

Joint Targeting School Student Guide



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Joint Targeting School

Joint Targeting School
Dam Neck, Virginia

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PREFACE

1. Scope

The *Joint Targeting School Student Guide* provides established and evolving tactics, techniques, and procedures used by personnel involved in day-to-day joint fires and targeting processes.

2. Purpose

This student guide serves as a bridge between current operational-level doctrine and tactical-level employment at the joint force level. It is intended to inform doctrine writers, educators, and trainers about the joint targeting process. It supplements, not replaces, existing joint or Service doctrine. The student guide is designed for use by personnel assigned to (or participating in) a joint targeting effort. It also presents well developed definitions that have been harmonized with joint doctrine and discusses those “best practices” that have proven of value during on-going military operations and exercises.

3. Application

This student guide is meant to educate the joint community about the joint fires and targeting processes that can be used by commanders and their staffs in joint force commands and subordinate units.

4. Command

The recommendations in this student guide are based on joint doctrine, Service and multi-Service doctrine, and Joint Staff and Department of Defense issuances, as well as existing lessons learned and best practices observed during current and recent operations and exercises.

CHAPTER I

FUNDAMENTAL CONSTRUCTS

SECTION A. JOINT OPERATION PLANNING FUNCTIONS

1. Joint Operation Planning

- a. Joint operation planning is the mechanism by which a JFC translates national military objectives into viable plans and orders for conducting military operations. The JFC issues initial targeting guidance early in the planning effort. The joint targeting process occurs within the context of joint operation planning, both before and during execution. During execution, commanders and planners continue to consider elements of operational design and adjust both COPS and future plans to capitalize on tactical and operational successes as the joint operation unfolds.
- b. Adaptive Planning and Execution. Joint operation planning occurs within Adaptive Planning and Execution (APEX), which is the department-level system of joint policies, processes, procedures, and reporting structures. APEX and the Joint Operational Planning Process (JOPP) share the same basic approach and problem-solving elements, such as mission analysis and Course of Action (COA) development. The combination of APEX and JOPP promotes coherent planning across all levels of war and command echelons, whether the requirement is for a limited, single-phase operation such as noncombatant evacuation or for a multiphase campaign involving high-intensity combat operations.
 - (1) APEX formally integrates the planning activities of the entire joint planning and execution community during the initial planning and plan refinement that occurs both in peacetime and crisis. APEX activities span many organizational levels, but the focus is on the interaction between the SecDef and the CCDRs, which ultimately helps the President and SecDef decide when, where, and how to commit US military forces in response to a foreseen contingency or an unforeseen crisis.
 - (2) APEX provides for orderly and coordinated problem solving and decision-making in two related but distinct categories — contingency planning and crisis action planning (CAP). These categories differ primarily in level of uncertainty, amount of available planning time, and products. First, the process is highly structured to support iterative, concurrent, and parallel contingency planning throughout the planning community to produce thorough and fully coordinated operation plans (OPLANs) when time permits. Second, the process is shortened in CAP, as necessary, to support the dynamic requirements of changing events. During actual military operations, the process adapts to accommodate greater decentralization of joint operation planning activities. Contingency planning and CAP share common planning activities and are interrelated.

c. Joint Operation Planning Process (JOPP). The JOPP provides a methodical approach to planning at any organizational level and at any point before and during joint operations. The focus of the JOPP is on the interaction between an organization's commander, staff, the commanders and staffs of the next higher and lower commands, and supporting commanders and their staffs. Although the ultimate product is an OPLAN or operation order (OPORD) for a specific mission, the process is continuous throughout an operation. The JOPP is an orderly, analytical process that consists of a logical set of steps to analyze a mission: develop, analyze, and compare alternative COAs against criteria of success and each other, select the best COA, and produce a joint OPLAN or OPORD. The JOPP focuses on defining the military mission and development and synchronization of detailed plans to accomplish that mission. Commanders and staffs can apply the thinking methodology to discern the correct mission, develop creative and adaptive CONOPS to accomplish the mission, and synchronize those CONOPS so they can be executed. It applies to both supported and supporting Joint Force Commanders (JFCs) and to joint force component commands when the components participate in joint planning. Together with operational design, the JOPP facilitates interaction between the commander, staff, and subordinate and supporting headquarters (HQ) throughout planning. The JOPP helps commanders and their staffs organize their planning activities, share a common understanding of the mission and commander's intent, and develop effective plans and orders. Figure I-1, Joint Operation Planning Process Steps, lists the JOPP steps.

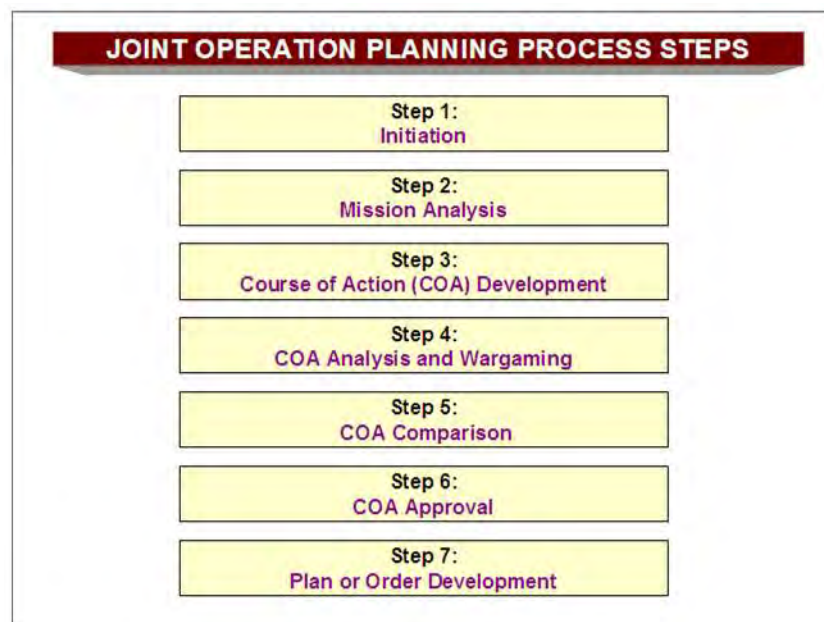


Figure I-1. Joint Operation Planning Process Steps

(1) **Step 1: Initiation.** Joint operation planning begins when an appropriate authority recognizes a potential for military capability to be employed in response to a potential or actual crisis. At the strategic level, that authority —

the President, Secretary of Defense (SecDef), or Chairman of the Joint Chiefs of Staff (CJCS) — initiates planning by deciding to develop military options. Planning is continuous once execution begins. However, planning initiation during execution is still relevant when there are significant changes to the current mission or planning assumptions or the commander receives a mission for follow-on operations.

- (2) **Step 2: Mission Analysis.** Mission analysis is used to study the assigned tasks and to identify all other tasks necessary to accomplish the mission. Mission analysis is critical because it provides direction to the commander and the staff, enabling them to focus effectively on the problem at hand. The commander's staff is responsible for analyzing the mission and proposing, if required, the restated mission for the commander's approval, thus allowing subordinate and supporting commanders to begin their own estimate and planning efforts and for higher headquarters' concurrence.
 - (a) The primary inputs to mission analysis are the higher headquarters' planning directive, other strategic guidance, and the commander's initial planning guidance. Initial planning guidance may include a description of the OE, a definition of the problem, the operational approach, initial intent, and the joint intelligence preparation of the operational environment (JIPOE). During this step, the JIPOE provides input to help frame the OE. The JIPOE subsequently provides a comprehensive framework for intelligence, surveillance, and reconnaissance (ISR) support to planning and COA selection. Consequently, the JIPOE must assist commanders in anticipating enemy intent and enable them in preempting enemy actions.
 - (b) The JIPOE process continues throughout planning by examining adversary and friendly capabilities, adversary intent, and the OE. Enemy and friendly centers of gravity (COGs) are also identified during this initial stage of the estimation process. As mission analysis is refined through later stages of the estimation process, enemy COGs are analyzed, yielding critical vulnerabilities or other key system nodes. These are further examined through target system or nodal analysis to yield target sets, targets, critical elements, and aimpoints. Such analysis carries a considerable information-flow cost. In order to properly identify collection and exploitation requirements for targeting, target system analysis (TSA) must begin well in advance of operations and must continue throughout them. It must begin during the initial stages of the JIPOE and draw upon as much ongoing peacetime targeting material as is available for the OA.
 - (c) The primary products of mission analysis are staff estimates, the mission statement, a refined operational approach, the commander's intent statement, updated planning guidance, and commander's critical information requirements (CCIRs).

For additional information on the JIPOE, see JP 2-01.3, Joint Intelligence Preparation of the Operational Environment.

(3) **Step 3: Course of Action Development (COA).** A COA is a potential way (i.e. solution or method) to accomplish the assigned mission. The staff develops COAs to provide unique choices to the commander, all oriented on accomplishing the military end state.

(a) A good COA accomplishes the mission within the commander's guidance, provides flexibility to meet unforeseen events during execution, and positions the joint force for future operations. It also gives components the maximum latitude for initiative. Since the operational approach contains the JFC's broad approach to solve the problem at hand, each COA will expand this concept with the additional details that describe what type of military action will occur, why the action is required (purpose), who will take the action, when the action will begin, where the action will occur, and how the action will occur (method of employment of forces). The staff converts the approved COA into a CONOPS. COA determination consists of four primary activities: COA development, analysis and wargaming, comparison, and approval.

(b) To develop COAs, the staff must focus on key information necessary to make decisions and assimilate the data in mission analysis. Usually, the staff develops no more than three COAs to focus their efforts and concentrate valuable resources on the most likely scenarios. Embedded within COA development is the application of operational art. Planners can vary COAs by adjusting the use of joint force capabilities throughout the OA by physical domain, through the information environment, and through cyberspace and by varying the combinations of these elements. During COA development, the commander and staff continue risk assessment, focusing on identifying and assessing hazards to mission accomplishment. Targeteers should provide their assessment of each COA's feasibility during the development process. The staff also continues to revise intelligence products. Thus, the JIPOE is refined during this stage and includes detailed analysis of COGs identified during mission analysis. As a part of analysis of adversary capabilities and intentions, one shall consider the potential impact on friendly desired effects and the likelihood that the adversary's actions will cause specific undesired effects.

(4) **Step 4: Course of Action Analysis and Wargaming.**

(a) COA Analysis is the process of closely examining potential COAs to reveal details that will allow the commander and staff to tentatively identify COAs that are valid, and then compare these COAs. The commander and staff analyze each tentative COA separately according to the commander's guidance. COA analysis identifies advantages and

disadvantages of each proposed friendly COA. While time-consuming, COA analysis should answer two primary questions: Is the COA feasible, and is it acceptable?

- (b) Wargaming is a primary means to conduct this analysis. Wargaming is a conscious attempt to visualize the flow of the operation, given joint force strengths and dispositions, adversary capabilities and possible COAs, the OA, and other aspects of the OE. Each critical event within a proposed COA should be wargamed based upon time available using the action, reaction, and counteraction method of friendly and/or opposing force (OPFOR) interaction. The basic wargaming method (modified to fit the specific mission and OE) can apply to noncombat as well as combat operations.
- (5) Step 5: Course of Action Comparison. COA comparison is a subjective process whereby COAs are considered independently of each other and evaluated/compared against a set of criteria that are established by the staff and commander. The goal is to identify and recommend the COA that has the highest probability of success against the enemy COA that is of the most concern to the commander. COA comparison facilitates the commander's decision-making process by balancing the ends, means, ways, and risk of each COA. The end product of this task is a briefing to the commander on a COA recommendation and a decision by the commander. COA comparison helps the commander answer the following questions: what are the differences between each COA? What are the advantages and disadvantages? What are the risks?

NOTE: COA comparison remains a subjective process and should not be turned into a mathematical equation. The key element in this process is the ability to articulate to the commander why one COA is preferred over another.

- (6) Step 6: Course of Action Approval. The staff determines the best COA to recommend to the commander. The staff briefs the commander on the COA comparison and the analysis and wargaming results, including a review of important supporting information. This briefing often takes the form of a commander's estimate. The briefing should include a review of important supporting information, such as the current status of the joint force, the current JIPOE, and assumptions used in COA development. All principal staff directors and the component commanders should attend this briefing.
- (7) Step 7: Plan or Order Development. Deliberate planning will result in plan development, while CAP typically will lead directly to OPORD development. During plan or order development, the commander and staff, in collaboration with subordinate and supporting components and organizations, expand the approved COA into a detailed joint OPLAN or OPORD by first developing an executable CONOPS — the eventual centerpiece of the OPLAN or OPORD.

- (a) The CONOPS clearly and concisely expresses what the JFC intends to accomplish and how it will be done using available resources. It describes how the actions of the joint force components and supporting organizations will be integrated, synchronized, and phased to accomplish the mission, including potential branches and sequels. The commander defines responsibilities by providing guidance to the staff and subordinate commanders.
- (b) The concept of fires is integral to the CONOPS. The concept of fires describes how tactical, operational, and strategic joint fires, as well as nonlethal capabilities, will be synchronized to accomplish specific tasks that support the JFC's desired effects and objectives. Planners determine the enemy's COGs, critical factors, and decisive points and how the joint force can apply fires to assist in creating desired effects. The JFC can also highlight the anticipated critical actions, times, and places during combat that would serve as triggers for friendly action. The JFC determines the sequencing of key events and emphasizes the desired end state. Not all fires will directly support maneuver forces, but all fires should support the JFC's CONOPS and specified tasks to joint force components.
- (c) The JFC provides fires and targeting guidance, operational objectives, desired effects, tasks to subordinates, and targeting/fires priorities. The CONOPS provides more detail on what/where fires effects are desired by phase (e.g., deny, disrupt, delay, suppress, neutralize, destroy, or influence). In addition, the JFC provides guidance on munitions usage and restrictions, restricted targets, and a no-strike list (NSL).
- (d) Targeting is integral to the concept of fires and OPLAN development, and deliberate targeting is used to help determine and develop target sets and strategic targets included in the OPLAN and its attachments. The joint air operations plan (JAOP) provides the joint component-level planning detail and guidance for joint targeting/fires. Even if targeting information developed during planning is not included in the OPLAN or its attachments, OPLAN development requires considerable targeting effort to validate selected COAs, CONOPS, and other elements of the plan. Commanders and planners must be able to estimate how much effort and what resources are required to accomplish the mission. One way to determine this is to conduct some (at least notional) deliberate targeting well before the operation begins.
- (e) The OPLAN should provide broad guidelines for prioritizing targets, making clear which sets or systems are most important to the operation. The OPLAN should also provide guidance on the sequencing of targeting actions or effects, which is not the same thing as priority. Although creating parallel effects is generally best, some

targets must be attacked sequentially to enable effects against other targets.

For additional information on the JOPP, see JP 5-0, Joint Operation Planning.

2. Operational Art and Operational Design

- a. The JFC and staff develop plans and orders through the application of operational art and operational design and by using the JOPP. They combine art and science to develop products that describe how (ways) the joint force will employ its capabilities (means) to achieve the military end state (ends). Operational art is the application of creative imagination by commanders and staffs — supported by their skill, knowledge, and experience. Operational design is a process of iterative understanding and problem framing that supports commanders and staffs in their application of operational art with tools and a methodology to conceive of and construct viable approaches to operations and campaigns. Commanders who are skilled in the use of operational art provide the vision that links tactical actions to strategic objectives. More specifically, 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. Likewise, operational art promotes unified action by helping JFCs and staffs understand how to facilitate the integration of other agencies and multinational partners toward achieving strategic and operational objectives.
- b. The key to operational design essentially involves: (1) understanding the strategic guidance (determining the end state and objectives), (2) identifying the adversary's principal strengths and weaknesses, and (3) developing an operational concept that will achieve strategic and operational objectives.
- c. Operational design supports operational art with a general methodology using elements of operational design for understanding the situation and the problem. The methodology helps the JFC and staff to understand conceptually the broad solutions for attaining mission accomplishment and to reduce the uncertainty of a complex OE. The elements of operational design are individual tools — such as termination, military end state, objectives, effects, COGs, and lines of operation (LOOs) to help the JFC and the staff visualize and describe the broad operational approach. These conceptual tools help commanders and their staffs think through the challenges of understanding the OE, defining the problem, and developing this approach, which guides planning and shapes the CONOPS. Targeteers must understand how joint force planners use these and other design elements during both planning and execution. The following are a number of operational design elements that are particularly relevant to targeting and the targeteer's understanding of planning. For a complete understanding of all elements of operational design, see JP 5-0, Joint Operation Planning.
 - (1) **Termination, Military End State, and Objectives.** Strategic guidance is essential to operational art and operational design. It should define what

constitutes “victory” or success (ends) and allocate adequate forces and resources (means) to achieve strategic objectives. The operational approach (ways) of employing military capabilities to achieve the ends is for the supported JFC to develop and propose. This guidance helps relate key elements of operational design, such as termination, end state, objectives, and effects. Once the military end state is understood and termination criteria are established, operational design continues with development of strategic and operational military objectives. Effective planning cannot occur without a clear understanding of the end state and the conditions that must exist to end military operations.

- (a) **Termination** criteria are developed first among the elements of operational design as they enable the development of the military end state and objectives. Knowing when to terminate military operations and how to preserve achieved advantages is key to achieving the national strategic end state.. Termination criteria describe the standards that must be met before conclusion of a joint operation. Termination criteria should account for a wide variety of operational tasks that the joint force may need to accomplish, to include disengagement, force protection, transition to post-conflict operations, reconstitution, and redeployment.
- (b) **Military end state** is the set of required conditions that defines achievement of all military objectives. It normally represents a point in time and/or circumstances beyond which the President does not require the military instrument of national power as the primary means to achieve remaining national objectives. While it may mirror many of the conditions of the national strategic end state, the military end state will typically be more specific and contain other supporting conditions. Aside from its obvious association with strategic or operational objectives, clearly defining the military end state promotes unity of effort, facilitates synchronization, and helps clarify (and may reduce) the risk associated with the campaign or operation.
- (c) An **objective** is a clearly defined, decisive, and attainable goal toward which every military operation should be directed. Once the military end state is understood and termination criteria are established, operational design continues with the development of strategic and operational military objectives. Tactical objectives are often associated with the specific “target” of an action. In this context, an objective could be a terrain feature, the seizing or defending of which is essential to the commander’s plan. It could also be an enemy force or capability, the destruction of which creates a vulnerability for the adversary. Objectives prescribe friendly goals. They constitute the aim of military operations and are necessarily linked to national objectives (simply defined as what we want to accomplish). Military objectives are one of the most important considerations in campaign and operational design. They specify what must be accomplished and provide the basis for describing desired effects.

For additional information on termination, military end state and objectives see JP 5-0, Joint Operation Planning.

- (2) **Effects.** Joint operation planning includes identifying desired effects (i.e. the conditions necessary to achieve objectives), and undesired effects (those that can hinder or complicate mission accomplishment). The use of effects during planning is reflected in the steps of the JOPP as a way to clarify the relationship between objectives and tasks. Combined with a systems perspective, commanders and staffs can use an understanding of desired and undesired effects to promote unified action with multinational and other agency partners.

KEY TERMS

Effect — 1. The physical or behavioral state of a system that results from an action, a set of actions, or another effect. 2. the result, outcome, or consequence of an action. 3. A change to a condition, behavior, or degree of freedom. JP 3-0.

Objective — 1. The clearly defined, decisive, and attainable goal toward which every operation is directed. 2. The specific target of the action taken which is essential to the commander's plan. JP 5-0.

- (a) The use of effects in planning can help commanders and staffs determine the tasks required to achieve objectives and use other elements of operational design more effectively by clarifying the relationships between COGs, LOOs, and/or lines of effort, decisive points, and termination criteria. Once a systems perspective of the OE has been developed (and appropriate links and nodes have been identified), the linkage and relationship between COGs, LOOs, and decisive points can become more obvious. This linkage allows for efficient use of desired effects in planning. The JFC and planners continue to develop and refine desired effects throughout the JOPP. Monitoring progress toward creating desired effects and avoiding undesired effects continues throughout execution.
- (b) Effects and their accompanying causal linkages join tasks to objectives. The tasks and effects in any causal chain can derive from any element of national power — diplomatic, informational, military, or economic — and may occur at any point across the full range of military operations. A single objective may require creating more than one effect. Properly understanding the relationship among effects at all levels is important to planning and conducting any joint operation.
- (c) Effects can be categorized in many ways. One important distinction is between direct and indirect effects.

1. **Direct effects** are the immediate, first order consequence of a military action (weapons employment results, etc.), unaltered by intervening events or mechanisms. They are usually immediate and easily recognizable. For example, the direct effects of leaflet drops may be the surrender of enemy soldiers or an increased participation by the local populace in elections, but more assessment will need to occur before reaching this conclusion because other factors could cause this behavior. Conversely, the direct effect of jamming may be targeted cell phones or other communications devices are unusable by insurgents, but this effect will not be immediately observable and should not be assumed to occur without evidence.
2. **Indirect effects** are the delayed or displaced second-, third-, and higher-order consequences of action, created through intermediate events or mechanisms. These outcomes may be physical or behavioral in nature. Indirect effects may be difficult to recognize, due to subtle changes in system behavior that may make them difficult to observe. For example, an indirect effect of destroying a communications node or capturing a courier may be doing so prevents C2 of fielded enemy forces or distant terrorist cell leaders and degrades their effectiveness against friendly forces, an effect with real benefits, which are nonetheless hard to measure.

KEY CONSIDERATION

The proximate cause of effects in complex situations can be difficult to predict. Even direct effects in these situations can be more difficult to create, predict, and measure, particularly when they relate to moral and cognitive issues (such as religion and the “mind of the adversary,” respectively). Indirect effects in these situations often are difficult to foresee. Where there is sufficient intelligence available to predict the direct effects reliably, some of the commander’s objectives can also be achieved indirectly. Some military objectives can be achieved by influencing political, economic, social, and other systems in the operational environment. *However, indirect effects often can be unintended and undesired since there will always be gaps in our understanding of the operational environment.* Commanders and their staffs must appreciate that unpredictable third-party actions, unintended consequences of friendly operations, subordinate initiative and creativity, and the fog and friction of conflict will contribute to an uncertain operational environment.

JP 5-0, Joint Operation Planning

(d) **Direct and indirect effects** possess many characteristics that can qualitatively shape the OE. Several of these are discussed below.

1. **Cumulative Effects.** Effects tend to compound, such that the ultimate result of a number of direct effects and/or indirect effects often combine to produce greater outcomes than the sum of their individual impacts.

2. **Cascading Effects.** Effects can ripple through a targeted system, often influencing other systems as well, most typically through nodes and links that are common and critical to related systems. The cascading of direct and indirect effects, as the name implies, usually flows from higher to lower levels. As an example, destruction of a HQ element or capture of a terrorist senior leader will result in the loss of C2 and thus degrade the effectiveness of subordinate organizations.
3. **Unintended Effects.** Target effects often spill over to create unintended consequences, which may be counterproductive or may create opportunities. An example of a counterproductive consequence entails injury or collateral damage to persons or objects unrelated to the intended target. Conversely, some unforeseen effects may create opportunities the joint force can exploit to help accomplish objectives. Unintended effects may also occur if the pre-strike analysis was incorrect and the enemy's reaction differs from what we expected, complicates operations, or causes a change to operations (e.g., we expected enemy withdrawal, but they counterattacked with their strategic reserve instead). The pre-strike analysis may also have miscalculated the local civilian population perceptions/reactions and international public opinion, ultimately resulting in more restrictions on target selection or engagement timing. Planners and targeteers should consider second-, third-, and higher-order effects, especially political-military effects, during planning and assessment. While estimating outcomes is rarely an exact process, estimation becomes increasingly difficult as effects continue to compound and cascade through targets and target systems. In addition, the impact of a single event can often be magnified over time and distance that greatly exceeds the span of the direct effect associated with that one event.

(e) **Lethal and Nonlethal Effects.**

1. Weapon systems deliver fires that are capable of producing both lethal and nonlethal effects on a target. Lethal effects are produced through some combination of blast, fragmentation, cratering, incendiary, and kinetic penetration of the selected target. Though highly effective for their intended purpose, lethal effects may not always be suitable across the range of military operations. That said, planners and weaponeers should not arbitrarily exclude any capability that can create the desired effect(s).
2. The scalability, selectability, and responsiveness of nonlethal capabilities provide the JFC the means to target all target types. The use of nonlethal capabilities may be particularly desirable when restraints on friendly weaponry, tactics, and levels of violence characterize the OE. In some cases, even carefully applied force with lethal weapons can result in negative public perceptions that could

adversely affect efforts to gain or maintain legitimacy and impede the attainment of both short- and long-term goals. Escalation of force guidance in the form of rules of engagement (ROE)/rules for the use of force (RUF), coupled with appropriate nonlethal capabilities, can help avoid raising the level of conflict unnecessarily.

For additional information on effects, see JP 5-0, Joint Operation Planning, and JP 3-60 Joint Targeting.

(3) **Center of Gravity.** One of the most important tasks confronting the JFC's staff during planning is identifying and analyzing friendly and adversary COGs. A COG is a source of power that provides moral or physical strength, freedom of action, or will to act. It is what Clausewitz called "the hub of all power and movement, on which everything depends . . . the point at which all our energies should be directed." An objective is always linked to a COG. At the strategic level, a COG could be a military force, an alliance, political or military leaders, a set of critical capabilities or functions, or national will. At the operational level a COG is often associated with the adversary's military capabilities — such as a powerful element of the armed forces — but could include other capabilities in the OE. Since the adversary will protect the COG, it invariably is found among strengths rather than among weaknesses or vulnerabilities. Commanders consider not only the enemy COGs, but also identify and protect their own COGs.

(a) **Systems Perspective.** A systems perspective of the OE (see Figure I-4, Systems Perspective of the Operational Environment) assists with identification of adversary COGs and their critical capabilities, requirements, and vulnerabilities. In combat operations, this involves knowing an adversary's physical and psychological strengths and weaknesses, and how the adversary organizes, fights, and makes decisions. Moreover, the JFC and staff (including targeteers) must understand strengths and weaknesses in other OE systems (political, military, economic, social, information, and infrastructure [PMESII]) and their interaction with the military system. The staff, under the intelligence directorate's (J-2) lead, analyzes the relevant systems in the OE based on understanding strategic objectives, desired effects, and the joint force's mission. This analysis identifies a number of nodes and links. Identifying nodes and their links helps the staff assess the systems' important capabilities and vulnerabilities, and is the foundation of the systems perspective of the OE. This analysis identifies the interrelationship of systems and capabilities within an adversary's COG(s) and decisive points; points for action to influence or change an adversary system behavior. A clear understanding of these relationships will help the JFC and staff in the identification of effective options to defeat the COG.

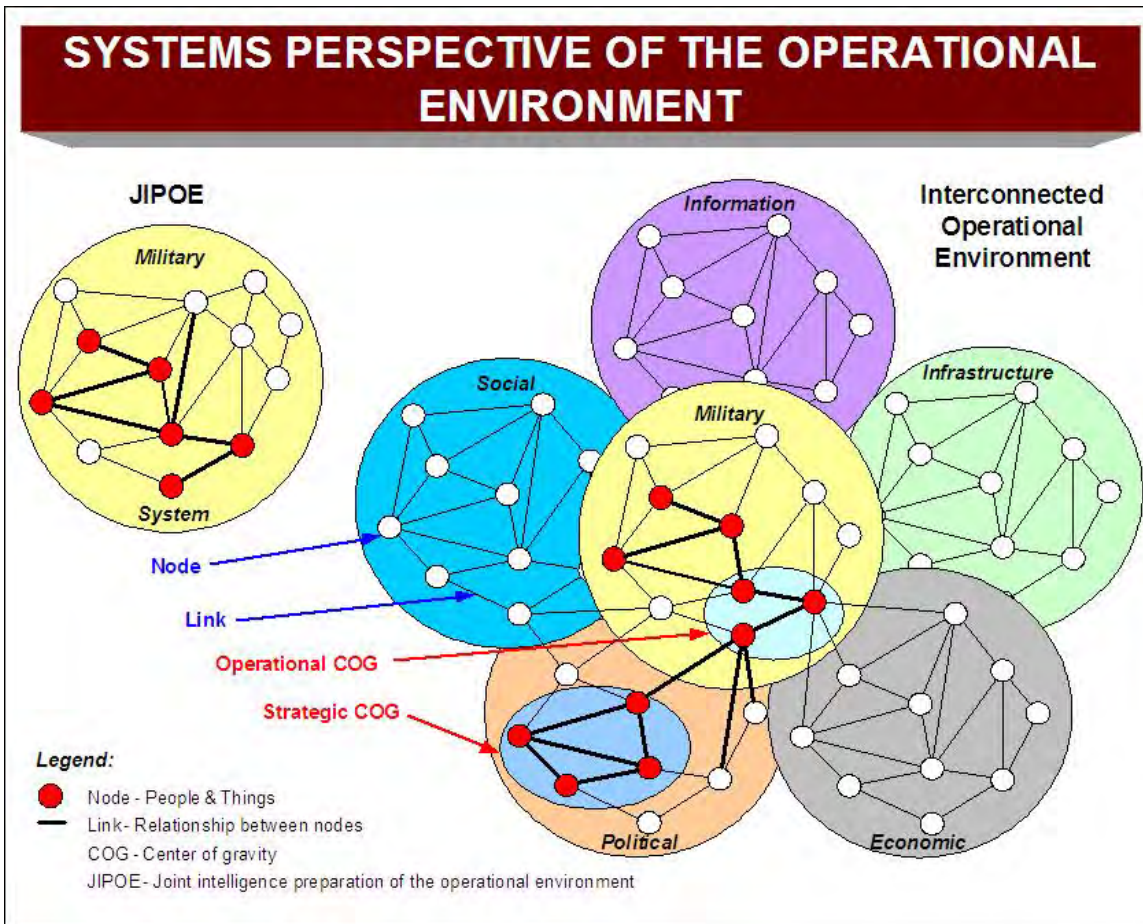


Figure I-2. Systems Perspective of the Operational Environment

1. **Nodes and Links.** System nodes are the tangible elements within a system that can be “targeted” for action, such as people, materiel, and facilities. Links are the behavioral or functional relationships between nodes, such as the command or supervisory arrangement that connects a superior to a subordinate, the relationship of a vehicle to a fuel source, and the ideology that connects a propagandist to a group of terrorists. Links establish the interconnectivity between nodes that allows them to function as a system — to behave in a specific way (accomplish a task or perform a function).
2. Thus, the purpose in targeting specific nodes is often to destroy, interrupt, or otherwise affect the relationship between them and other nodes, which ultimately influences the system as a whole. Analysts link nodes to each other with sufficient detail to inform the JFC of potential key nodes. These are nodes related to a strategic or operational effect or a COG. Some may become decisive points for military operations since, when acted upon, they could allow the JFC to gain a marked advantage over the adversary or contribute materially to attaining a desired effect. Key nodes are likely to be linked to, or resident in, multiple systems. Since each adversary system (infrastructure, social, etc.) is composed of nodes and links, the capabilities of US instruments

of national power can be employed against selected key nodes to attain operational and strategic effects.

KEY TERMS

System — A functionally, physically, and/or behaviorally related group of regularly interacting or interdependent elements; that group of elements forming a unified whole. JP 3-0.

Node — An element of a system that represents a person, place or physical thing. JP 3-0.

Link — A behavioral, physical, or functional relationship between nodes. JP 3-0.

- (b) A COG typically will not be a single node in the system, but will consist of a set of nodes and their respective links (relationships). For example, Figure I-5, Analyzing Critical Factors, shows a notional adversary's strategic and operational COGs, each consisting of a set of nodes and links. The operational COG in this example resides in the military system, while the strategic COG focuses in the political system but overlaps with the operational COG. However, a COG that appears entirely military on the surface often will have underlying links to key nodes in other systems. A single node might be considered a COG as an exception, such as when the adversary senior military leader is also the political leader and the nature of the adversary's political and military systems is such that the leader's demise would cause support for the conflict by other leaders in these systems to collapse. Also, systems are viewed differently at different levels. For example, the CCDR might consider an adversary's key military capability to be a single node in the adversary's military system, while a JFC who must attack this capability would analyze it as a system of nodes and links in an effort to determine its critical capabilities and vulnerabilities.

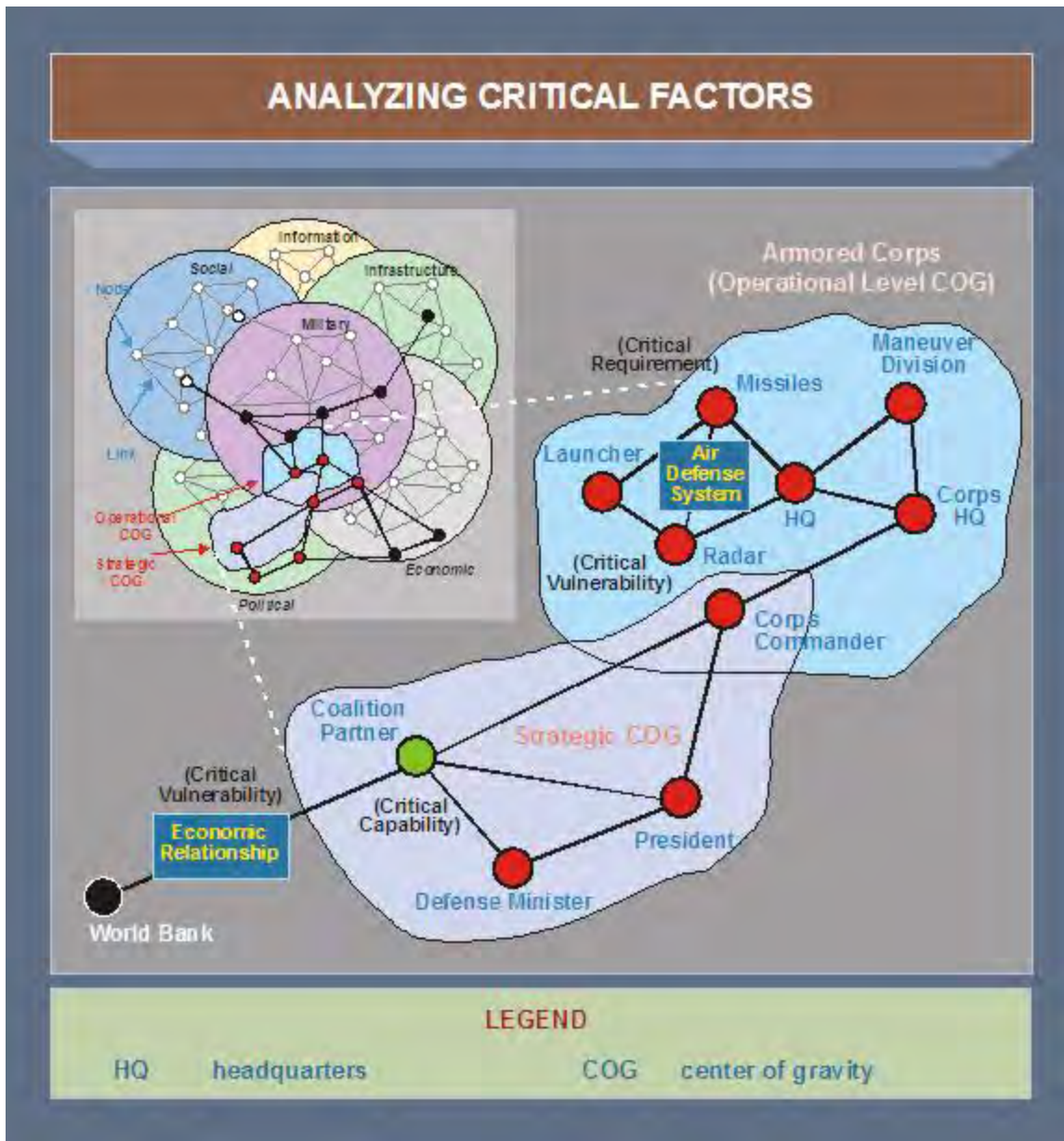


Figure I-3. Critical Factors

For additional information on systems perspective, see JP 2-01.3, Joint Intelligence Preparation of the Operational Environment.

- (c) **COG Analysis.** COG analysis is important to targeting efforts because it identifies the adversary's physical and psychological strengths and weaknesses, and how the adversary organizes, fights, and makes decisions. This analysis helps identify where those sources of power are vulnerable, where critical nodes within them are, and how they can be exploited.

1. **Critical Factors.** Analysis begins with the COG as a source of power. The analysis identifies the inherent abilities that allows the COG to act

as such (critical capabilities); identifies the essential conditions, resources, or means (critical requirements) that allow the COG to operate; and then determines where those critical requirements are vulnerable (critical vulnerabilities [CVs]). Collectively, these are called critical factors. While it can sometimes be difficult to pick CVs from critical requirements or translate the former into explicit target sets, target system and nodal analysis performed during target development can help “operationalize” this technique’s insights.

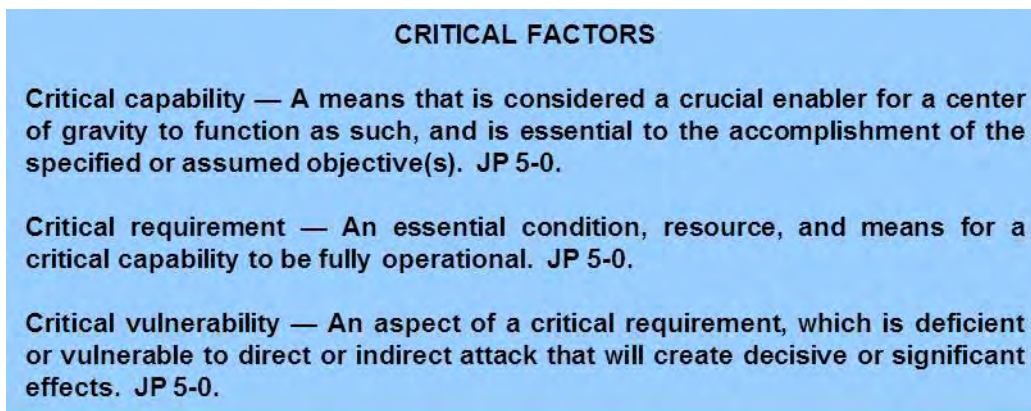


Figure I-4 Critical Factors

2. Figure I-5 shows notional critical factors associated with the strategic and operational-level COGs depicted in Figure I-4. For example, the J-2 determines the air defense (AD) system is the critical capability for the operational-level COG — the armored corps — and the radar network is the CV for the AD system due to the overmatching capabilities of the joint force’s anti-radiation missiles. This assessment likely will result in fires and targeting tasks to the joint force air component commander (JFACC) relative to neutralizing the AD system so the maneuver divisions become vulnerable.
- (d) Once the systems analysis is mature, the planners should then try to identify the critical factors within that system. Those elements or functions that enable the COG are its critical capabilities. Once these are identified, planners should determine the critical requirements and CVs. When identifying friendly and adversary CVs, the JFC and staff will understandably want to focus their efforts against the CV that will do the most decisive damage to an adversary’s COG. However, in selecting those CVs, planners must also compare their criticality with their accessibility, vulnerability, redundancy, ability to recuperate, and impact on the civilian populace, then balance those factors against friendly capabilities to affect those vulnerabilities. The JFC’s goal is to seek opportunities aggressively to apply force against an adversary in as vulnerable an aspect as possible, and in as many dimensions as possible. In other words, the JFC seeks to undermine the adversary’s strength by exploiting adversary vulnerabilities, while protecting friendly vulnerabilities from adversaries attempting to do the same.

For additional information on COG analysis, see JP 5-0, Joint Operation Planning.

- (4) **Decisive Points.** Commanders and their staffs identify decisive points to help them determine where and how to apply friendly capabilities to exploit adversary vulnerabilities. A decisive point is a geographic place, specific key event, critical factor, or function that, when acted upon, allows a commander to gain a marked advantage over an adversary or contributes materially to achieving success (e.g., creating a desired effect, achieving an objective). The most important decisive points can be determined from analysis of critical factors. As part of the node-link analysis associated with a systems perspective, understanding the relationship between a COG's critical capabilities, requirements, and vulnerabilities can illuminate direct and indirect approaches to the COG. It is likely most of these critical factors will be decisive points, which should then be further addressed in the planning process.
- (5) **Direct Versus Indirect Approach.** The approach is the manner in which a commander contends with a COG; there are generally three approaches from which to choose. The decision facing the commander is whether to attack the COG directly, indirectly, or through a combination of the two. A direct approach attacks the enemy's COG or principal strength by applying combat power directly against it. However, COGs are generally well protected and not vulnerable to a direct approach. Thus, commanders usually choose an indirect approach. An indirect approach attacks the enemy's COG by applying combat power against a series of decisive points that lead to the defeat of the COG while avoiding enemy strength. In theory, direct attacks against adversary COGs resulting in their neutralization or destruction provide the most direct path to victory — if this can be done in a prudent manner. In the event a direct attack is not a reasonable solution, JFCs should seek an indirect approach until conditions are established that permit successful direct attacks. In this manner, the adversary's derived vulnerabilities can offer indirect pathways to gain leverage over its COGs.

For additional information on direct versus indirect approach, see JP 5-0, Joint Operation Planning.

(6) **Lines of Operations and Lines of Effort**

- (a) **Lines of Operation.** LOOs describe and connect a series of decisive actions that lead to control of a geographic or force-oriented objective. Operations designed using LOOs generally consist of a series of actions executed according to a well-defined sequence, although multiple LOOs can exist at the same time (parallel operations). Major combat operations are typically designed using LOOs. These lines tie offensive, defensive, and stability tasks to the geographic and positional references in the OA.

Commanders synchronize activities along complementary LOOs to achieve the end state.

1. **Interior Lines.** A force operates on interior lines when its operations diverge from a central point. Interior lines usually represent central position, where a friendly force can reinforce or concentrate its elements faster than the enemy force can reposition. With interior lines, friendly forces are closer to separate enemy forces than the enemy forces are to one another. Interior lines allow an isolated force to mass combat power against a specific portion of an enemy force by shifting capabilities more rapidly than the enemy can react.
 2. **Exterior Lines.** A force operates on exterior lines when its operations converge on the enemy. Operations on exterior lines offer opportunities to encircle and annihilate an enemy force. However, these operations typically require a force stronger or more mobile than the enemy.
 3. The **relevance of interior and exterior lines** depends on the time and space relationship between the OPFORs. Although an enemy force may have interior lines with respect to the friendly force, this advantage disappears if the friendly force is more agile and operates at a higher tempo. Conversely, if a smaller friendly force maneuvers to apposition between larger but less agile enemy forces, the friendly force may be able to defeat them in detail before they can react effectively.
- (b) **Lines of Effort.** A line of effort links multiple tasks and missions using the logic of purpose — cause and effect — to focus efforts toward establishing operational and strategic conditions. Lines of effort are essential to operational design when positional references to an enemy or adversary have little relevance, such as in counterinsurgency or stability operations. In operations involving many nonmilitary factors, lines of effort may be the only way to link tasks, effects, conditions, and the desired end state. A full array of lines of effort might include offensive and defensive lines, as well as lines for public affairs (PA), IO, and integrated financial operations. All typically produce effects across multiple lines of effort.
- (c) **Combining Lines of Operation and Lines of Effort.** Commanders may use both LOOs and lines of effort to connect objectives to a central, unifying purpose. Lines of effort can also link objectives, decisive points, and COGs. Combining LOOs and lines of effort allows commanders to include nonmilitary activities in their operational design. This combination helps commanders incorporate stability tasks into their operational approach that are necessary to reach the end state. It allows commanders to consider the less tangible aspects of the OE where the

other instruments of national power or nontraditional military activities may dominate.

For additional information on LOOs and lines of effort, see JP 5-0, Joint Operation Planning.

3. Planning and Targeting During Execution

Like most complex organizations, JFCs have long-, mid-, and near-term goals. Joint task forces (JTFs) organize to conduct future planning, future operations planning, and COPS planning. The division of labor between these planning efforts is linked to time or events and is situation, as well as the level of command, dependent. Using time horizons to delineate responsibilities, a JFC HQ may focus COPS on activities inside of 24 hours, focus future operations on activities between 24 and 96 hours, and focus future plans on activities beyond 96 hours and up to six months. The joint force battle rhythm and the JFC's decision cycle are two factors that may also affect planning in these timeframes, with the greatest potential impact on COPS planning. The JTC and supporting component processes (such as the JFACC's six-stage air tasking cycle) must adapt to the joint force battle rhythm and decision cycle.

- a. **Future Plans.** The joint force J-5's effort focuses on future plans. The timeframe of focus for this effort varies according to the level of command, type of operation, desires of the JFC, and other factors. Typically, the emphasis of the future plans effort is on planning the next phase of operations (sequels to the current operation). In a campaign, this could be planning the next major operation (the next phase of the campaign).
- b. **Future Operations Planning.** The focus of the JTF's future operations is the development of orders and FRAGORDs that are beneath the threshold of the long-term efforts of the future plans, but are not directly related to the management of COPS. Future planning processes and products generally require significant coordination with elements internal to the JTF. The timeframe of focus for future operations planning varies according to the factors listed for future plans, but the period typically is more near-term than the future plans timeframe. Future planning could occur in the J-5 or joint planning group while future operations planning could occur in the JOC or J-3.
- c. **COPS planning** addresses the immediate or very near-term planning issues associated with ongoing operations. This normally occurs in the JOC or J-3.

For additional information on planning during execution, see JP 5-0, Joint Operation Planning. For additional information on the JFC/JTF battle rhythm, the commander's decision cycle, and other factors that can affect joint targeting and the synchronization of plans and operations, see JP 3-33, Joint Task Force Headquarters.

4. Assessment

- a. Assessment is a continuous process that measures progress of the joint force toward mission accomplishment. The JFC and component commanders continuously assess the OE and the progress of operations, and compare them to their initial vision and intent. Commanders adjust operations based on their assessment to ensure objectives are met and the military end state is achieved.
- b. The assessment process begins during mission analysis when the commander and staff consider what to measure and how to measure it to determine progress toward accomplishing a task, creating an effect, or achieving an objective. The process continues throughout execution.
- c. As a general rule, the level at which a specific operation, task, or action is directed should be the level at which such activity is assessed. Since the direct effects of target engagement typically reside at the tactical level, the JTC focuses on combat assessment (CA) to determine qualitative and quantitative results of fire efforts.
 - (1) CA is the primary process to determine the performance of target engagement relative to desired target effects with both lethal and nonlethal capabilities. It is an important component of joint fires and the joint targeting process.
 - (2) The staff consolidates and integrates CA results with other assessment results to provide a complete picture of progress during the joint operation.

For additional information on assessment, refer to Chapter III, “Joint Fires Planning and Targeting.”

SECTION B. FIRES AND TARGETING

1. Fires — A Joint Function

- a. Joint functions are related capabilities and activities grouped together to help joint force commanders (JFCs) integrate, synchronize, and direct joint operations. Functions that are common to joint operations at all levels of war fall into six basic groups — command and control (C2), intelligence, fires, movement and maneuver, protection, and sustainment. Some functions, such as C2 and intelligence, apply to all operations. Others, such as fires, apply as required by the JFC's mission. A number of subordinate tasks and related capabilities help define each function.
- b. **Fires** are defined as the use of weapon systems or other actions to create a specific lethal or nonlethal effects on a target. Examples of nonlethal fires to create effects at all levels of war include information operations (IO), electronic attack (EA), military information support operations (MISO), space operations, and cyberspace operations (CO).
- c. **Employing Fires.** Policy, guidance, and planning for the employment of operational and strategic fires are primarily joint functions. Joint fires are delivered during the employment of forces from two or more components in coordinated action to create desired effects in support of a common objective. Fires typically produce destructive effects, but some ways and means (such as EA) can be employed with little or no associated physical destruction. The fires function encompasses a number of tasks (or missions, actions, and processes) including:
 - (1) **Conduct Joint Targeting.** This is the process of selecting and prioritizing targets and matching the appropriate response to them, taking into account operational requirements and capabilities.
 - (2) **Provide Joint Fire Support.** This task includes joint fires that assist air, land, maritime, and special operations forces (SOF) to move, maneuver, and control territory, populations, airspace, and key waters, in support of the JFC's scheme of maneuver.
 - (3) **Countering Air and Missile Threats.** This task integrates offensive and defensive operations and capabilities to attain and maintain a desired degree of air superiority and force protection. These operations are designed to destroy or negate enemy aircraft and missiles, both before and after launch.
 - (4) **Interdict Enemy Capabilities.** Interdiction diverts, disrupts, delays, or destroys the enemy's military surface capability before it can be used effectively against friendly forces, or to otherwise achieve objectives.

- (5) **Conduct Strategic Attack.** This task includes offensive action against targets — whether military, political, economic, or other — which are selected specifically to achieve strategic objectives.
- (6) **Employ Information Operations Capabilities.** This task focuses on military actions involving the use of electronic warfare (EW), and MISO. It may involve targeting key leaders and influential groups to affect decision-making processes.
- (7) **Assess The Results Of Employing Fires.** This task includes assessing the effectiveness and performance of fires, as well as their contribution to the larger operation or objective.

For additional information on joint functions, see Joint Publication (JP) 3-0, Joint Operations, and JP 5-0, Joint Operation Planning.

2. Targeting — A Fires Task and Process

- a. Joint targeting is a fundamental task of the fires function that encompasses many disciplines and requires participation from many joint force staff elements and components along with numerous nonmilitary agencies.

KEY TERM

Targeting — The process of selecting and prioritizing targets and matching the appropriate response to them, considering operational requirements and capabilities. JP 3-0.

- b. **Purpose.** The purpose of targeting is to integrate and synchronize fires into joint operations by utilizing available capabilities to generate a specific lethal or nonlethal effect on a target. Joint targeting helps integrate and synchronize fires with other joint functions (C2, intelligence, movement and maneuver, protection, and sustainment) during the joint operation planning process (JOPP). Principles of joint targeting can apply in multinational operations and may involve participation from other agencies, governments, and organizations. Joint targeting supports unity of effort by providing:
 - (1) **Compliance with JFC objectives, guidance, and intent.**
 - (2) **Coordination, integration, synchronization, and deconfliction of target engagement.**
 - (3) **A common perspective on all targeting efforts performed in support of the commander.**
 - (4) **Reduced duplication of effort.**
 - (5) **Full integration of all available target engagement capabilities.**

- (6) **Reduced chance of friendly fire and collateral damage**
 - (7) **Focus on creating effects to achieve objectives in support of the commander's plan.**
 - (8) **Expeditious assessment of targeting effects.**
- c. Targeting systematically analyzes and prioritizes targets and matches appropriate lethal and nonlethal actions to those targets to create specific desired effects that achieve the JFC's objectives, accounting for operational requirements, capabilities, and the results of previous assessments. The emphasis of targeting is on identifying resources (targets) the enemy can least afford to lose or that provide him with the greatest advantage (high-value target [HVT]), then further identifying the subset of those targets which must be acquired and engaged to achieve friendly success (high-payoff target [HPT]). Targeting links the desired effects to actions and tasks. This contributes to creating the effects necessary to achieve the JFC's objectives.
- d. **Principles of Targeting.** The joint targeting cycle (JTC) is designed to achieve the JFC's objectives through joint fires. Adherence to four targeting principles throughout the targeting cycle should create desired effects while diminishing undesired or adverse collateral effects.
- (1) **Focused.** The targeting process is focused on achieving the JFC's objectives. It is the function of targeting to efficiently achieve those objectives within the parameters set by the concept of operations (CONOPS), directed limitations, the ROE, the law of war (LOW), and agreements concerning the sovereignty of national territories. Every target nominated should contribute to attaining the JFC's objectives.
 - (2) **Effects-based.** To contribute to the achievement of the JFC's objectives, targeting is concerned with the creation of specific desired effects through target engagement. Target analysis considers all possible means to create desired effects, drawing from all available capabilities. The art of targeting seeks to create desired effects with the least risk and expenditure of time and resources.
 - (3) **Interdisciplinary.** Joint targeting is a command function that requires the participation of many disciplines. This entails participation from all elements of the JFC's staff, component commanders' staffs, other agencies and organizations, and multinational partners, as illustrated in Figure I-4, Interdiscipline Participation in Targeting.
 - (4) **Systematic.** The JTC is designed to create effects through target engagement in a systematic manner. It is a rational and iterative process that methodically analyzes, prioritizes, and assigns assets against targets systematically. If the desired effects are not created, targets are recycled through the process.

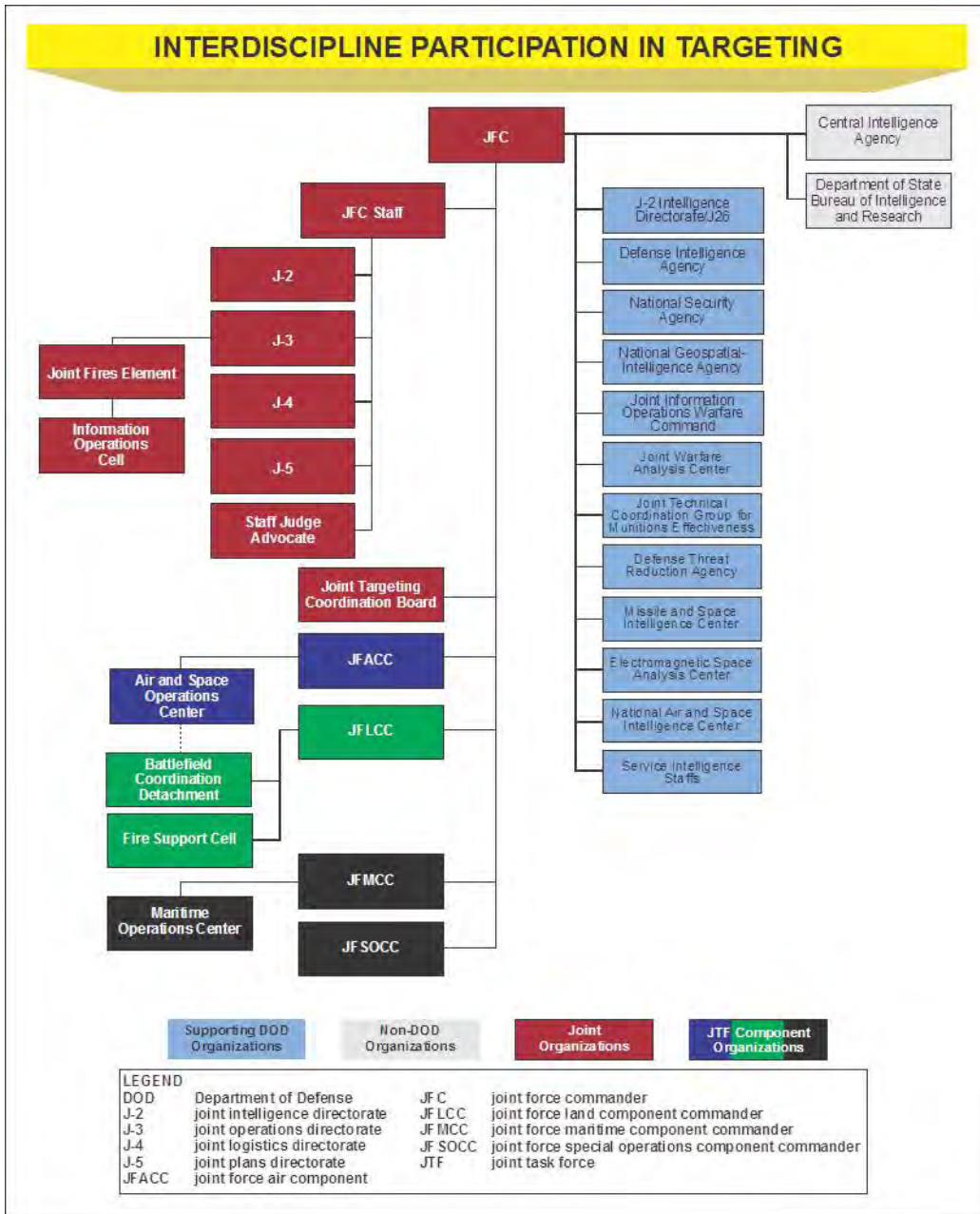


Figure I-4. Interdiscipline Participation in Targeting

For additional information on the principles of targeting, see JP 3-60, Joint Targeting.

3. Targets — Description, Characteristics, and Types

- a. **Target.** A target is an entity (person, place, or thing) considered for possible engagement or action to alter or neutralize the function it performs for the adversary. However, the target itself is not necessarily the adversary or even aligned with the adversary, as in the case of a target audience or population. A target's importance derives from its potential contribution to achieving a commander's objective(s) (CO) or otherwise accomplishing assigned tasks. These

objectives must be consistent with national strategic direction and selected to accomplish the assigned missions and tasks. Targets nominated for engagement may include the following:

- (1) **Facility:** A real property entity consisting of one or more of the following: a building, a structure, a utility system, pavement, and underlying land. These measurable geophysical parameters define the real property. In the context of entity-level target development, a facility provides a function that contributes to a target system's capability. Note: A facility entity should not be confused with an installation, which is a grouping of associated functionally-related facilities, normally geolocated adjacent to each other.
- (2) **Entity:** Within the context of targeting, a term used to describe facilities, organizations, individuals, equipment, or virtual (nontangible) things.
- (3) **Individual(s):** a person or persons who provide a function that contributes to a target system's capability.
- (4) **Virtual:** an entity typically found in cyberspace and the electro-magnetic spectrum that provides a function that contributes to a target system's capability. Examples of virtual entities include web sites, cyber persona, applications, and financial accounts.
- (5) **Equipment:** a tangible device that provides a function that contributes to a target system's capability.
- (6) **Organization:** a group or unit that provides a function that contributes to a target system's capability. Examples of organization entities include front companies, corporations, nongovernmental organizations (NGOs), and military units. Note: a terrorist network is the adversary, not the target. A terrorist training unit working on behalf of the terrorist network is an organization.

KEY TERM

Target — An entity or object that performs a function for the adversary considered for possible engagement or action. JP 3-60.

- b. **Target Characteristics.** Every target has distinct intrinsic or acquired characteristics that form the basis for target detection, location, identification, and classification for ongoing and future surveillance, analysis, engagement, and assessment. There are five categories of characteristics by which targets may be defined: physical, functional, cognitive, environmental, and temporal. The lists of example characteristics are not intended to be exhaustive, and some characteristics may belong in more than one category.

- (1) **Physical Characteristics.** These are features that describe a target. They are discernable to the five senses or through sensor-derived signatures. Furthermore, they may shape or influence the selection of the type and number of weapons, the weapon systems, and the methods or tactics employed against the target.
- (a) **Location.**
 - (b) **Shape.**
 - (c) **Size or area covered.**
 - (d) **Appearance (outward form and features, including color).**
 - (e) **Number and nature of elements.**
 - (f) **Dispersion or concentration** of elements that make up the target as a whole.
 - (g) **Reflectivity** (to heat, light, sound, radar energy, etc.).
 - (h) **Structural composition.**
 - (i) **Degree of hardening.**
 - (j) **Electromagnetic (EM) radiation** (e.g., radar and radio transmissions).
 - (k) **Target's mobility characteristics:** fixed (unable to move); transportable (operate from fixed locations, but can be broken down and moved); mobile (operates on the move or with very limited setup time).
- (2) **Functional Characteristics.** These are features that describe what the target does and how it does it. They describe the target's function within a greater system, how the target or target system operates, its level of activity, the status of its functionality, and, in some cases, its importance to the enemy. Functional characteristics are difficult to discern, because they most often cannot be directly observed. Reaching plausible conclusions can often entail careful assessment of known facts. Functional characteristics include:
- (a) **Target normal or reported activity.**
 - (b) **Target status** (state or condition at a given point in time [e.g., "operational," "inoperative"]).
 - (c) **Degree, proportion, or percentage of functionality** (e.g., "function 50 percent degraded").

- (d) **Materials** the target requires to perform its function(s).
 - (e) **Functional redundancy.** (Can the target's function be performed elsewhere or by a similar capability in an alternate target system?)
 - (f) **Ability to reconstitute** itself or its function.
 - (g) **Self-defense capability.**
 - (h) **Importance** within the enemy's strategic structure (such as its role in the geopolitical system or its cultural importance).
 - (i) **Necessary relationships** (see the discussion of the systems perspective of the OE later in this section).
 - 1. If the target is a person or group, what other people or groups are necessary to enable it to function?
 - 2. What is the nature of the connectivity between this person or group and others?
 - (j) **Target physical vulnerabilities.** (Identification of potential aim points above ground, natural ventilation, exposure of critical infrastructure, dependence on above ground functions/facilities, etc.)
- (3) **Cognitive Characteristics.** These are features that describe how some targets think, exercise control functions, or otherwise process information. In those cases where the entity is an individual, cognitive characteristics are focused on describing that person's reasoning patterns or how that person's decision making is influenced. These characteristics are particularly important to properly assess the critical nodes in a target system, since nearly every system possesses some central controlling function. Neutralizing this function may be crucial to bringing about desired changes in behavior. As with functional characteristics, these can be difficult to discern or deduce. Cognitive characteristics may relate to:
- (a) **How the target processes information.**
 - (b) **How the target's decision cycle works** (if applicable).
 - (c) **Process inputs the target requires performing its function(s).**
 - (d) **Process outputs to the processes the target performs.**
 - (e) **How much information the target can handle.**
 - (f) **How the target or system stores information.**

- (g) **Whether the target is an individual or organization.** (How does the target think? What are its motivations? What's the target's behavior? What are the target's rules, norms, and beliefs? What are its cognitive vulnerabilities?)
 - (h) **Cultural considerations** (perceptions, attitudes, religious factions, tribal affiliations).
- (4) **Environmental Characteristics.** These characteristics describe the effect of the environment on the target and its surroundings. These factors may also affect the types and numbers of weapons, weapon systems, and the methods used to attack them.
- (a) **Atmospheric conditions** affecting the target (such as temperature, and visibility).
 - (b) **Terrain features** (such as land form, vegetation, soil, elevation).
 - (c) **Degree of denial and deception measures.**
 - (d) **Physical relationships** (such as proximity to civilians, noncombatants or friendly forces).
 - (e) **Dependencies** (such as raw materials, personnel, energy, water, C2).
- (5) **Temporal Characteristics.** The factor of time, as a characteristic of a target, describes the target's vulnerability to detection, attack, or other engagement in terms of time available. All potential targets and all targets nominated for attack continually change in priority due to the dynamic nature of the evolving operational environment (OE). Many targets may be fleeting and some may be critical to friendly operations. Those that are both fleeting and critical present one of the biggest targeting challenges faced by the joint force. This characteristic can help planners determine when and how to find or engage a target. By comparing this factor to information latency and knowledge of friendly capabilities, the staff can make better recommendations to the commander regarding possible actions. Many factors may contribute to this:
- (a) **Time of appearance.** The expected time the target will appear in the designated operational area (OA).
 - (b) **Dwell time.** The length of time a target is expected to remain in one location (this can be directly related to the physical characteristic of target mobility). Generally, a target is more difficult to find or engage on the move.

- (c) **Time to target functionality.** The length of time required for the target to become operational, to conduct its mission, or to repair or reconstitute.
- (d) **Identifiable time.** The length of time a target is identifiable as a threat before it then becomes indistinguishable from other objects in the OE.

For additional information on target characteristics, see JP 3-60, Joint Targeting.

- c. **Sensitive targets** are those targets for which planned actions warrant President or the SecDef review and approval. Criteria normally are delineated in plans, orders, and/or ROE by combatant commanders (CCDRs). Sensitive targets exceed national-level thresholds, such as high collateral damage or collateral effect (e.g., versus civilian population, property, infrastructure, facilities), adverse political or diplomatic ramifications (e.g., near the territory of surrounding states), environmental harm or hazard, or adverse public sentiment.

For additional information on sensitive targets, see Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3122.06D, Sensitive Target Approval and Review (STAR) Process (Classified).

- d. Certain targets may require special care or caution in treatment; engaging them improperly could lead to major adverse consequences. Examples include leadership targets (**high-value individuals [HVIs]**) that must be handled sensitively due to potential political repercussions, targets located in areas with a high risk of collateral damage, and weapons of mass destruction (WMD) facilities, where an improper attack could lead to major long-term environmental damage. Such targets are often characterized as “sensitive” in one respect or another, without having the intrinsic characteristics, by definition, of a sensitive target. The use of nonlethal capabilities in support of such operations may reduce the potential for unintended consequences that are detrimental to the JFC’s strategic goals.
- e. **Time Sensitive Targets.** A time sensitive target (TST) is a JFC-validated target or set of targets requiring immediate response because it is a highly lucrative, fleeting target of opportunity or it poses (or will soon pose) a danger to friendly forces. A TST is a highly-lucrative, fleeting target of opportunity only differing from other such highly lucrative, fleeting targets of opportunity due the process of validation and classification as TSTs. As such TSTs are listed in the CONOPS.
 - (1) Targets that are both fleeting and critical present one of the biggest targeting challenges faced by the joint force. Advances in surveillance technology and weaponry make it possible in some instances to detect, track, and engage high-priority targets in real time or to thwart emerging enemy actions before they become dangerous to the joint force. A JFC can classify a target prosecuted in this manner as a TST. While TSTs tend to be targeted via the dynamic targeting process, they may be prosecuted using either deliberate or

dynamic processes. A TST can belong to either of the two target categories discussed in section 4 below.

- (2) The JFC provides specific guidance and priorities for TSTs within the operational area (OA). Examples might be a WMD-capable combat vessel that was just detected approaching the joint force, a sought-after enemy national leader whose location was just identified, an enemy aircraft detected approaching friendly high-value assets, or launch of an intermediate-range ballistic missile. Only the JFC designates TSTs. However, there may be other targets requiring “time-sensitive” treatment, which are of concern primarily to the JFC’s component commanders (vital to their schemes of maneuver or immediately threatening their forces, for instance) the JFC may not deem to be TSTs. These targets are prosecuted using the same dynamic targeting methodology as TSTs, even though they may not be designated as such.
- f. **Component-Critical Targets.** Component commanders may nominate targets to the JFC for consideration as TSTs. These component high-priority targets, if not approved as TSTs by the JFC, may require both dynamic prosecution and cross-component coordination and assistance in a time-compressed fashion. The JFC and component commanders should identify these targets within the JTC, provide clear guidance to ensure the appropriate priority of asset allocation (intelligence collection, exploitation, and attack assets), and provide ROE to facilitate rapid cross-component coordination in order to minimize confusion and facilitate prosecution. Although there is no doctrinally-approved term and definition for these targets, they are component-level, high-priority targets, and they should receive the highest engagement priority possible, just below targets identified on the JFC's TST list.

For additional information on component critical targets see Army Tactical Publication (ATP) 3-60.1/Marine Corps Reference Publication (MCRP) 3-16D, Navy Tactics, Techniques, and Procedures (NTTP) 3-60.1/Air Force Tactics, Techniques, and Procedures (AFTTP) 3-2.3, Multi-Service Tactics, Techniques, and Procedures (MTTP) for Dynamic Targeting.

- g. **High-Value and High-Payoff Targets.** A High-Value Target (HVT) is a target the enemy commander requires for the successful completion of the mission. A High-Payoff Target (HPT) is derived from the list of HVTs. The loss of HVTs would be expected to seriously degrade important enemy functions throughout the friendly commander’s area of interest. A HPT is one whose loss to the enemy will significantly contribute to the success of the friendly course of action (COA). Time-sensitive and component-critical targets are usually special types of HPTs. Component and JFC target development and priorities will focus on these targets to support success of the mission.

4. Categories of Targeting and Targets

- a. **Targeting Categories.** The targeting process may be grouped into two categories: *deliberate* and *dynamic*. **Neither is indicative of the target to be**

engaged but is more closely aligned with the planning phase in which the target is identified and prosecuted. Timing is the primary factor that determines whether deliberate or dynamic targeting will support the JFC's targeting requirements (see Figure I-5, Categories of Targeting and Targets).

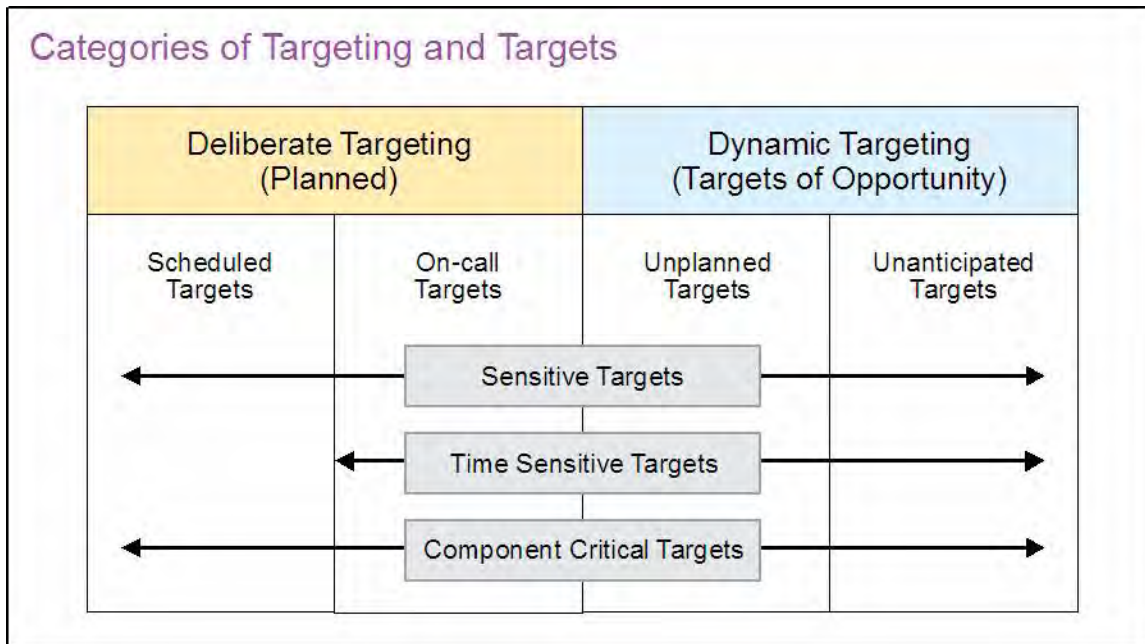


Figure I-5. Categories of Targeting and Targets

(1) **Deliberate targeting** normally supports the joint force's future plans effort, which is overseen by the plans directorate of a joint staff (J-5). The timing of focus for this effort varies according to the level of command, type of operation, JFC's desires, and other factors. Normally, the future operations directorate focuses on 24 hours out to 72 hours. This is a critical linkage during targeting execution. Typically the emphasis of the future plans effort is on planning the next phase of operations (sequels to the current operation). In a campaign, this could be planning the next major operation.

(2) **Dynamic targeting** is normally employed in current operations planning because the nature and timeframe (usually the current 24-hour period) typically requires more immediate responsiveness than is achieved in deliberate targeting. Current operational planning addresses the immediate or very near-term planning issues associated with ongoing operations which usually occur in the **joint operations center (JOC)** under the operations directorate of a joint staff (J-3). Dynamic targeting prosecutes changes to planned targets or objectives and targets of opportunity.

b. **Target Categories.** Targets may be described as two different categories: planned targets and TOO. Each has two separate subcategories:

(1) **Planned.** Planned targets are known to exist in the OE with engagement actions planned against them using the deliberate targeting process. Examples

range from targets being engaged through ongoing shaping activities, targets on joint target lists (JTLs) in the applicable operations plan, to targets detected in sufficient time to list in an air tasking order (ATO), mission-type orders, attack guidance matrix (AGM), fragmentary orders (FRAGORDs), or fire support plans. Planned targets may be further divided into scheduled targets and on-call targets depending upon an event or condition set that prompts engagement.

- (a) **Scheduled.** Scheduled targets are prosecuted at a specific time.
 - (b) **On-call.** On-call targets have actions planned, but not for a specific delivery time. The commander expects to locate these targets in sufficient time to execute planned actions. These targets are unique in that actions are planned against them using deliberate targeting but execution will normally be conducted using dynamic targeting.
- (2) **Targets of opportunity.** Targets of opportunity are those targets that meet the criteria to achieve objectives but were not selected for action during the current JTC. These can be divided into two subgroups: unplanned targets and unanticipated targets. These targets often cause deliberate plans to change and are best managed using dynamic targeting.
- (a) **Unplanned.** Unplanned targets are known targets and are included on a target list, but not selected for engagement because the target was not nominated, was nominated but did not make the joint integrated prioritized target list (JIPTL), or was not expected to be available for engagement within the target cycle. However, changes to the target status (priority, access, permissions) could result in the need (or opportunity) to engage the target during the current cycle.
 - (b) **Unanticipated.** Unanticipated targets are unknown or not expected to be present in the OE. These targets are not included on a target list and an evaluation of the target is needed to determine engagement requirements and timing. In some cases the target will require engagement in the current targeting cycle and will require use of dynamic targeting. In other cases, the target will be identified and processed as a new target for inclusion on the appropriate targeting list through normal target development.

For additional information on categories of targeting and targets, see JP 3-60, Joint Targeting.

CHAPTER II JOINT FORCE TARGETING DUTIES AND RESPONSIBILITIES

SECTION A. JOINT FORCE COMMANDER HEADQUARTERS

1. Joint Targeting Integration and Oversight

- a. The JFC's primary targeting responsibility lies in establishing the objectives that component commanders will achieve throughout the OE with their forces (assigned, attached, and supporting). With the advice of subordinate component commanders, JFCs set priorities, provide clear targeting guidance, and determine the weight of effort to be provided to various operations. Joint force and component commanders identify HVTs and HPTs for acquisition, collection, and attack or influence, employing their forces in accordance with the JFC's guidance.
- b. **Friendly Fire Prevention.** Throughout the targeting process, JFCs and component commanders should establish safeguards to reduce the possibility of friendly fire. Knowledge of friendly forces position and intended scheme of maneuver, in relation to select targets, aids in friendly fire prevention. Friendly fire prevention is a key consideration of risk assessment throughout the entire spectrum of anticipated targeting timelines from long-term to rapidly-changing, time-sensitive situations. Although the JFC may justifiably elect to accept additional risk during time sensitive targeting, particularly for HVTs or HPTs, appropriate friendly fire prevention measures must still be in place and followed.
- c. **Collateral Damage Prevention.** The US places a high value on preserving civilian and noncombatant lives and property and seeks to accomplish its mission through the discriminate application of force with minimal collateral damage. Joint standards and methods for estimating collateral damage potential provide mitigation techniques and assist commanders with weighing collateral risk against military necessity and assessing proportionality within the framework of the military decision-making process. Joint standards and methods for conducting collateral damage estimation (CDE) are stipulated in CJCSI 3160.01 Series, No-Strike and the Collateral Damage Estimation Methodology.
- d. **Targeting Organizational Structure.** The joint targeting process crosses traditional functional and organizational boundaries. Operations, plans, and intelligence personnel are the primary participants, but other functional area (e.g., logistics, weather, legal, and communications) subject matter experts (SMEs) also support the JTC. Therefore, the organizational structure established by the JFC should be functionally inclusive, responsive, and flexible enough to adapt to a range of situations. In addition, JFCs should arrange their joint targeting organizational structure based upon assigned, attached, and supporting forces, as well as the threat, mission, and OA. Ultimately, the organizational design must be able to identify adversary critical vulnerabilities and execute all phases of joint targeting efficiently and continuously.

- e. **Other Considerations.** Offensive military activities (e.g., EA, offensive cyberspace operations [OCO], and information-related capabilities [IRCs]) should be coordinated and deconflicted with the joint targeting process.
- f. **Targeting Integration** via Joint and Component Operations Centers. The joint intelligence operations center (JIOC), JOC, and/or component command centers plan for and conduct operations. Targeting mechanisms should exist at multiple levels. Joint force components identify requirements, nominate targets that are outside their boundaries or exceed the capabilities of organic or supporting assets (based on the JFC's apportionment decision), and conduct execution planning. After the JFC makes the targeting and apportionment decisions, components plan and execute assigned missions through their respective operations centers. The theater air/ground system is normally the C2 structure through which targeting should be integrated.

For additional information on joint targeting integration and oversight, see JP 3-60, Joint Targeting.

2. Joint Force Targeting Responsibilities

- a. **Joint Force Commander Responsibilities.** The JFC has the responsibility to conduct planning, coordination, and deconfliction associated with joint targeting. Joint targeting coordination responsibilities for the JFC include:
 - (1) Establish parameters for successful targeting within the JFC's OA by promulgating intent, objectives, guidance, sequencing, and priorities.
 - (2) The JFC, assigned as the supported commander, will provide early, broad, and clear targeting guidance to components and supporting commands and DOD agencies consistent with the operation's end state.
 - (3) Maintain currency of mission planning guidance, intent, and priority intelligence requirements (PIRs) throughout the operation.
 - (4) Direct the formation, composition, and specific responsibilities of a joint fires element (JFE) and joint targeting coordination board (JTCB), if required.
 - (5) Approve or delegate approval of the JIPTL developed from component and staff nominations.
 - (6) Define criteria for identification of TSTs in the OA. These coordination tasks are normally accomplished through the JFC established JTCB or like body.
- b. **Joint Targeting Coordination Board.** Targeting coordination tasks are normally accomplished through the JFC-established JTCB or like body. The JFC normally appoints the deputy JFC or a component commander to chair the JTCB to provide the appropriate level of experience and focus. Component and JFC

staff representation on the JTCB should also possess the necessary rank, experience, and knowledge to speak authoritatively for their respective components and staff elements. When a JTCB is not established and the JFC decides not to delegate targeting oversight authority to a deputy or subordinate commander, the JFC may perform this task at the joint force headquarters (JFHQ), with the assistance of the J-3. The JFC ensures this is a joint effort involving applicable subordinate commands, other agencies, and multinational partners, as appropriate. Joint targeting is a highly iterative process that needs close coordination during operations. If the JFC delegates authority for joint target planning, coordination, and deconfliction to a subordinate commander, that commander should possess or have access to a sufficient C2 infrastructure, adequate facilities, and joint planning expertise to effectively manage and lead the JFC's joint targeting operations. Should a specific agency be charged with joint functional command responsibilities, a joint targeting mechanism might also be needed to facilitate this task at the component level. All components are normally involved in targeting and should establish procedures and mechanisms to manage their part in joint targeting.

- (1) The JTCB may be an integrating center for targeting oversight efforts or a JFC-level review mechanism. It should be comprised of representatives from the joint force staff; all components; and, if deemed necessary, other agencies, multinational partners, and/or subordinate units (see Figure III-1, Joint Targeting Coordination Board Organization and Representation).
- (2) Membership of the JTCB should include SMEs in both lethal and nonlethal capabilities. The relative importance of lethal versus nonlethal capabilities in targeting may shift as the focus of the operation shifts from direct combat to stability operations. The JTCB should be flexible enough to consider both types of capabilities for appropriate targeting. This represents the integrated functional staff effort, anchored by the joint targeting working group (JTWG), leading up to the JTCB. There is typically a parallel lethal/nonlethal effort at the working group level, due to time and SME availability. In some cases, an additional JTWG may be required to process, deconflict, and prioritize all nominated targets.
- (3) The JFC defines the role of the JTCB. The JTCB provides a forum in which all components can articulate strategies and priorities for future operations to ensure they are synchronized and integrated. The JTCB normally facilitates and coordinates joint force targeting activities with the components' schemes of maneuver to ensure the JFC's priorities are met. Normally, specific targeting issues are resolved by direct coordination between elements of the joint force below the level of the JTCB, but the JTCB or JFC may address specific target issues not previously resolved.
- (4) In multinational operations, the JTCB may be subordinate to a multinational targeting coordination board, with JFCs, or their agents representing the joint force on the multinational board.

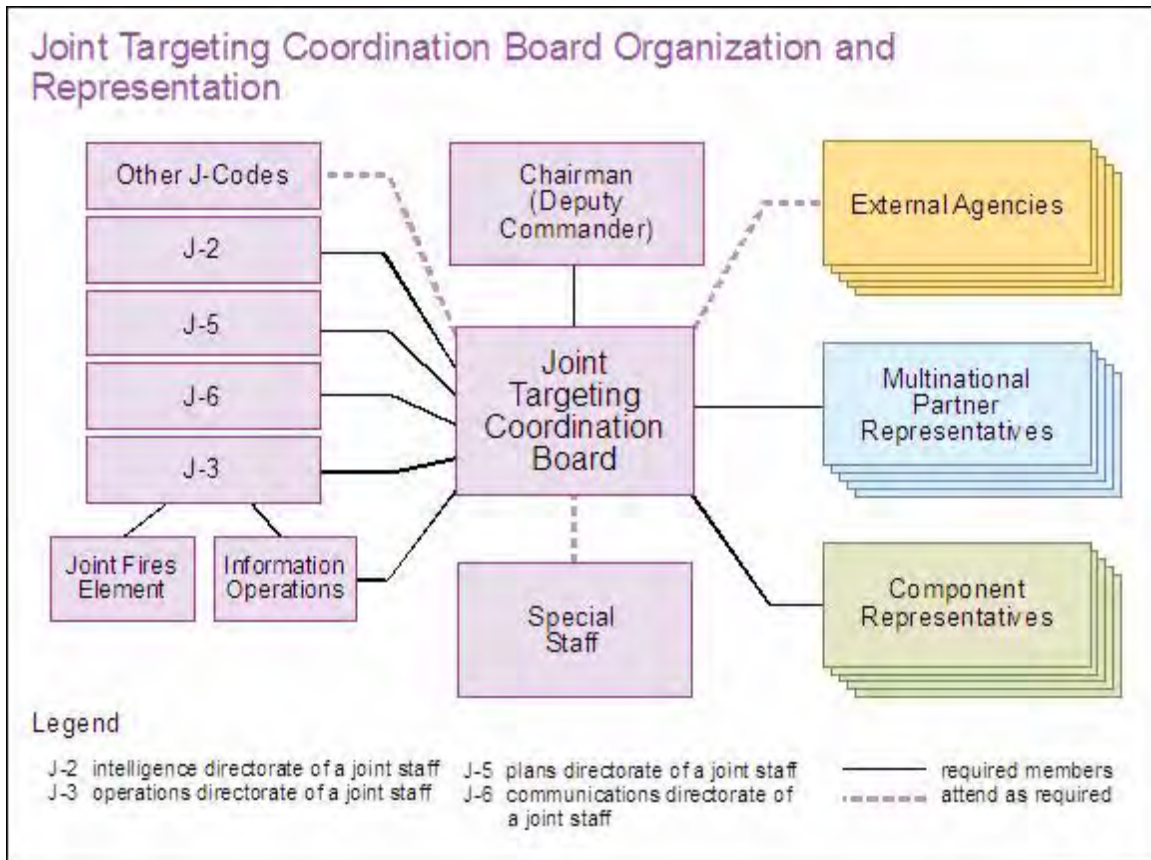


Figure II-1. Joint Targeting Coordination Board Organization and Representation

- (5) The JTCB is typically responsible for the following:
- (a) Reviewing operational-level assessment to guide the JFC’s decision making.
 - (b) Maintaining a macro-level view of the OE.
 - (c) Reviewing components’ schemes of maneuver and broad targeting guidance for compliance with the JFC’s intent.
 - (d) Integrating, when appropriate, component plans according to the JFC’s CONOPS.
 - (e) Developing and refining broad component targeting guidance and priorities.
 - (f) Reviewing and refining ISR collection requirements (CRs) and joint ISR assessment guidance based on JFC priorities and intent, to include refinement of measures of performance (MOPs) and measures of effectiveness (MOEs), as appropriate.

- (g) Reviewing and submitting the coordinated JIPTL for JFC approval or serving as approving authority for JIPTL when designated by the JFC.
 - (h) Ensuring the JTL, NSL, restricted target list (RTL), and other relevant target lists are maintained and updated based on JFC guidance.
 - (i) Reviewing, validating, and approving targets to the JTL and RTL when such authorities are delegated to the JTCB by the JFC.
- (6) **Joint Targeting Coordination Board Scope and Focus.** The JTCB's focus is to develop broad targeting priorities and other targeting guidance in accordance with the JFC's objectives as they relate operationally. The JTCB must be flexible to address targeting issues, but should not become over-involved in tactical-level decision making. In order to function as effectively and efficiently as possible, the JTCB requires a focused agenda to guide the daily conduct of business. A notional JTCB agenda is outlined in Figure II-2, Notional Joint Targeting Coordination Board Agenda. In breaking the meeting into four parts, the JTCB may address at least four planning horizons.
- (a) **Assessment.** The first session is a review of completed operations (for example, the last 24 hours), focusing on the operational level and progress toward the JFC's objectives. It should include an intelligence forecast of anticipated adversary action for future operations planning considerations.
 - (b) **Joint Force Commander Intent.** The second session of the board should consist of broad guidance for future plans and be presented by the JTCB's chairman.
 - (c) **Component Schemes of Maneuver.** The third session should review components' detailed operational-level schemes of maneuver for future operations. Broad targeting guidance and priorities should be refined as appropriate in this portion of the meeting.
 - (d) **Joint Maneuver and Fires.** The final session of the board should review the next 24 hour's plan for maneuver, fires, and targeting. More specific targeting issues may be addressed here if not previously resolved as part of deliberate targeting. Such issues may include TSTs, target restrictions, dynamic targeting priorities, priorities for certain weapons (e.g., cruise missiles), and collection and assessment issues. This is the final review of the next day's plan to ensure it is still valid. This is the JTCB's final chance to recommend modification to targeting priorities before mission planning and execution.
- (7) JFC (or designated representative) approval for the next day's JIPTL and related products is usually sought immediately upon adjournment of the JTCB and then promulgated in message format throughout the joint force.

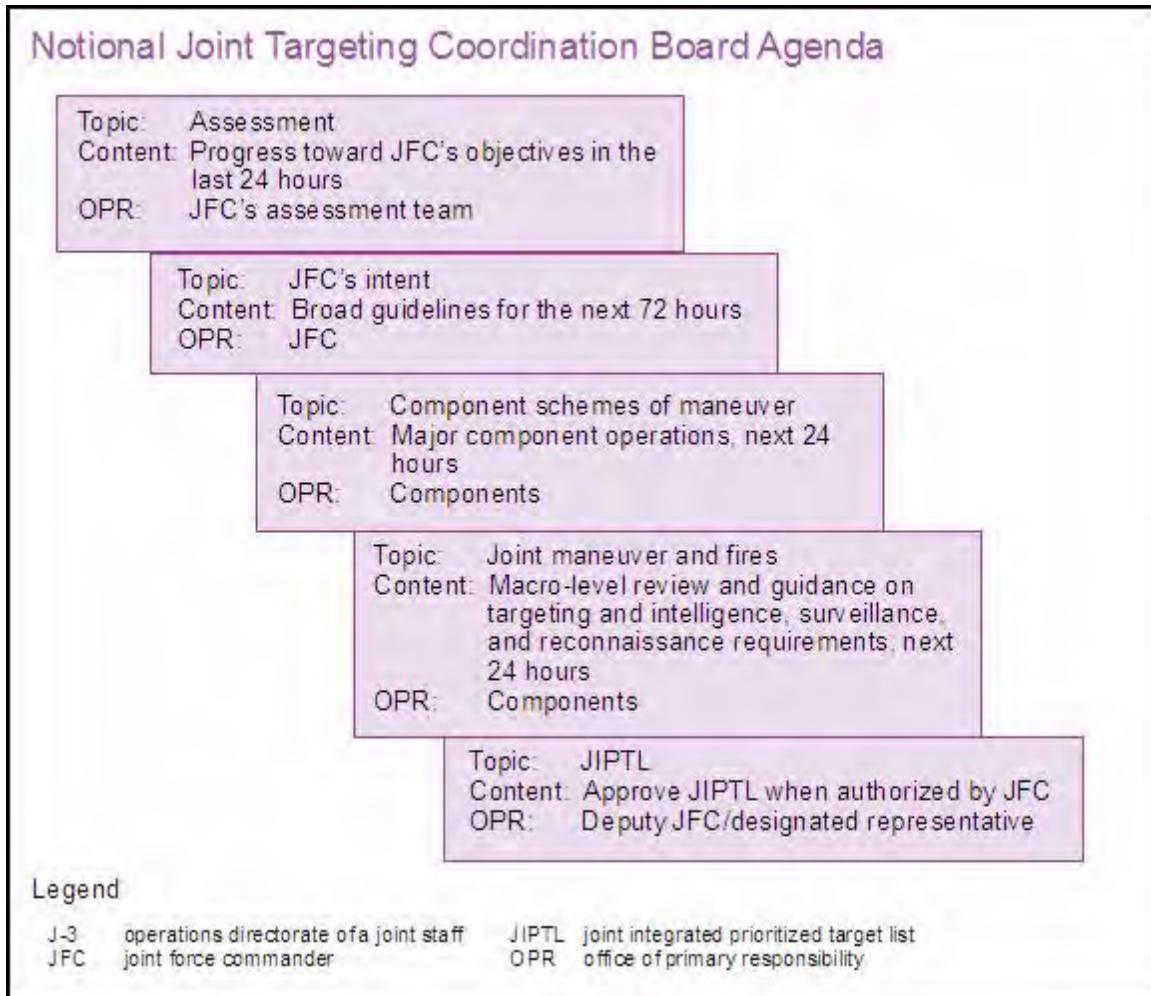


Figure II-2. Notional Joint Targeting Coordination Board Agenda

- (8) Normally the JTCB is concerned with future operations, not the “current battle.” Operators already have the current day’s targeting plan(s) in hand and are preparing to execute. Changing priorities on the day of execution is possible, but normally will be handled through the J-3 (or their equivalents at the component level) rather than the JTCB. Moreover, component commanders are normally authorized to make execution day changes compelled by current conditions, consistent with the JFC’s guidance and intent.
- c. **Joint Fires Element.** The JFC may approve the formation of a JFE within the J-3. The JFE is an optional staff element comprised of representatives from the J-3, the components, and other elements of the JFC’s staff, to include the J-2 targeting staff, logistics directorate of a joint staff (J-4), J-5, and others, as required. The JFE is an integrating staff element that synchronizes and coordinates fires planning and coordination on behalf of the JFC and should be physically located near the JTF JOC, collocated with the IO cell, if possible. The JFE assists the J-3 in accomplishing responsibilities and tasks as a staff advisor to the JFC.

- (1) JFE key functions and tasks are numerous and include:
- (a) developing joint targeting guidance, objectives, and priorities;
 - (b) coordinating, deconflicting, and validating target nominations at the JFC level and higher;
 - (c) coordinating JTF component input to the JTF JIPTL;
 - (d) prioritizing and forwarding the JTF JIPTL to the JTCB for review and JFC for approval;
 - (e) managing the JFC-approved JIPTL.
- (2) Additionally the JFE may coordinate, maintain, and disseminate a complete list of fire support coordination measures (FSCMs) within the joint operations area (JOA); review/recommend intelligence CRs; develop the joint fires estimate and COAs; monitor JTF TST operations for the JTF J-3; and recommend procedures for engaging TSTs and component critical targets, to include making recommendations for deconfliction.

d. **Joint Targeting Working Group.** To assist in the coordination and integration throughout the joint targeting process, the JFC may approve the formation of a JTWG. The JTWG supports the JTCB by conducting initial collection, consolidation, and prioritization of targets and synchronization of target planning and coordination on behalf of the JFC. The JTWG is an action officer-level venue, chaired by the JFE chief, J-2 (chief of targets), or similar representative, and meets, as required, to consolidate and prioritize the draft JIPTL and discuss targeting integration and synchronization issues raised by the JFC, staff, planning teams, and the JFC's major subordinate commands (see Figure II-3, Joint Targeting Working Group).

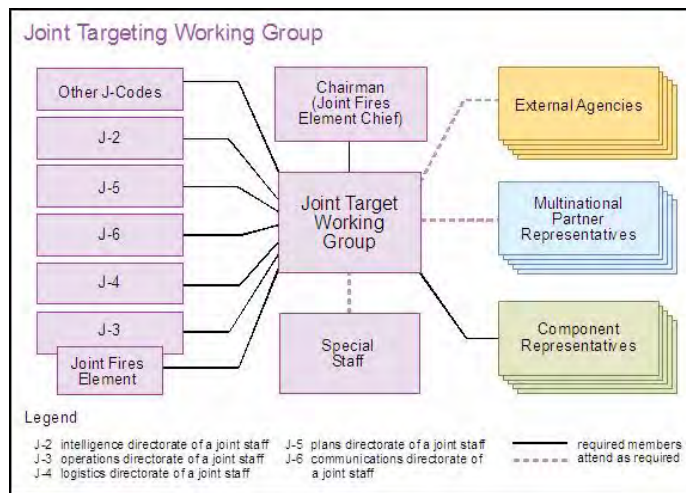


Figure II-3. Joint Targeting Working Group

- (1) The purpose of the JTWG includes consolidating, deconflicting, and prioritizing target nominations; synchronizing lethal and nonlethal targeting efforts; disseminating revised or new targeting guidance; and identifying and integrating lethal and nonlethal opportunities and engagements.
- (2) JTWG responsibilities include reviewing the JFC's broad targeting guidance and components proposed schemes of maneuver; disseminating the JFC's targeting guidance and priorities; reviewing and refining ISR CRs; refinement of MOPs and MOEs; submitting the draft JIPTL for JTCB review; and maintaining and updating the JTL, NSL, RTL, and other relevant target-related lists.
- (3) Inputs to the JTWG may include commander's guidance; current target-related lists (JTL and RTL), including TSTs, target nomination lists (TNLs), the NSL, and estimated availability of resources/capabilities.
- (4) Some of the products the JTWG should produce are recommended JIPTL and apportionment, changes to target lists (particularly any targets nominated from the RTL), and changes to TSTs CRs and recommended priorities.

3. Joint Force Staff Responsibilities

- a. **Responsibility Sharing.** The JFC should determine the relative burden sharing for the JTC between the JFC staff and those of the component commanders. The JFC develops guidance that directs and focuses planning and targeting to support the CONOPS. Supporting and subordinate commanders, functional and Service, will have their own targeting processes that will complement and support the supported JFC's targeting process. The supported JFC is responsible for coordinating these various targeting processes and delineating the responsibilities of each supporting and subordinate commander to support the JFC's targeting cycle. The supported JFC is responsible for providing opportunities for coordination between these various targeting processes and delineating the responsibilities of each supporting and subordinate commander to support the JFC's targeting process.
- b. **Intelligence Directorate.** The J-2 has the primary responsibility for prioritization of intelligence collection efforts, analysis, validation, and assessment for all joint operations. In addition, the J-2 provides a major input to the J-3 and J-5 in the form of adversary COA assessments critical to the joint target prioritization process and identification of HVTs and HPTs.
 - (1) Some of the joint targeting-related duties that are normally performed by the J-2 are: conduct JIPOE, conduct target development, manage the candidate target list (CTL), coordinate target vetting with the national intelligence community (IC), nominate targets for engagement, develop and maintain NSL, recommend targets for inclusion in the JIPTL, manage theater collection priorities, and manage PIRs.

(2) Intelligence and Information Requirement Planning (PIR)

- (a) During JIPOE and mission analysis, the joint force staff identifies significant information gaps about the adversary and other relevant aspects of the OE. After gap analysis, the staff formulates intelligence requirements, upon which there is a need for the collection of information or the production of intelligence.
- (b) The J-2 has overall staff responsibility for consolidating intelligence requirement nominations from the staff and for making the overall recommendation to the commander regarding their approval and their relative order of priority.
- (c) Intelligence requirements designated as PIRs receive increased levels of intelligence support and priority in the allocation of intelligence resources while those not designated as PIR are satisfied as time and resources allow.
- (d) Ultimately, the commander designates PIRs, which, together with friendly force information requirements (FFIRs), constitute the commander's critical information requirements (CCIRs).

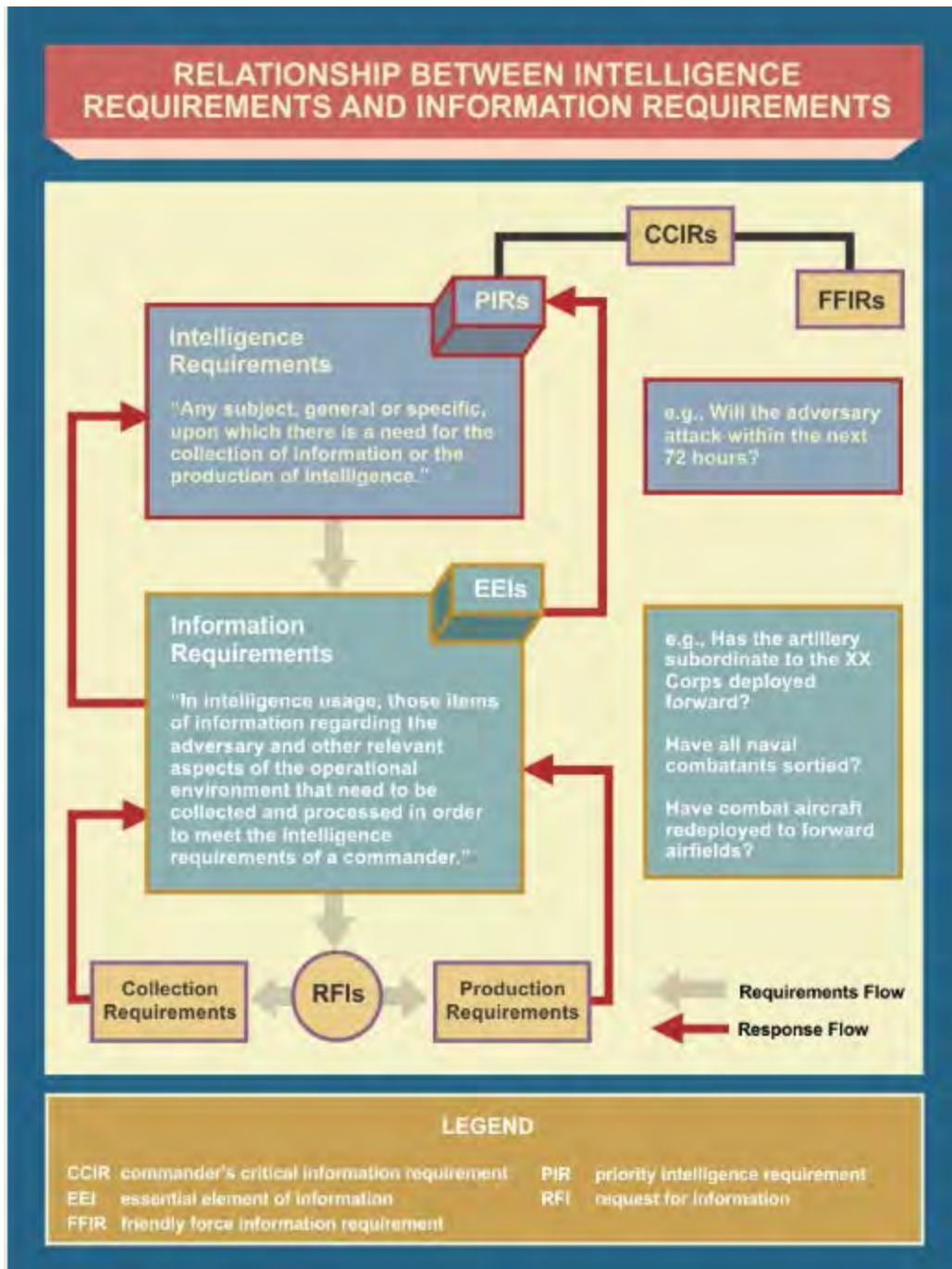


Figure II-4. Relationship Between Intelligence Requirements and Information Requirements

- c. **Operations Directorate.** The J-3 assists the commander in the direction and control of operations, including the planning, monitoring, and completion of specific operations. In this capacity, the directorate is the lead for coordinating, integrating, and executing operations throughout the OA. The directorate also leads planning efforts for current and future operations. The flexibility and range of forces require close coordination and integration for effective unity of effort.

When a JFE is established by the JFC, the J-3 will normally organize it and serve as a member.

(1) The operations directorate's key functions and tasks generally include the following: coordinate assessment activities, provide current operational assessment, develop and maintain ROE, publish JFC daily guidance, develop proposed force boundaries, provide targeting options, recommend targets for inclusion in the JIPTL, deconflict and validate target nominations, manage the JTL and RTL, conduct CDE and post-engagement collateral damage assessment (CDA), conduct munitions effectiveness assessment (MEA), and initiate and coordinate the STAR process.

(2) Additionally, if directed by the JFC, the J-3 may act as lead agent for the JTCCB or any similar group established to provide broad targeting oversight.

d. **Information Operations Staff and Information Operations Cell.** Within the joint community, the integration of IRCs to achieve the commander's objectives is managed through an IO staff or IO cell. JFCs may establish an IO staff to provide command-level oversight and collaborate with all staff directorates and supporting organizations on all aspects of IO. Most combatant commands (CCMDs) include an IO staff to serve as the focal point for IO. Faced with an ongoing or emerging crisis within a geographic combatant commander's (GCC's) area of responsibility (AOR), a JFC can establish an IO cell to provide additional expertise and coordination across the staff and interagency.

(1) **Information Operations Staff.** In order to provide planning support, the IO staff includes IO planners and a complement of information-related capabilities (IRC) specialists to facilitate seamless integration of IRCs to support the JFC's CONOPS. IRC specialists can include, but are not limited to, personnel from the EW, CO, MISO, civil-military operations (CMO), military deception (MILDEC), intelligence, and Public Affairs (PA) communities. They provide valuable linkage between the planners within an IO staff and those communities that provide IRCs to facilitate seamless integration with the JFC's objectives.

(2) **Information Operations Cell.** The IO cell integrates and synchronizes IRCs to achieve national or CCDR-level objectives. Normally, the chief of the CCMD's IO staff will serve as the IO cell chief. However, at the JTF level, someone else may serve as the IO cell chief.

For additional information on the IO staff and IO cell, see JP 3-13, Information Operations.

e. **Logistics Directorate.** The J-4 identifies logistic issues unique or specific to targeting. Of particular interest, the J-4 compares the operational logistic plans to developing target lists to identify infrastructure and supplies required to support

current and future operations and recommendations for the RTL or the desired degree of functionality required to support future operations.

- f. **Plans Directorate.** The J-5 performs the long-range or future joint planning responsibilities. Planning is conducted by various organizations in conjunction with appropriate staff elements. Specific joint targeting-related duties normally performed by the J-5 are as follows:
- (1) Publishes the JFC's planning guidance and planning directives.
 - (2) Identifies possible branches and sequels.
 - (3) Develops, analyzes, compares, and recommends COAs for JFC approval.
 - (4) Ensures overflight agreements or arrangements are in place with en route nations prior to commencement of operations.
- g. **Staff Judge Advocate.** The staff judge advocate (SJA) advises the JFC and other staff members on applicable international and domestic laws, legal custom and practice, multilateral and bilateral agreements with host nations, LOW issues, compliance and interpretation of the ROE, and other pertinent issues involved in joint target recommendations and decisions. The SJA also reviews target selection and force assignment for legal compliance. Additionally, the SJA highlights potential associated issues, such as harmful environmental impacts or other consequences that should be considered in the targeting process.

For additional information on joint force staff responsibilities, see JP 3-60, Joint Targeting, and JP 3-33, Joint Task Force Headquarters. For additional information on Joint Intelligence, see JP 2-0, Joint Intelligence.

4. Battle Rhythm

- a. Battle rhythm is described as the sequencing and execution of actions and events within a JFHQ that are regulated by the flow and sharing of information that support all decision cycles. As a practical matter, a JFC HQ battle rhythm typically consists of a series of meetings, report requirements, and other activities to synchronize current and future operations. These activities may be daily, weekly, monthly, or quarterly requirements.
- b. The JFC must ensure the planning, decision, and operating cycles of the JFC are nested or linked to that of higher HQ, and that subordinate commanders synchronize their battle rhythms with the JFC HQ. **Some of the pertinent processes and activities that influence the JFC HQ battle rhythm include the targeting cycle, ATO cycle, fire support planning, intelligence collection, and battle damage assessment (BDA) collection.** Figure II-4, Planning Process and Battle Rhythm, illustrates how these processes and activities interact

vertically between the levels of command and horizontally during one 96-hour cycle.

Planning Process and Battle Rhythm

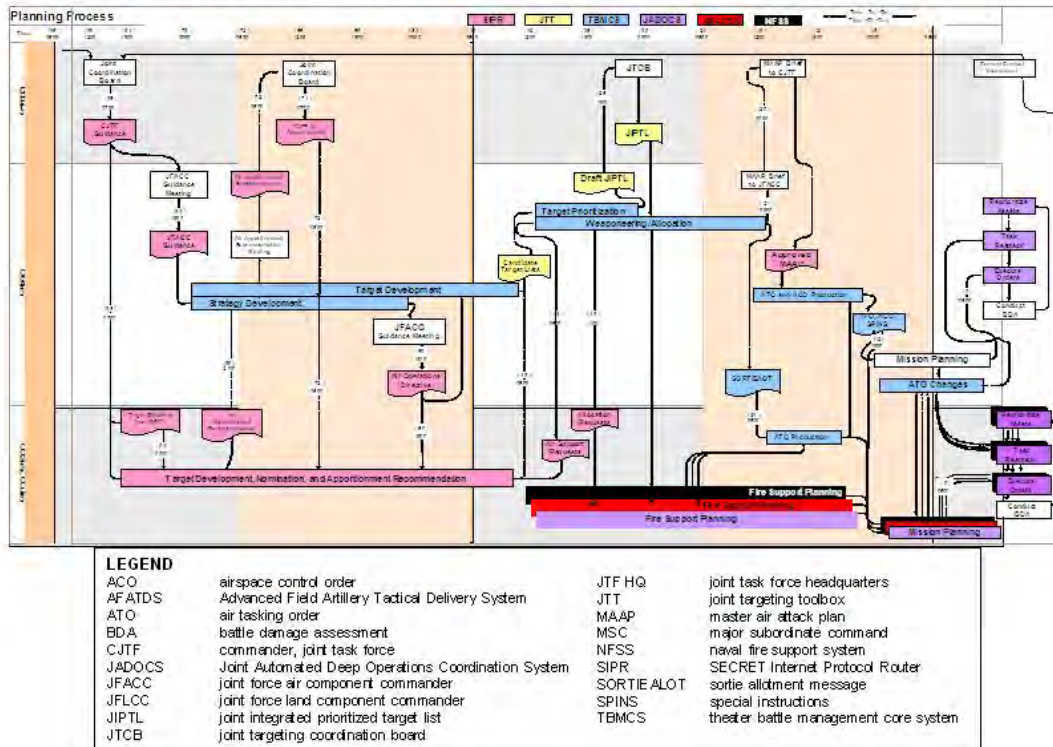


Figure II-5. Planning Process and Battle Rhythm

c. **Critical Functions.** Typically, the JTF HQ battle rhythm is managed by the JTF chief of staff. There are several critical functions for a battle rhythm. These include, but are not limited to, the following:

- (1) Providing a routine for staff interaction and coordination within the HQ.
- (2) Providing a routine for commander and staff interaction.
- (3) Synchronizing staff organizations' activities.
- (4) Facilitating planning by the staff and decision making by the commander.

d. **Factors that Shape a Battle Rhythm.** Many factors influence the establishment of a battle rhythm. Subordinate commanders are responsible for linking the planning, decision, and operating cycles of their command to those of the higher HQ and must synchronize their unit battle rhythm with that of the higher HQ.

- (1) The higher HQ battle rhythm and reporting requirements.
- (2) Battle rhythm must support the commander's decision cycle.

(3) The planning requirements within the HQ (e.g., future plans, future operations, and COPS).

(4) Other factors (e.g., battlefield circulation).

For additional information on HQ battle rhythm, see JP 3-33, Joint Task Force Headquarters.

SECTION B. JOINT TASK FORCE COMPONENTS AND FORCES

1. Common Responsibilities

- a. JFCs have the authority to establish functional component commands to control military operations. JFCs may establish a functional component command to integrate planning, reduce their span of control, and/or significantly improve combat efficiency, information flow, unity of effort, weapon systems management, component interaction, or control over scheme of maneuver.
- b. The JFC service and functional component commanders have common fires and targeting responsibilities that include:
 - (1) Conduct target development.
 - (2) Nominate potential targets for inclusion in the JTL and RTL.
 - (3) Nominate targets for inclusion on the JFC's TST list and maintain their own lists of HPTs.
 - (4) Identify and nominate component-critical targets for JFC approval. Typically these are component nominations not approved as TSTs by the JFC.
 - (5) Provide appropriate representation to the JFE, JTWG, and JTCB, as well as other associated staff organizations, when established.
 - (6) Consolidate and nominate deconflicted and prioritized targets for inclusion in the JIPTL.
 - (7) Provide timely and accurate reporting to the JFE in support of joint operations assessment.
 - (8) Provide tactical and operational assessment to the JFE for incorporation into the JFC's overall assessment efforts.
 - (9) Coordinate components' deliberate and dynamic targeting via established procedures. Examples include the liaison elements to the joint air operations center (JAOC) — battlefield coordination detachment (BCD), Marine liaison element (MARLE), naval and amphibious liaison element, Air Force liaison element, tactical air planners, and the special operations liaison element (SOLE). Direct cross-component coordination provides a means to rapidly coordinate dynamic targeting and avoid delays or possible miscommunication through liaison elements. Decentralized execution during dynamic operations (e.g., counterinsurgency and certain stability operations) is facilitated by conducting tactical air planning within lower, tactical-level units and commands. This level of integration will enable more flexible employment of airpower and also improve the fidelity of the JFACC's overall common operational picture (COP).

- c. JFC component decisions to modify missions or direct attacks that deviate from the planned activity must be based on the JFC's guidance. These decisions are made with the understanding of the perspective and target priorities of other JFC component targeting effects throughout the campaign.

For additional information on authorities and common responsibilities, see JP 1, Doctrine for the Armed Forces of the United States, and JP 3-60, Joint Targeting.

2. Functional and Service Component Commanders

- a. **Joint Force Land Component Commander.** The joint force land component commander (JFLCC) is responsible for making recommendations on the proper employment of assigned, attached, or made-available-for-tasking land forces and assets; planning and coordinating land operations; and accomplishing such operational missions as assigned.
 - (1) Normally, the Service component commander with the preponderance of forces to be tasked and the ability to command and control those forces will be designated as the functional component commander. In those instances when the theater-level Service component commander is designated the JFLCC, the JFLCC normally delegates as many of the Service component-related duties as practical to a subordinate Army forces (ARFOR) or Marine Corps forces (MARFOR) HQ. These duties typically include Title 10, United States Code support and administrative control (ADCON) of Service forces.
 - (2) The JFLCC, as a Service component commander, normally exercises operational control (OPCON) of same-Service forces through subordinate Service force commanders. (The JFLCC will normally be delegated tactical control [TACON] of other-Service forces.) This arrangement has the potential to over task the JFLCC's staff during the performance of its dual role. It may be advantageous for the JFLCC to delegate as many of the Service component-related duties as practical to a subordinate Service force HQ.
 - (3) The JFLCC plans, coordinates, synchronizes, and executes joint fires to create lethal and nonlethal effects to set the conditions for success in their area of operations (AO). The JFLCC's primary agency for fires and their effects is either an Army fires cell or a Marines forces fires coordination center (FFCC) or a fire support coordination center (FSCC) of J-3. The fires cell or center reviews the JFC's guidance and intent, and makes recommendations for the JFLCC to achieve them. The fires cell or center applies this guidance as it shapes the OE for the land component's current and future fights. By employing the fires cell or center, the JFLCC focuses on shaping those adversary formations, functions, facilities, and operations that could impact on JFLCC's AO. The JFLCC has the following four primary goals associated with these operations:

- (a) Facilitating both operational and tactical maneuver by suppressing the adversary's deep-strike systems, disrupting the adversary's operational maneuver and tempo, and creating exploitable gaps in adversary positions.
 - (b) Isolating the OA by interdicting adversary military potential before it can be used effectively against friendly forces.
 - (c) Destroying or disrupting critical adversary C2 capabilities.
 - (d) Limiting the destruction of adversary formations, functions, and facilities to the minimum required to achieve both the JFLCC's and the JFC's guidance and intent, enabling potential exploitation or use in continuing or future operations.
- (4) The JFLCC's primary means to attack targets are operational fires and interdiction. Potential resources available include maneuver forces (i.e., regiments, brigades, divisions), assigned and supporting air, tactical missile systems, IO, SOF (when assigned), engineer assets, and naval surface fire support (NSFS).
- (5) The JFLCC conducts targeting within the joint targeting process. A primary consideration in organizing this framework is the JTF's ability to coordinate, deconflict, prioritize, integrate, synchronize, and assess joint targeting operations. The structure established by the JFLCC must facilitate the joint targeting process throughout the entire spectrum of anticipated targeting timelines from long-term to rapidly-changing, time-sensitive situations. In addition, the joint force must react to rapidly-changing events. Likewise, the JFLCC should execute all phases of the joint targeting process efficiently and continuously. The joint targeting process cuts across traditional functional and organizational boundaries. Operations, plans, and intelligence are the primary staff functions involved with the targeting process, but other functional areas (e.g., logistics, weather, legal, and communications) SMEs also support the JTC. Close coordination, cooperation, and communication are essential. The JFLCC develops guidance that focuses operation planning and targeting to support the JFC's CONOPS and complies with applicable ROE. In the event of unresolved conflict with targeting priorities or ROE, changes may be requested from the JFC.
- (6) The JFLCC uses the fires cell to synchronize and coordinate fires. These functions and responsibilities include the following:
- (a) Coordinating and synchronizing all aspects of operational fires with other component commands, major subordinate commands, and multinational forces.

- (b) Working in direct coordination with the air support operations center for close air support (CAS) or through the BCD to the JAOC for air interdiction (AI) and other air support. It also participates in the JTF JTCCB and other JTF joint boards.
 - (c) Review and comment on the JFACC's air apportionment recommendation.
 - (d) Identify assets for JFC allocation (e.g., Army Tactical Missile System [ATACMS]/attack helicopters), when available.
 - (e) Identify requirements for fires from other components (AI/CAS/NSFS). Influence the JFACC's air apportionment recommendation.
 - (f) Develop JFLCC targeting guidance and priorities.
 - (g) Integrate and synchronize lethal and nonlethal fires.
- (7) The JFLCC may organize a JFLCC targeting coordination board to function as an integrating center to accomplish targeting oversight functions or as a JFLCC-level review mechanism for fires, from lethal and nonlethal weapons. In either case, it must be a joint activity with appropriate representatives from the other JTF components, JFLCC subordinate units, and the JFLCC's staff.
- (8) JFLCC targeting responsibilities include the following:
- (a) To retain authority and responsibility to direct target priorities for land operations and coordinate subordinate units' efforts.
 - (b) To provide clear guidance and objectives for JFLCC operational planning and targeting.
 - (c) To update JFLCC mission planning guidance, intent, and PIRs.
 - (d) To direct the formation, composition, and specific responsibilities of a JFLCC targeting coordination board to support land operations.
 - (e) To review target selection for unnecessary adverse impacts, such as collateral or environmental damage and potential intelligence gains or losses.
- (9) JFLCC subordinate unit targeting responsibilities include the following:
- (a) To identify requirements and nominate targets to the JFLCC.
 - (b) To provide representation to the JFLCC targeting coordination board.

- (c) To recommend priorities for BDA CRs to the JFLCC.
- (10) The JFLCC provides a description of the support plan through the liaison elements to the Service and functional components. This basic understanding promotes unity of effort through the coordination and deconfliction of targeting efforts between components, multinational forces, and other agencies.
- (11) The air component coordination element (ACCE) located with the JFLCC provides valuable assistance and liaison from the JFACC and assists the JFLCC in planning and synchronizing operational fires.

For additional information on the JFLCC's roles and responsibilities with fires and targeting, see JP 3-31, Command and Control for Joint Land Operations.

b. Joint Force Air Component Commander. The JFC normally designates a JFACC based on his vision, CONOPS, mission tasks assigned to subordinates, forces available, duration and nature of joint air operations (JAO) desired, and the desired level of C2 for JAO. The JFC will normally assign JFACC responsibilities to the component commander having the preponderance of forces to be tasked and the ability to effectively plan, task, and control JAO.

- (1) The JFACC is given the authority necessary to accomplish missions and assigned tasks in support of the JFC's intent and CONOPS. The JFACC will normally have OPCON over forces assigned and exercise TACON over forces made available for tasking. The JFC also may establish supporting and supported relationships between the JFACC and other components to facilitate operations.
- (2) The JFACC normally assumes the area air defense commander (AADC) and airspace control authority (ACA) responsibilities, because AD and airspace control are an integral part of JAO. As the designated commander for JAO, the responsibility for planning, coordinating, and developing airspace control procedures and operating an airspace control system (ACS) also rests with the JFACC. When the situation dictates, the JFC may designate a separate AADC or ACA. In those joint operations where separate commanders are required and designated, close coordination is essential for unity of effort, prevention of fratricide, and deconfliction of JAO.
- (3) The responsibilities of the JFACC normally include the following:
 - (a) Planning, coordinating, tasking, executing, monitoring, and assessing JAO, and the allocation and tasking of joint air operation forces in accordance with the JFC's guidance, objectives, and end state.
 - (b) Develop a JAOP to best support the JFC's CONOPS or OPLAN.

- (c) Recommend air apportionment priorities of for the joint air effort to the JFC, after consulting with other component commanders. This recommendation can be by either percentage or priority, and should be devoted to the various air operations for a given period of time.
 - (d) Allocate and task air capabilities/forces made available, based on the JFC's air apportionment decision.
 - (e) Develop daily anticipatory guidance for construction of the air operations directive (AOD).
 - (f) Assess the results of JAO and forward assessments to the JFC to support the overall assessment effort.
 - (g) Perform the duties of the space coordinating authority (SCA), if designated. The SCA is responsible for coordinating and integrating space capabilities in the OA and has primary responsibility for joint space operations planning, to include ascertaining space requirements within the joint force.
 - (h) Provide oversight and guidance during execution of JAO, to include making timely adjustments to taskings of available joint air capabilities/forces. The JFACC will coordinate with the JFC and affected component commanders, as appropriate, when the situation requires changes to planned JAO.
 - (i) Perform the duties of the personnel recovery (PR) coordinator, as required.
 - (j) Perform the duties of the ACA, unless a separate ACA is designated.
 - (k) Perform the duties of the AADC, unless a separate AADC is designated.
- (4) In concert with the above responsibilities, the JFACC typically accomplishes various mission areas that include: counterair, strategic air attack, airborne ISR, AI, intratheater and intertheater air mobility, and CAS.
- (5) The JFACC will normally operate from a JAOC. The JAOC and the JFACC's staff should be manned with SMEs who reflect the capabilities/forces available to the JFACC for tasking and include appropriate component representation. JFACC staff billets requiring specific expertise or individuals should be identified, staffed accordingly, trained, and employed during peacetime exercises to ensure their preparedness for military operations. The JFACC's staff is organized to support the planning, coordinating, and execution of aviation fires and typically includes the following (see Figure II-5, Typical Joint Force Air Component Commander Staff and Joint Air Operations Center Organization).

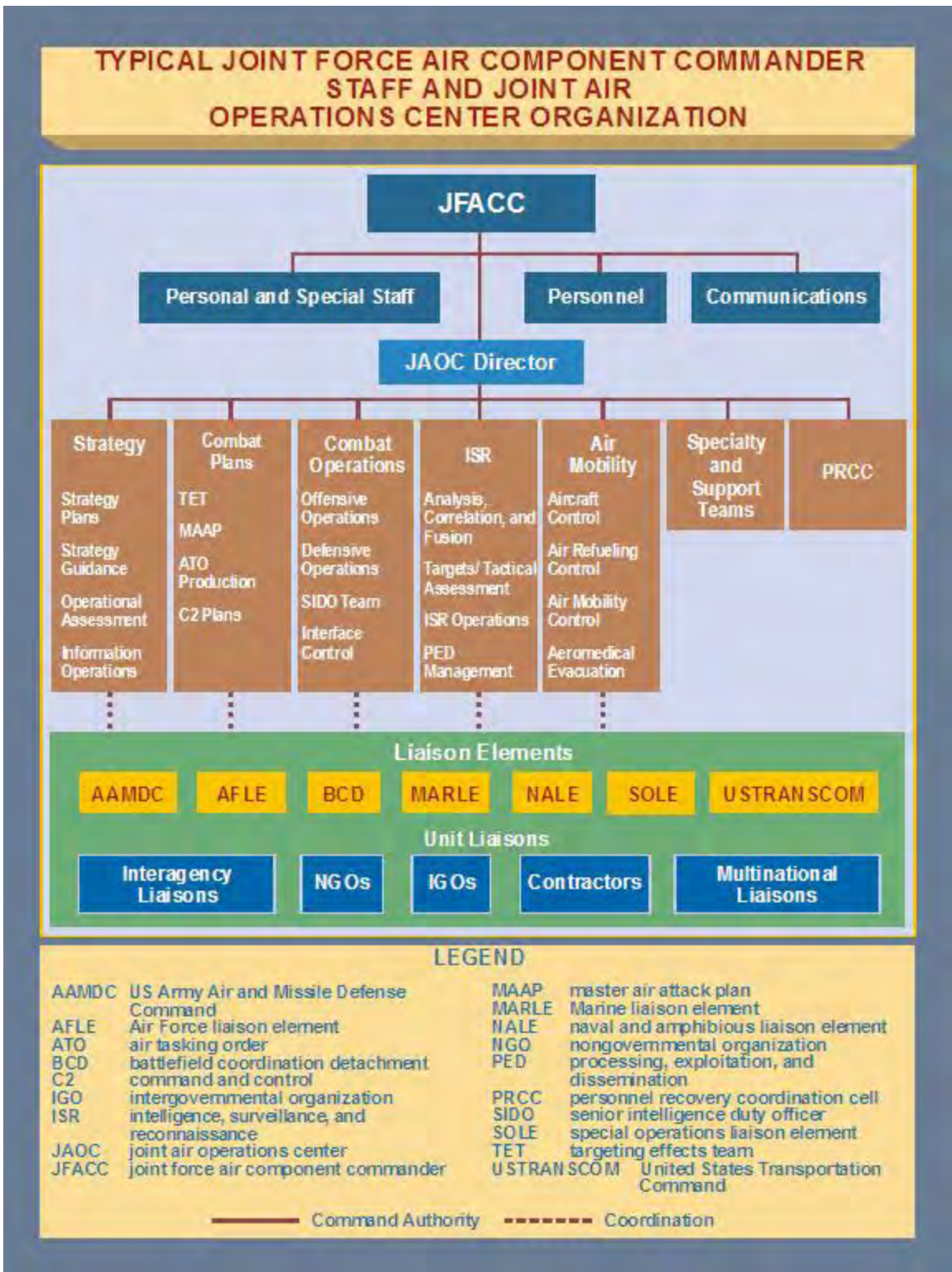


Figure II-6. Typical Joint Force Air Component Commander Staff and Joint Air Operations

- (a) **Strategy Division.** The strategy division (SD) concentrates on long-range and near-term planning of JAO to achieve JFC objectives by developing, refining, disseminating, and assessing the JFACC’s strategy. In addition, the SD does near-term planning for space, cyberspace, and IO in

coordination with JAO. Strategy activities are primarily reflected in the JAOP, AOD, and the operational assessment report. The SD is divided into four teams: strategy plans, strategy guidance, IO, and operational assessment. Although the IO team is organizationally aligned with the SD, it coordinates IO efforts across all the divisions within the JAOC.

- (b) **Combat Plans Division.** The combat plans division (CPD) is responsible for near-term air operations planning (within 48 hours prior to ATO execution). The CPD is divided into four teams: targeting effects team (TET), master air attack plan (MAAP), ATO production, and C2 plans. The TET develops the JFACC's TNL and produces a draft JIPTL for JFC approval. The primary daily products of the CPD processes are the ATO and airspace control order (ACO). The CPD develops the MAAP, assembles the special instructions (SPINS), and ISR synchronization matrix. The MAAP team needs the current AOD, air battle plan (ABP) shell, and JIPTL loaded to build missions in the proper theater battle management core system (TBMCS) format. The C2 plans team produces the daily ACO, tactical operations data, and operational task link message. The ATO production team develops the ABP databases, and assembles, publishes, and disseminates the ATO, ACO, and SPINS. Additionally, various specialty/support personnel are embedded in the CPD.
- (c) **Combat Operations Division.** The combat operations division (COD) is responsible for the execution of the current ATO (usually the 24 hours encompassing the effective period of the ATO). The COD is divided into four teams: offensive operations, defensive operations, interface control, and the senior intelligence duty officer (SIDO) team.
- (d) **Intelligence, Surveillance, and Reconnaissance Division.** For operations in theaters outside the continental US, the intelligence, surveillance, and reconnaissance division (ISRD) is responsible for providing the JFACC and JAOC with awareness of adversary activity in the OA; assisting with integrating, planning, and managing airborne ISR operations; developing and maintaining targeting information about the adversary; and assisting with execution of ISR operations. The ISRD is divided into four teams: analysis, correlation, and fusion; targets and tactical assessment; ISR operations; and processing, exploitation, and dissemination team. ISR personnel, assigned in the SD, assist in the development of overall JFACC strategy, JAOP and operational assessment. ISR personnel, assigned in the CPD, provide tailored ISR operations planning, threat analysis, and targeting expertise necessary to develop detailed execution plans for JAO. ISR personnel assigned to the COD are part of the SIDO team and provide current situational awareness (SA), targeting, and ISR operations management for execution of the ATO.
- (e) **Air Mobility Division.** The air mobility division (AMD) plans, coordinates, tasks, and executes the air mobility mission in support of the

joint air planning and execution process. The AMD consists of four teams: airlift control team (ALCT), air refueling control team (ARCT), air mobility control team (AMCT), and aeromedical evacuation control team (AECT). The ALCT plans, schedules, and tasks the theater airlift portion of the ATO. The ARCT plans, schedules, tasks, and assists in execution of air refueling missions. The AMCT manages the execution of the air mobility missions in the ATO and provides support for the overall air mobility effort. The AECT plans, schedules, and monitors execution of aeromedical evacuation (AE) missions and AE assets to support patient movements.

For additional information on the JFACC's roles and responsibilities with fires and targeting, see JP 3-30, Command and Control for Joint Air Operations.

c. Joint Force Maritime Component Commander. When a JTF is established that includes naval forces, the JFC designates the Service component commander best suited to accomplish the mission as the joint force maritime component commander (JFMCC). Organizing the maritime force and staffs should take into account the nature of the global maritime environment, and technological advances in communications, ISR systems, and improved weapons capabilities associated with maritime forces. Equally important in determining how a JFC organizes joint forces are an adversary's nature, capabilities, and the OE (e.g., geography, accessibility, climate, and infrastructure). Though most times this will be the Navy component commander (NCC) or numbered fleet commander, there may be occasions when maritime operations are focused on the littorals and the Marine Corps component has the preponderance of forces and C2 capabilities. In such instances, the JFC may elect to designate the Marine Corps component commander as the JFMCC.

- (1) The JFMCC is responsible for the planning and employment of operational fires within the assigned AO, both in terms of developing and integrating multidimensional attacks on the adversary's COGs and in terms of shaping the JFMCC's AO. JFMCC targeting tasks include setting maritime asset allocations and maneuver priorities, identifying HVTs and HPTs for acquisition and attack, and employing forces. JFMCC intelligence, operations and planning personnel translate operational objectives and tasking into orders directing tactical actions by subordinate maritime commands.
- (2) The JFMCC organization is scalable, and will be tailored in size and specific capability depending on mission requirements. Likewise, the maritime operations center's (MOC's) targeting and fires element functions and organization supporting the JFMCC will be designed and scaled according to mission requirements (e.g., a large fires element may be required for missions against OPFORs, whereas a humanitarian crisis may require little or no targeting capability). The fires element performs three distinct but related targeting functions: operational planning, deliberate targeting, and dynamic targeting. Fires and targeting personnel who contribute to the various MOC

fires functions are organized in the fires element for standardization and coordination. The fires element is a matrixed organization and is responsible for the coordination of all fires functions. Fires personnel may be assigned from another center (e.g., intelligence targeting personnel for deliberate targeting) or may be assigned to perform duties under the direction of other MOCs and cells.

- (3) While it is acknowledged that targeting requirements will to some extent be JOA-specific, many of the core targeting processes will remain the same or be similar. For joint forces to achieve unity of effort there will always be a need to synchronize JFMCC targeting efforts with those of other components and the JFC. The following operational assumptions frame the discussions for the remainder of JFMCC fires and targeting.
 - (a) The JFMCC targeting capability will complement and integrate into the larger joint targeting process as defined by JFC guidance. While it is conceivable the JFMCC could be the JFC's executive agent responsible for all JFC targeting coordination (similar to the functions typically done on a JFACC staff or MOC), a more likely scenario is one where the JFMCC supports an established joint targeting process.
 - (b) The JFMCC will retain OPCON over organic maritime targeting and fires assets in direct support (DS) strike missions for JFMCC-specified and implied tasks. These assets include organic ISR capabilities that provide actionable targeting information to organic and joint weapon systems, including carrier-based Navy tactical aviation, land-based Marine air-ground task force (MAGTF) aviation combat element (ACE) tactical aviation (through the MAGTF commander), surface- and subsurface-launched cruise missiles (commonly known as Tomahawk land-attack missiles [TLAMs]), naval surface fires, and maritime IO capabilities.
 - (c) The JFMCC/MOC will also actively participate in deliberate targeting operations via nomination of potential targets to the JFC targeting authority (e.g., JFC JTCB). The JFMCC will actively participate in dynamic targeting to address emerging targets in the OE. This may include targets within the JFMCC's AO or targets that impact the JFMCC's ability to achieve objectives as defined by the JFC. (Note: MOC operations and intelligence targeting personnel will interface directly with the JFC targeting organizations, other components, federated partners, and subordinate commands to ensure unity of effort toward maritime objectives. The maritime targeting process is synchronized with joint targeting by aligning the MOC battle rhythm with the timelines and products of the JFC and the other component commanders.)
 - (d) The JFMCC/MOC targeting organization will be federated and will utilize operations and intelligence capabilities that are part of subordinate maritime commands. This may include the functions typically found in

carrier and expeditionary strike groups, and maritime patrol and reconnaissance wings. The composite warfare commander (CWC) structure may be used for tactical coordination and synchronization of targeting functions.

- (4) Fires, targeting resources, and capabilities normally organic to a JFMCC include the following:
 - (a) Interdiction, CAS, suppression of enemy air defenses (SEAD), counterair (offensive and defensive), and NSFS (direct and general). IRCs are also employed to affect adversary information and information systems. The JFMCC's interests are those adversary forces, functions, facilities, and operations that impact plans and operations.
 - (b) Concentrated fires, even from dispersed forces, are possible because of the maneuverability of forces and the extended range of their fires. The JFMCC's resources for fires encompass forces assigned by the JFC, and may include sea- or shore-based aircraft including fixed- or rotary-wing assets as well as surface- and subsurface-launched TLAMs and torpedoes; surface gunnery (including NSFS); surface-, subsurface- and air-launched mines; air, land, maritime, space, cyberspace, SOF capabilities; and unmanned vehicles.
- (5) The maritime challenge is complex due to the multidimensional nature of the maritime OE and the various mission areas for which the JFMCC is responsible. These include strike warfare, IO, antisubmarine warfare, surface warfare (SUW), AD, mine warfare, and amphibious warfare. Because maritime assets routinely and simultaneously conduct operations in two or more of these mission areas, there is typically an overlap in the mission objectives for maritime tactical commanders. This overlap often results in competing warfare commander requirements for force allocation or asset positioning, and requires the commander to balance, synchronize, and adjudicate requests to produce the best overall asset allocation or positioning/maneuver solution. Another complication is that tasking may change significantly and rapidly, as events in this complex environment unfold. The JFMCC manages these shifts in tasking and delineates how to provide this varied simultaneous support to sometimes geographically separated forces. The JFMCC's management mechanism is normally via OPORDs, FRAGORDs, operation general matter, and operation tasks. These directives should incorporate the JFC's intent, support-approved subordinate CONOPS, consider requests prompted by the dynamics of the OE, work within the required operations tempo, and frame the daily operational planning conducted by the JFMCC's staff and assigned forces.
- (6) JFMCC targeting functions and tasks will be conducted by directorates of the MOC and the maritime intelligence operations center (MIOC). Additionally, the JFMCC/MOC will incorporate tactical targeting capabilities via the adoption of a federated targeting operational architecture. The MIOC and IO cell targeting personnel will maintain the connectivity to the

JFC and external centers for federated targeting support to the MOC. These federated capabilities will include intelligence and operations functions that are part of the existing CWC/task force structure.

- (a) The future plans cell (FPC) is focused on long-range planning and participates in the JFMCC's long-range planning processes. This may include participation and input to JFMCC's contribution to the JFC's OPLANs and OPORDs. The FPC manages the JOPP and complementary naval planning process. The focus of the command's future planning is development of plans, orders, and policy directives. From a targeting perspective, the maritime planning group (MPG), which is the avenue the plans' directorate planning efforts are synchronized across the staff during the staff estimate process, coordinates development of the JFMCC objectives and end state. This effort helps frame targeting. Close coordination between the FPC and the JFC future planning cell, as well as with counterparts on other component staffs, is critical to developing targeting strategies and apportionment decisions that are aligned with JFC objectives and guidance.
- (b) The future operations center (FOC) conducts operational-level planning for potential midterm operations (branch plans) for the JFMCC. In conjunction with the MPG and COPS cell, the FOC works to conduct rapid planning in support of the branch plan and has the responsibility to recommend changing force apportionment and resourcing in response to a branch plan. The FOC proposes changes to prioritization of operational objectives to guide targeting objectives and priorities, and coordinates with the SJA to ensure targeting is in accordance with the law of armed conflict and the MIOC to ensure the intelligence supports the fulfillment of the CCIRs. The FOC is responsible for developing targeting engagement options, target-weapon pairing recommendations, force allocation, maritime master attack plan, and tasking orders.
- (c) The COPS cell primarily focuses on monitoring and assessing ongoing operations and the execution of the commander's intentions. The COPS cell is responsible for overseeing and providing quality control during an operation for the implementation and coordination of the commander's orders. The COPS cell is the central point for all cross-functional teams to forward key events and to receive information related to the execution of operations. The COPS cell is responsible for monitoring the current situation and reflecting any changes to the execution of assigned orders by all subordinate forces. The COPS cell, in coordination with other cells, must be capable of short-term operation planning, usually through a crisis action team. The COPS cell must also monitor the CCIRs. The COPS cell is focused on short-term operations and execution of the JFMCC's daily intentions. The COPS cell monitors the current situation and receives the results of ongoing operations. The battle watch captain (BWC) and staff provide 24/7 SA during execution and dynamically

responds to changes in the OE to ensure the JFMCC's objectives are achieved.

1. Within the COPS cell organization, (with coordination with the fires element targeting team) SMEs monitor ongoing operations for all fires efforts. This includes operations involving IO, TLAM, tactical air, maritime patrol aircraft (MPA), and naval surface fires. maritime dynamic targeting personnel fill 24/7 watch positions on the COPS watch floor, and report to the BWC for the execution of dynamic targeting, and prosecution of dynamic targets and TSTs.
 2. The COPS cell monitors or tracks a variety of functions to include orders in execution (i.e., OPORDs, FRAGORDs, ATOs, and other current directives); status of the commander's critical information links in coordination with the joint communication control center, and commander's directions to subordinate commands (i.e., task forces, groups, units, and elements); collects and analyzes COPS MOPs; synthesize task assessments; and collects and passes MOE indicator data for effects assessment.
 3. The COPS cell maintains close liaison with the operations staffs of the JFC and other components to ensure operations are synchronized and, where necessary, deconflicted. These tasks are critical to maintaining unity of effort and to reduce the risk of fratricide.
- (7) While the JFMCC AO will be defined by the JFC, JFMCC targets can and should include all enemy capability that have the potential to interfere with the accomplishment of JFC assigned tasks to the JFMCC. These may include inland targets; targets in the littorals; and targets on, under, or over the sea. Potential examples include an enemy naval operations center located deep inland, a coastal defense cruise missile site, mine storage facility, ships and submarines either pier-side or at sea, or maritime aviation units.
- (8) While the MIOC is the organization that fulfills the commander's numbered fleet theater responsibilities, an intelligence support element (ISE) can be established to support the commander's responsibilities if designated as a JFMCC. In this case, the MIOC continues to support the commander's statutory numbered fleet responsibilities, while the ISE serves the commander in his JFMCC role. The ISE gives the commander liaison with the JFC's JIOC or joint intelligence support element (JISE), and a focus on the JOA and campaign requirements. To enable successful mission planning and execution, the ISE must coordinate with the JIOC/JISE, national agencies, and other components. This federated and collaborative intelligence support effort is described in Chapter III, "Joint Fires Planning and Targeting," and Appendix A, "Intelligence Organizations Supporting Targeting." To enable this effort, the JFMCC ISE will be required to be compatible and align with JFC C2 and intelligence systems and processes. These information exchange

requirements include the systems and processes designed to develop the ATO, JIPTL, targeting imagery, and other targeting intelligence. Where systems are not interoperable, a suitable work-around solution is needed.

For additional information on the JFMCC's roles and responsibilities with fires and targeting, see JP 3-32, Command and Control for Joint Maritime Operations.

d. Joint Force Special Operations Component Commander. The joint force special operations component commander (JFSOCC) is the commander within a unified command, subordinate unified command, or JTF responsible to the establishing commander. The JFSOCC is given the authority necessary to accomplish missions and tasks assigned by the establishing commander (i.e., a GCC or commander, joint task force). The commander, theater special operations command or a commander, joint special operations task force (CDRJSOTF) will normally be the individual functioning as the JFSOCC. When acting as a JFSOCC, they retain their authority and responsibilities as JFCs.

(1) Responsibilities of the JFSOCC include the following:

(a) Make recommendations on the proper employment of SOF and its assets.

(b) Plan and coordinate special operations (SO).

(c) Synchronize the conduct of SO as assigned, with the other component commanders.

(2) **Joint Special Operations Task Force.** A joint special operations task force (JSOTF) is a JTF composed of SO units from more than one Service, formed to carry out a specific SO or prosecute SO in support of a theater campaign or other operations. A JSOTF may have conventional forces (CF) tasked to support the conduct of specific missions.

(3) Deconfliction, coordination, and transfer of forces are always critical concerns for SO commanders, regardless of organizational status. Deconfliction and coordination activities routinely include target deconfliction, communications frequency allocation, surface and airspace deconfliction, fire support coordination, and coordination for logistics support.

(4) SOF can facilitate JFC joint fires and targeting with the following capabilities:

(a) Special reconnaissance.

(b) Positive identification (PID) of specific targets.

(c) Target marking and terminal guidance.

- (d) BDA.
 - (e) Recommendations to NSL and RTL.
 - (f) AC-130 gunship support or other direct action support.
 - (g) Information on other coalition or indigenous force status and positions.
 - (h) Combat meteorological and oceanographic support.
 - (i) Nonlethal fires.
 - (j) Information from SOF ISR, and human assets.
 - (k) Experience with indigenous or surrogate forces.
- (5) Joint fires assist SOF and attached forces to move, maneuver, and control territory, populations, and key waters. Joint fire support is the synergistic product of three subsystems: target acquisition, C2, and attack resources. The JSOTF HQ is most concerned with the C2 subsystem. The JSOTF must consider incorporating the complementary capabilities of CF under control of the JFC.
- (6) SOF must be compatible with CF that either host or support their activities. This is especially true during time-critical contingency planning operations. For example, if SOF is operating from naval surface vessels during forced-entry operations, they must be prepared to function with the host vessel. Weapons and communications must be deconflicted with ship systems, and SOF helicopters must be compatible with shipboard fuel systems. Likewise, conventional force commanders must be sensitive to their own operations, which may require modification so as not to inhibit the SOF operation.
- (7) CF, integrated with SOF, create unique capabilities for the JFC to achieve objectives that might otherwise be unattainable. Flexible C2, specific mission generation processes, clear mission approval levels, and tactical interdependence can improve SOF and CF integration.
- (8) SOF target acquisition, C2, and attack resources must be properly planned, coordinated, and executed to prevent fratricide and duplication while supporting operational momentum, maintaining the initiative, and conducting maneuver. Both CF and SOF must be integrated fully into this system. In some cases, a JFE is embedded within a JSOTF to coordinate, synchronize, and deconflict fires within the joint special operations area (JSOA). The JSOTF J-3 performs this function (without a JFE), and coordinates and deconflicts air operations in its assigned airspace. Airspace coordination and deconfliction may require a joint air coordination element to assist the JSOTF J-3 in the C2 of these related functions.

For additional information on the JFSOCC's roles and responsibilities with fires and targeting, see JP 3-05, Special Operations, and JP 3-05.1 Joint Special Operations Task Force Operations.

e. Army Forces

- (1) **Battlefield Coordination Detachment.** A BCD is established to act as an Army liaison provided by the Army component or force commander to the designated air operations center (AOC) and/or to the component designated by the JFC to assist in planning, coordinating, and integrating JAO (normally the JFACC.). The BCD is collocated with the JFACC's staff in the JAOC. The BCD processes land force requests for air support, monitors and interprets the land battle situation in the JAOC, and provides necessary interface for the exchange of current operational and intelligence data. The BCD expedites the exchange of information through face-to-face coordination with elements in the JAOC, and coordinates AD and airspace control matters. The BCD is organized into sections incorporated throughout the JAOC (e.g., plans, intelligence, operations, airspace management, and airlift).
- (2) **Allocation of Battlefield Coordination Detachments.** The BCD basis of allocation is one per GCC based on requirements approved by Department of the Army. The BCD may support the Army Service component commander (ASCC) or be tailored to support a corps or division commander's operations. Normally, the BCD is assigned to the ASCC and further attached to the senior operational ARFOR HQ.
 - (a) The Army provides a BCD as the interface for selected battlefield functions between the ARFOR/JFLCC and the Air Force Forces (AFFOR)/JFACC. The BCD supports offensive counterair (OCA) operations by advising the JFACC/JAOC on the capabilities and effective employment of ARFOR systems. The BCD is responsible to the JFLCC and coordinates with, and receives, objectives, guidance, and priorities through the JFLCC's Army component operations staff officer (G-3). Guidance and priorities must be sufficiently clear to permit the BCD to adjudicate ARFOR needs for air support. The BCD assists in the synchronization of JAO with JFLCC maneuver and fires and the exchange of operational and intelligence data.
 - (b) The BCD singly represents the ARFOR interests of the JFLCC. Other Services or functional components normally provide their own liaisons to the JFACC and to the JFLCC, as appropriate. For example, all of the following might provide liaison: SOLE, Marine liaison officer, or naval and amphibious liaison element.
 - (c) The BCD monitors and interprets the land battle for the JFACC staff. It passes ARFOR operational data and operational support requirements

from the commander, Army forces, to the JFACC and participating multinational forces, to include CAS, AI, manned and unmanned reconnaissance and surveillance, and joint suppression of enemy air defenses (SEAD).

For additional information on ARFORs, see JP 3-31, Command and Control for Joint Land Operations; Air, Land, Sea Application MTTP for Theater Air Ground System; and Army Tactics Techniques, and Procedures 3-09.13, The Battlefield Coordination Detachment.

f. Marine Corps Component Commander and Forces

(1) In accordance with joint doctrine, a JFC should allow Service tactical and operational assets to function generally as they were designed, trained, and equipped. Regardless of the level of the joint force or how a JFC organizes his force, if Marine Forces (MARFOR) are assigned, there is always a Marine Corps Service component. There are two levels of Marine Corps components — a Marine Corps component under a unified command and a Marine Corps component under a subordinate unified command or a JTF. The Marine Corps component commander advises functional component commanders on the most effective use of MARFOR or capabilities made available. The MARFOR or capabilities made available by the JFC respond to the functional component commander for operational matters based on the existing command relationship. Joint doctrine provides specific guidance regarding how this is accomplished, with respect to Marine Corps tactical aviation. All MARFOR receive administrative and logistic support from the Marine Corps component commander.

(2) Marine Air-Ground Task Force.

(a) MARFOR consists of combat, combat support, and combat service support units that are normally task-organized as the Marine Air-Ground Task Force (MAGTF). The MAGTF is the Marine Corps' principal organization for all missions across the range of military operations. All MAGTFs consist of four core elements: a command element (CE), a ground combat element (GCE), an ACE, and a logistics combat element (LCE). The MAGTF principally employs fire support provided by the GCE and the ACE, but may also receive external fire support from other joint, combined, and coalition forces. The MAGTF and GCE are combined arms teams by the nature of their organization. The GCE's ability to create decisive effects is most efficient and effective when it synchronizes combined arms fires. It is the only MAGTF element that can seize and occupy territory.

(b) The MAGTF is a scalable construct, with three standard sized task forces. The largest is the Marine Expeditionary Force (MEF), the GCE of which is a division. The Marine Expeditionary Brigade (MEB) is the mid-sized

MAGTF, which includes a regiment as the GCE. Finally, the Marine Expeditionary Unit (MEU), is the smallest standard MAGTF, which includes a battalion landing team (BLT) as the GCE and is generally embarked on naval shipping for deployment. The MAGTF can also be specially task-organized for a specific mission, creating a Special Purpose MAGTF (SPGMATF).

- (3) **Marine Expeditionary Force.** The Marine expeditionary force (MEF) CE organizes a FFCC, which is responsible for overall fires coordination. At each level below the MEF CE (division, regiment, and battalion), a FSCC is established as an advisory and coordination agency within the GCE. The FSCC is a single location that centralizes communications facilities and personnel for the coordination of all forms of fire support for the GCE. The United States Marine Corps (USMC) employs a designated ground combat officer as a fire support coordinator (FSC), who acts as the direct representative of the commander, landing force (CLF), for the planning and coordinating of all available fire support. A USMC FSCC normally includes an air section, naval gunfire liaison section, and artillery section to plan and execute fires in support of the scheme of maneuver.
- (4) The GCE FSCC interacts with the CE through the MAGTF FFCC. The FFCC coordinates those matters that cannot be coordinated by the FSCC and those matters that affect the MAGTF as a whole. The MAGTF landing force (LF) FFCC coordinates fires with higher, adjacent, and external commands. The FFCC maintains close coordination with the GCE for integrating fire support plans of the deep and close battle.

For additional information on Marine Corps component commander and forces, see Marine Corps Doctrinal Publication 1-0, Marine Corps Operations, and Marine Corps Warfighting Publication (MCWP) 3-40.8, Marine Corps Componentency.

g. **Naval Forces**

- (1) **Officer in Tactical Command.** The officer in tactical command (OTC) is the senior officer present eligible to assume command or the officer to whom the senior officer has delegated tactical command. The OTC is responsible for the tactical force deployment and for successfully accomplishing missions assigned to the naval force. The OTC of any naval task organization may create a composite warfare organization whenever and to whatever extent required, depending upon the composition and mission(s) of the force, the environment in which the force is operating, and the nature and severity of the threat. The composite warfare organization enables offensive and defensive combat operations against air, surface, undersea, electronic, and land-based threats. When multiple warfare functions (e.g., anti-submarine warfare, SUW, or IO) are assigned, the OTC also designates a composite warfare commander (CWC) to coordinate overall operations. The OTC may also retain CWC command functions. However, the OTC and CWC are always separate and

distinct even when the same commander fills both roles. In the case of a widely disbursed force, the OTC may designate sector CWCs. The OTC and/or CWC may choose to activate all warfare commanders and coordinators or activate only a few of them. Flexibility of implementation, reinforced by clear guidance to subordinates, and use of command by negation is key to decentralized control of the tactical force. The CWC may, in turn, delegate some or all warfare functions to subordinate warfare commanders.

- (2) The Navy employs the CWC concept as the doctrinal cornerstone of its task force operational and tactical C2 system. (Note: While acknowledged in joint doctrine, the OTC and CWC are Navy and NATO unique constructs. Joint community understanding of these C2 constructs is important when coordinating or working with maritime forces. The OTC controls CWC and subordinate warfare commander's actions through "command by negation.") The CWC concept enables the OTC of a naval force to wage combat operations aggressively against air, surface, and subsurface threats simultaneously while supporting the JFC CONOPS. The concept is designed to prevent an enemy from saturating a single command node with a large number of rapidly closing air, surface, and submarine threats by assigning warfare areas to separate commanders. Principal warfare commanders are responsible to the CWC for the conduct of the tactical battle. The five principal warfare commanders are the AD commander, surface warfare commander (SUWC), antisubmarine warfare commander (ASWC), strike warfare commander (STWC), and information operations warfare commander.
 - (a) Dependent on the situation, the ASWC and SUWC may/can be combined and put under a sea combat commander. Warfare commanders normally operate from the combat direction centers of the ships they actually command or in spaces specially equipped to accomplish their respective missions. All warfare commanders collect, evaluate, and disseminate tactical information, as well as plan and coordinate with other warfare commanders. Also, when authorized by the CWC, warfare commanders may operate autonomously in TACON of assigned resources.
 - (b) The CWC may assign functional warfare commanders (subordinate to the CWC) to perform duties that are generally more limited in scope and duration than those acted upon by principal warfare commanders. Functional warfare commanders in certain situations are delegated authority to conduct fires to respond to threats with assigned assets.
 - (c) Coordinators assist the CWC and the subordinate warfare commanders. They differ from warfare commanders in that coordinators execute policy but do not control forces and do not initiate autonomous actions. Typical coordinators include the following:

1. The air resource element coordinator is responsible for managing and coordinating the allocation and distribution of carrier aircraft.
2. Naval force ACA is responsible for coordinating and managing use of airspace by the naval force.
3. The helicopter element coordinator is responsible for managing naval helicopter assets.
4. Tomahawk land-attack missile strike coordinator (TSC) is responsible for all TLAM strike planning, coordination, and reporting.
5. TLAM launch area coordinator is the TSC's principal deputy in the execution of TLAM strike operations.

For additional information on Naval forces, see Naval Warfare Publication 3-56, Composite Warfare Doctrine, and NTTP 3-32.1, Maritime Operations Center.

h. Air Force Forces

- (1) **Theater Air Control System.** The theater air control system (TACS) is the commander, Air Force forces (COMAFFOR) mechanism for commanding and controlling component air and space power. It consists of airborne and ground elements to conduct tailored C2 of air and space operations throughout the range of military operations, including AD, airspace control, and coordination of space mission support not resident within theater. The structure of the TACS should reflect sensor coverage, component liaison elements, and the communications systems required to provide adequate support. As an organic Air Force system, the TACS remains under OPCON of the COMAFFOR. The TACS is the backbone of the AFFOR's contribution to the theater air-ground system (TAGS) and consists of units specifically trained and equipped to support the C2 process. (Note: For further discussion on COMAFFOR's responsibilities, see Appendix B, "Joint and Service Command and Control Systems.")
- (2) **Air Support Operations Center.** The air support operations center (ASOC) is the principal air control agency of the TAGS responsible for the direction and control of air operations supporting the GCE. It is directly subordinate to the AOC and is responsible for the integration of air operations within its assigned corps sector, including CAS, AI, intratheater airlift, ISR, SEAD, and PR. It normally collocates with the Army tactical HQ senior FSCC within the ground combat element. The ASOC can be configured for rapid deployment. The ASOC director, normally the corps air liaison officer (ALO), exercises OPCON of all subordinate tactical air control parties (TACPs). The ASOC also provides some logistic and administrative support to the TACPs under its OPCON.

- (3) **Theater Air Control Party.** The TACP is the principal Air Force liaison element collocated with Army maneuver units from battalion through corps. The primary TACP mission is to advise ground commanders on the capabilities and limitations of airpower and assist integrating airpower into the Army's scheme of maneuver. The TACP provides the primary terminal attack control of CAS in support of ground forces. TACPs deconflict the aircraft with Army fire support to prevent fratricide. TACPs are directly subordinate to the ASOC. TACPs may employ joint tactical air controllers at company/team level.

For additional information on AFFOR, see Lemay Center for Doctrine, Air Force Doctrine Annex (AFDA) 3-30, Command and Control, AFDA 3-01, Counterair Operations; and AFDA 3-52, Airspace Control.

CHAPTER III JOINT FIRES PLANNING AND TARGETING

SECTION A. JOINT FIRES PLANNING

1. General

- a. **Joint Fire Support Definition.** Joint fire support is defined as joint fires that assist air, land, maritime, and SOF to move, maneuver, and control territory, populations, airspace, and key waters. Synchronization of joint fire support with the supported force is essential. Prerequisites for effective joint fire support are interoperable systems, broad understanding of the differing strengths and limitations of each Service's capabilities and how they are applied, and clear agreement about how those capabilities will be integrated in any given operational setting. JP 3-09, Joint Fire Support, provides guidance for planning, coordinating, and executing joint fire support.

- b. **Planning.** Joint fire support planning is an integral part of the overall planning process. Joint fire support planners and/or coordinators actively participate with other members of the staff to develop estimates, give the commander recommendations, develop the joint fire support portion of the CONOPS, and supervise the execution of the commander's decision. The effectiveness of their planning and coordination is predicated on the commander providing clear and precise guidance. Joint fire support planning and coordination ensures all available joint fire support is synchronized in accordance with the JFC's plan. **The key to effective integration of joint fire support is the thorough and continuous inclusion of all component fire support elements (FSEs) in the joint planning process, aggressive coordination efforts, and a vigorous execution of the plan.** Commanders should not rely solely on their joint fire support agencies to plan and coordinate joint fire support. A continuous dialogue between the commander, subordinate commanders, and joint fire support planners must occur.

- c. **Purpose.** The purpose of joint fire support planning is to optimize its employment by integrating and synchronizing joint fire support with the commander's maneuver plan. **During the planning phase, commanders develop a CONOPS, including the concept for fires. Commanders determine how to shape the OE with fires to assist maneuver and how to use maneuver to exploit the use of joint fire support.** Objectives are restated in terms of what effects are required from joint fire support. Decisive operations, freedom of action, massing the effects of firepower, and depth and simultaneity are typical considerations. Joint fire support planners are responsible for advising commanders on the best use of available joint fires support, developing joint fire support plans, issuing necessary orders in the name of appropriate commanders, and implementing approved joint fire support plans for the component or joint force. Joint fire support requirements are considered throughout the JFC's planning and decision-making processes and during all phases of an operation.

- d. **All components can plan for and coordinate joint fire support.** Just as the JFC's intent and CONOPS should take into account the integration and synchronization of tactical, operational, and strategic operations, the CONOPS for component commanders should integrate and synchronize joint fire support at the tactical as well as the operational level. Joint fire support planning and coordination must be continuous and its execution decentralized.
- e. **Basic Joint Fire Support Tasks.** Effectiveness of the joint fire support effort is measured by creating desired effects on the enemy, setting conditions for decisive operations, and supporting joint force operations. Effective joint fire support depends on planning for the successful performance of the following four basic fire support tasks:
- (1) **Support Forces in Contact.** The commander must provide responsive joint fire support that protects and ensures freedom of maneuver to forces in contact with the enemy throughout the OA.
 - (2) **Support the Concept of Operations.** The CONOPS clearly and concisely expresses what the JFC intends to accomplish and how it will be done using available resources. The concept of fires must describe how joint fires will be synchronized and integrated to support the JFC's objectives as articulated in the CONOPS.
 - (3) **Synchronize Joint Fire Support.** Joint fire support is synchronized through fire support coordination, beginning with the commander's estimate and CONOPS. Joint fire support must be planned both continuously and concurrently with the development of the scheme of maneuver. Further, operations providing joint fire support must be synchronized with other joint force operations (e.g., air operations, CO, ISR functions, SO, and IO) in order to optimize the application of limited resources, achieve synergy, and avoid fratricide.
 - (4) **Sustain Joint Fire Support Operations.** Joint fire support planners must formulate joint fire support plans to reflect logistic limitations and to exploit logistic capabilities. Ammunition, fuel, food, water, maintenance, transportation, and medical support are all critical to sustaining joint fire support operations.
- f. **Importance of the Electromagnetic Spectrum.** All modern forces and the operations they conduct depend on the electromagnetic spectrum (EMS). The EMS is a characteristically-discernable, physics-based continuum within which attack, maneuver, deception, and concealment can be conducted by military forces. To achieve effective joint fire support, commanders must understand and manage the increasingly dense and complex demands placed on the EMS.

For additional information on fire support planning and operational considerations, see JP 3-09, Joint Fire Support.

2. Coordination and Synchronization

- a. **Force Employment.** During military operations, the JFC employs conventional and SOF capabilities throughout the breadth and depth of the JOA in linear and nonlinear orientations. Direct and indirect attacks on enemy COGs through critical vulnerabilities should be designed to achieve the required military operational objectives per the CONOPS, while limiting the potential undesired effects on operations in follow-on phases. Integrating and synchronizing interdiction and maneuver assists commanders in maximizing leverage at the operational level.
 - (1) Within their AO, land and maritime component commanders (MCCs) are designated the supported commander for the integration and synchronization of maneuver, fires, and interdiction. To facilitate this integration and synchronization, such commanders have the authority to designate target priority, effects, and timing of fires within their AO.
 - (2) Synchronization of efforts within the land or maritime AO with theater and/or JOA-wide operations is of particular importance. To facilitate synchronization, the JFC establishes priorities that will be executed throughout the theater and/or JOA, including within the land and maritime force commander's AO. The JFACC is normally the supported commander for the JFC's overall AI effort, while land and MCCs are supported commanders for interdiction in their AO.
- b. **Joint Fire Support.** Joint fire support includes joint fires that support joint forces to achieve military objectives. Joint fire support may include, but is not limited to, the lethal effects of fixed- and rotary-wing aircraft, NSFS, artillery, mortars, rockets, and missiles, as well as nonlethal effects of some IO, CO, EA, space control operations, and other nonlethal capabilities. Integration and synchronization of joint fires and joint fire support with the fire and maneuver of the supported force is essential.
 - (1) Joint fire support coordination includes efforts to deconflict attacks, avoid fratricide, reduce duplication of effort, and assist in shaping the OE. Coordination procedures must be flexible and responsive to the ever-changing dynamics of warfighting. Streamlined arrangements for approval or concurrence should be established. Coordination arrangements are reflected in the CONOPS and support the sequencing and timing of actions to achieve objectives. Coordination is enhanced when joint fire support personnel clearly understand the commander's intent. A very important part of the planning process is the identification of potential fratricide situations, risk mitigation measures, and coordination measures to positively manage and control the attack of targets.

- (2) The JFC and component commander staffs synchronize joint fire support operations to optimize effects in time, space, and purpose to produce maximum, relative combat power at a decisive place and time. To facilitate synchronization efforts, commanders and staffs must have a thorough knowledge of joint and Service doctrine, major system capabilities and limitations (see Appendixes B, “Joint and Service Command and Control Systems,” and C, “Joint Fires Networked Systems”) and their tactics, techniques, and procedures. Typical coordinating instructions found in the joint fire support annex include:
- (a) List the targeting products (target selection standards [TSS] matrix, high payoff target list, and attack guidance matrix).
 - (b) List FSCMs.
 - (c) Refer to time of execution of program of fires.
 - (d) Include ROE.
 - (e) List fire support rehearsal times and requirements.
 - (f) List target allocations.
 - (g) Specify the datum or coordinate system to be used.

For additional information on coordinating instructions, see JP 3-09, Joint Fire Support; JP 3-31, Command and Control for Joint Land Operations; and Field Manual (FM) 3-31/MCWP 3-40.7, Joint Force Land Component Commander Handbook (JFLCC).

c. Information Operations Coordination and Synchronization. The coordination and synchronization of lethal or nonlethal effects on a target (fires) with IO, through the targeting process, is fundamental to maximizing the effects of both IO and more traditional maneuver/strike operations. In order to achieve this integration, commanders must be able to clearly define the objectives they desire to achieve so staffs can develop supporting effects and incorporate them into the commander’s plan.

- (1) **Information Operations Cell.** The IO cell coordinates and synchronizes IRCs to accomplish JFC objectives. Uncoordinated IO can compromise, complicate, negate, or harm other military operations, as well as other United States Government (USG) information activities. JFCs must ensure IO planners are fully integrated into the planning and targeting process, including the JTCB. Successful integration, synchronization, and execution of an information strategy requires early, detailed IO planning, coordination, and deconfliction with USG interagency efforts.

- (2) **Information Environment.** Understanding the unique nature of the information environment further enables effective coordination and synchronization of IO. The information environment is the aggregate of individuals, organizations, and systems that collect, process, disseminate, or act on information. This environment consists of three interrelated dimensions which continuously interact with individuals, organizations, and systems. These dimensions are the physical, informational, and cognitive. The JFC's OE is the composite of the conditions, circumstances, and influences that affect employment of capabilities and bear on the decisions of the commander (i.e., encompassing physical areas and factors of the air, land, maritime, and space domains), as well as the information environment (which includes cyberspace).
- (a) **The Physical Dimension.** The physical dimension is composed of C2 systems, key decision makers, and supporting infrastructure that enable individuals and organizations to create effects. It is the dimension where physical platforms and the communications networks that connect them reside. The physical dimension includes, but is not limited to, human beings, C2 facilities, newspapers, books, microwave towers, computer processing units, laptops, smart phones, tablet computers, or any other objects that are subject to empirical measurement. The physical dimension is not confined solely to military or even nation-based systems and processes; it is a defused network connected across national, economic, and geographical boundaries.
- (b) **The Informational Dimension.** The informational dimension encompasses where and how information is collected, processed, stored, disseminated, and protected. It is the dimension where the C2 of military forces is exercised and where the commander's intent is conveyed. Actions in this dimension affect the content and flow of information.
- (c) **The Cognitive Dimension.** The cognitive dimension encompasses the minds of those who transmit, receive, and respond to or act on information. It refers to individuals' or groups' information processing, perception, judgment, and decision making. These elements are influenced by many factors, to include individual and cultural beliefs, norms, vulnerabilities, motivations, emotions, experiences, morals, education, mental health, identities, and ideologies. Defining these influencing factors in a given environment is critical for understanding how to best influence the mind of the decision maker and create the desired effects. As such, this dimension constitutes the most important component of the information environment.

For additional information on IO, see JP 3-13 Information Operations.

- d. **Cyberspace Operations Coordination and Synchronization.** Most aspects of joint operations rely on cyberspace. Cyberspace is a global domain within the

information environment and one of the five interdependent domains; the others being the physical domains of air, maritime, land, and space. CO rely on interdependent networks of information technology (IT) infrastructures, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers, and the content that flows across and through the components. Activities in the physical domains can create effects in and through cyberspace by affecting the EMS, or the physical infrastructure.

- (1) **Domain Overlap.** The JFC must consider domain overlap when employing CO. Other capabilities the JFC may employ in conjunction with CO include EW, EMS management, C2, ISR, navigation warfare (NAVWAR), and some space mission areas. The JFC and staff must be familiar with the different coordinating requirements early in the planning process in order to comply with US law, and facilitate effective and timely CO. The cyberspace support element, in coordination with the CCMD joint cyberspace center, is best suited to minimize domain overlap.
- (2) CO considerations include the intrinsic or acquired characteristics of targets in cyberspace. Cyberspace can be viewed as having the following three layers (See Figure III-1):
 - (a) **Physical network layer** is comprised of the geographic component and physical network components. It is the medium where data travels. (Geographic is the location on land, sea, air, or space where elements of the network reside. The physical network component is comprised of the hardware, systems software, and infrastructure.)
 - (b) **Logical network layer** consists of those elements of the network that are related to one another that is abstracted from the physical network, such as a single web site hosted on servers in multiple physical locations.
 - (c) **Cyber persona layer** is an online identity that facilitates communication, decision making, and influencing of audiences in the cognitive dimension.

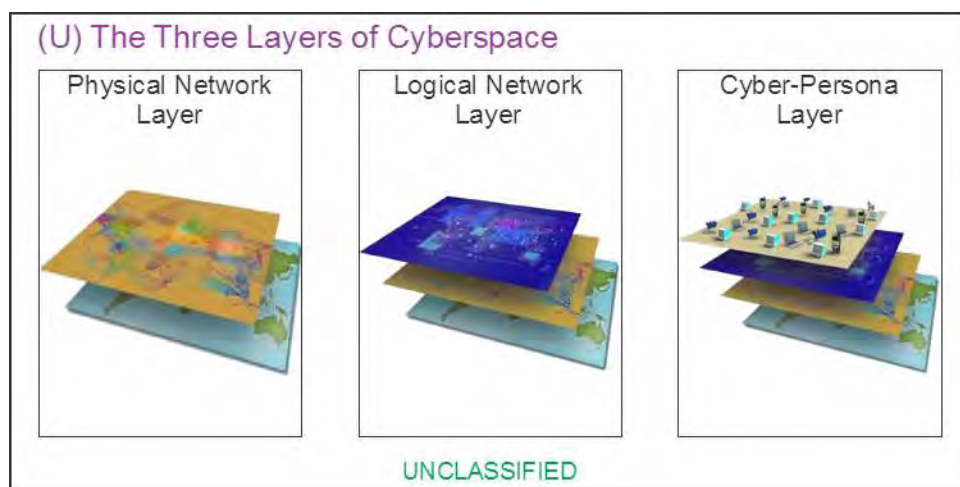


Figure III-1. The Three Layers of Cyberspace

- (3) One of the key challenges in targeting is to identify, coordinate, and deconflict multiple activities occurring across multiple layers. Due to the dynamic nature of these aforementioned cyberspace layers, use of CO in the targeting policy is especially challenging.

For additional information on CO, see JP 3-12, Cyberspace Operations (Classified).

e. **Combat Identification.** Combat identification (CID) is the process of attaining an accurate characterization of detected objects in the OE sufficient to support an engagement decision. Depending on the situation and the operational decisions that must be made, this characterization may be limited to “friend,” “enemy,” or “neutral.” In other situations, other characterizations may be required such as class, type, nationality, and mission configuration. CID characterizations, when applied with ROE, enable engagement decisions and the subsequent use (or prohibition of use) of lethal and nonlethal weapons to create targeting effects in support of targeting objectives. CID is used for force posturing, C2, SA, and strike/no-strike employment decisions.

- (1) The JFC’s CID procedures should be developed early during planning and ROE development. Important considerations include the missions, capabilities, and limitations of all participants, including multinational forces, other USG departments and agencies, intergovernmental organizations (IGOs), and nongovernmental organizations (NGOs). There are many different CID procedures and systems currently in use by US and multinational forces. Experience has proven that early identification of common CID procedures significantly increases CID effectiveness.
- (2) CID-related information exchange is driven by the need for friendly and neutral force SA, location/identification of restricted sites and structures, and identification of threat objects. CID information requires constant coordination and should be conveyed to decision makers in an understandable manner.

For additional information on CID, See JP 3-09, Joint Fire Support.

f. **Positive Identification.** PID is an identification derived from observation and analysis of target characteristics including visual recognition, electronic support systems, non-cooperative target recognition techniques, identification friend or foe systems, or other physics-based identification techniques. During dynamic targeting, PID is acquired during Step 2 (Fix) of find, fix, track, target, engage, and assess (F2T2EA) and CID is acquired prior to engagement.

g. **Control and Coordination Measures.** JFCs establish various FSCMs, maneuver control measures, and airspace coordinating measures (ACMs) to facilitate effective joint operations. These include, but are not limited to, permissive/restrictive measures, boundaries, phase lines (PLs), fires support areas, and formal/informal airspace control areas.

(1) **Fire Support Coordination Measures.** Within their OAs, land and maritime commanders employ permissive and restrictive FSCMs to expedite attack of targets; protect forces, populations, critical infrastructure, and sites of religious or cultural significance; clear joint fires; deconflict joint fire support operations; and establish conditions for future operations. Along with other control and coordination measures, FSCMs and their associated procedures help ensure joint fire support does not jeopardize troop safety, interfere with other attack means, or disrupt operations of adjacent subordinate units. A commander's geographic location and adjustment to control and coordination measures must be consistent with the location of friendly forces, the concept of the operation, anticipated enemy actions, and in consultation with superior, subordinate, supporting, and affected commanders.

(a) **Permissive Measures.** The primary purpose of permissive measures is to facilitate the attack of targets. Permissive measures facilitate reducing or eliminating coordination requirements for the engagement of targets with conventional means.

1. **Coordinated Fire Line (CFL)** is a line beyond which conventional and indirect surface joint fire support means may fire at any time within the boundaries of the establishing HQ without additional coordination. The purpose of the CFL is to expedite the surface-to-surface engagement of targets beyond the CFL without coordination with the land commander in whose area of operation the targets are located. The CFL is usually established by a brigade or division commander equivalent, but it can also be established by a maneuver battalion (especially in amphibious operations).

2. **Fire support coordination lines (FSCLs)** facilitate the expeditious engagement of TOO beyond the coordinating measure. An FSCL does not divide an AO by defining a boundary between close and deep operations or a zone for CAS. The FSCL applies to all fires of air-, land-, and sea-based weapon systems using any type of munition against surface targets.

3. **Free-Fire Area.** A free-fire area is a specifically designated area into which any weapon system may fire without additional coordination with the establishing HQ. It is used to expedite joint fires and to facilitate emergency jettison of aircraft munitions.

4. **Kill Boxes.** A kill box is a three-dimensional area used to facilitate the integration of joint fires. When established, the primary purpose of a kill box is to allow lethal attack against surface targets without further coordination with the establishing commander and without terminal attack control. When used to integrate air-to-surface and surface-to-surface indirect fires, the kill box will have appropriate restrictions. The goal is to

reduce the coordination required to fulfill support requirements while providing maximum flexibility and preventing fratricide. A kill box will not be established specifically for CAS missions.

- (b) **Restrictive Measures.** Restrictive measures impose requirements for specific coordination before engagement of targets.
1. **Restrictive Fire Line.** The restrictive fire line is a line established between converging friendly forces — one or both may be moving — that prohibits joint fires or the effects of joint fires across the line without coordination with the affected force. The purpose of the line is to prevent fratricide and duplication of engagements by converging friendly forces.
 2. **No-Fire Area.** The purpose of the no-fire area (NFA) is to prohibit joint fires or their effects into an area. There are two exceptions: **first**, when the establishing HQ approves joint fires within the NFA on a mission-by-mission basis; **second**, when an enemy force within the NFA engages a friendly force and the engaged commander determines there is a requirement for immediate protection and responds with the minimal force needed to defend the force.
 3. **Restrictive Fire Area.** A restrictive fire area (RFA) is an area where specific restrictions are imposed and in which joint fires, or the effects of joint fires, that exceed those restrictions will not be delivered without coordination with the establishing HQ. The purpose of the RFA is to regulate joint fires into an area according to the stated restrictions.
 4. **Zone of Fire.** A zone of fire (ZF) is an FSCM that includes the area within which a designated ground unit or fire support ship delivers, or is prepared to deliver, joint fire support. Joint fires may or may not be observed. Land is divided into ZFs which are assigned to gunfire support ships and units as a means to coordinate their efforts with each other and with the scheme of maneuver of the supported ground unit. Units and ships assigned ZFs are responsible for engaging known targets and TOO according to their mission and the guidance of the supported commander.
- (2) **Maneuver Control Measures.** JFCs and other commanders at the operational level of war often use boundaries, **maneuver control measures**, and fire support coordinating measures to control and coordinate the operations of their forces in the battlespace. These measures are usually employed to delineate AOs or other areas where components or subordinate commands will conduct their operations or to coordinate maneuver or fires between adjacent units.
- (a) **Boundaries.** In land warfare, a boundary is a line by which surface AOs between adjacent units or formations are defined. Boundaries designate the geographical limits of the AOs of a unit. Within their boundaries,

units may execute joint fires and maneuver without close coordination with neighboring units unless otherwise restricted. Normally, units do not fire across boundaries unless the fires are coordinated with the adjacent unit or the fires are beyond an FSCM, such as a CFL. These restrictions apply to conventional and special munitions and their effects. When fires, such as smoke and illumination, affect an adjacent unit, coordination with that unit is normally required. A commander can, in certain situations, decide to fire across boundaries at positively identified enemy elements without coordination. However, direct and observed joint fires should be used when firing across boundaries at positively identified enemy forces when there is no time to coordinate with adjacent friendly units.

- (b) **Phase Lines.** A PL is used by land forces for control and coordination of military operations. It is usually a recognizable terrain feature extending across the zone of action. Units normally report crossing PLs, but do not halt unless specifically directed. PLs can be used to identify limits of advance, control joint fires, or define an AO. The purpose of each PL and any actions required by forces affected by the PL will be specified in the OPORD of the establishing HQ. Any commander given an AO can establish PLs.
- (c) **Fire Support Area and/or Fire Support Station.** A fire support area (FSA) is an appropriate maneuver area assigned to fire support ships by the maritime commander from which they deliver surface joint fire support to an operation ashore. A FSA is normally associated with amphibious operations, but can be used whenever it is desirable to have a fire support ship occupy a certain geographic position. A fire support station (FSS) is an exact location at sea within an FSA from which a fire support ship delivers joint fire. This designation is used to station ships in order to be able to reach certain targets. For example, a ship in a FSA may not be able to reach a certain target except when it is stationed at the FSS.

(3) **Airspace Coordinating Measures and Area.**

- (a) **Airspace Coordinating Measures.** ACMs are critical to the successful employment of joint fires. A key to effectively coordinating joint fires is to constantly view the OE as a three-dimensional area. ACMs are nominated from subordinate HQ through component command HQ and forwarded to the ACA, in accordance with the air control plan. Most ACMs impact on direct and indirect joint fires trajectories and unmanned aircraft systems (UASs) because of their airspace use. Some ACMs may be established to permit surface joint fires or UAS operations. The component commanders ensure ACM nominations support and do not conflict with joint operations prior to forwarding to the JAOC. The ACA approves formal ACM nominations and includes them in the ACO. The ACA consolidates, coordinates, and deconflicts the airspace requirements of the components and publishes the ACMs in the ACO. The ACO is

normally published at least daily and is often distributed both separately and as a section of the ATO.

- (b) **Airspace Coordination Area.** The ACA is the primary ACM which reflects the coordination of airspace for use by air support and indirect joint fires. ACAs are used to ensure aircrew safety and the effective use of indirect supporting surface joint fires by deconfliction through time and space. The ACA is a block or corridor of airspace in which friendly aircraft are reasonably safe from friendly surface fires. A formal ACA (a three-dimensional box of airspace) requires detailed planning. More often, an informal ACA is established using time, lateral separation, or altitude to provide separation between surface-to-surface and air-delivered weapon effects.

For additional information on control and coordination measures, see JP 3-09, Joint Fire Support.

3. Planning Considerations

- a. **Joint Fire Support.** When planning joint fire support, JFC's should consider the following missions and unique aspects of fire support.
 - (1) **Close Air Support.** CAS is an element of joint fire support. Although simple in concept, CAS requires detailed planning, coordination, and training for effective and safe execution. Synchronizing CAS in time, space, and purpose with supported maneuver forces increases the effectiveness of the joint force. CAS assists land, maritime, amphibious, and SOF to move, maneuver, and control territory, populations, and key waters.
 - (a) CAS is air action by fixed- and rotary-winged aircraft against hostile targets that are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces. CAS provides supporting firepower in offensive and defensive operations to destroy, disrupt, suppress, fix, harass, neutralize, or delay enemy targets. The speed, range, and maneuverability of airpower allow CAS assets to attack targets that other supporting arms may not be able to engage effectively. CAS can be conducted at any place and time friendly forces are in close proximity to enemy forces and, at times, may be the best means to exploit tactical opportunities. Although in isolation it rarely achieves operational-level objectives, at times it may be the more critical mission due to its contribution to them. CAS should be planned to set the conditions for success or reinforce successful attacks of surface forces.
 - (b) Each Service organizes, trains, and equips to employ CAS within its roles as part of the joint force. As a result, a variety of aircraft are capable of

performing CAS. The JFC and his staff must be capable of integrating CAS capabilities into the CONOPS.

For additional information on CAS, see JP 3-09.3, Close Air Support.

(2) **Countering Air and Missile Threats.** The counterair mission integrates both offensive and defensive operations, by all capable joint force components, and counters the air and missile threat by attaining and maintaining the degree of air superiority and protection desired by the JFC. Counterair operations may use the range of military capabilities to neutralize or destroy enemy aircraft, missiles, and launchers before and after launch. Generally, OCA operations seek to dominate enemy airspace and prevent the launch of threats, while defensive counterair (DCA) operations defeat enemy air and missile threats attempting to penetrate or attack through friendly airspace. Counterair operations may employ aircraft with weapons or sensors, surface-to-surface missiles, surface-to-air missiles, ADA, air-to-surface missiles, SOF, EA, or IO.

(a) **Offensive Counterair.** OCA is offensive operations to destroy, disrupt, or neutralize enemy aircraft, missiles, launch platforms, and their supporting structures and systems both before and after launch, and as close to their source as possible. The goal of OCA operations is to prevent the launch of enemy aircraft and missiles by destroying them and their overall supporting infrastructure prior to employment. Prior planning and accurate and timely intelligence are key to locating and attacking OCA targets, as well as their supporting elements.

(b) **Defensive Counterair.** DCA is all defensive measures designed to detect, identify, intercept, and neutralize or destroy enemy forces attempting to penetrate or attack through friendly airspace. DCA includes both active and passive AMD measures to protect friendly forces, critical assets, population centers, infrastructure, etc., and deny enemy freedom of action in friendly airspace. The goal of DCA operations, in concert with OCA operations, is to provide an area from which forces can operate while protected from air and missile threats. DCA operations must be integrated and synchronized with OCA operations and all other joint force operations. The AADC normally is responsible for developing an integrated air defense system (IADS) by integrating the capabilities of different components with a robust C2 architecture. **Because of their time-sensitive nature, DCA operations require streamlined coordination and decision-making processes.**

For additional information on countering air and missile threats, see JP 3-01, Countering Air and Missile Threats.

(3) **Interdiction Operations.** Interdiction operations are actions to divert, disrupt, delay, or destroy the enemy's military surface capabilities before they

can be used effectively against friendly forces, or to otherwise achieve objectives. In support of law enforcement, interdiction includes activities conducted to divert, disrupt, delay, intercept, board, detain, or destroy, under lawful authority, vessels, vehicles, aircraft, people, cargo, and money.

- (a) Forces that can conduct interdiction operations include those listed in Figure III-2, Interdiction-Capable Forces.

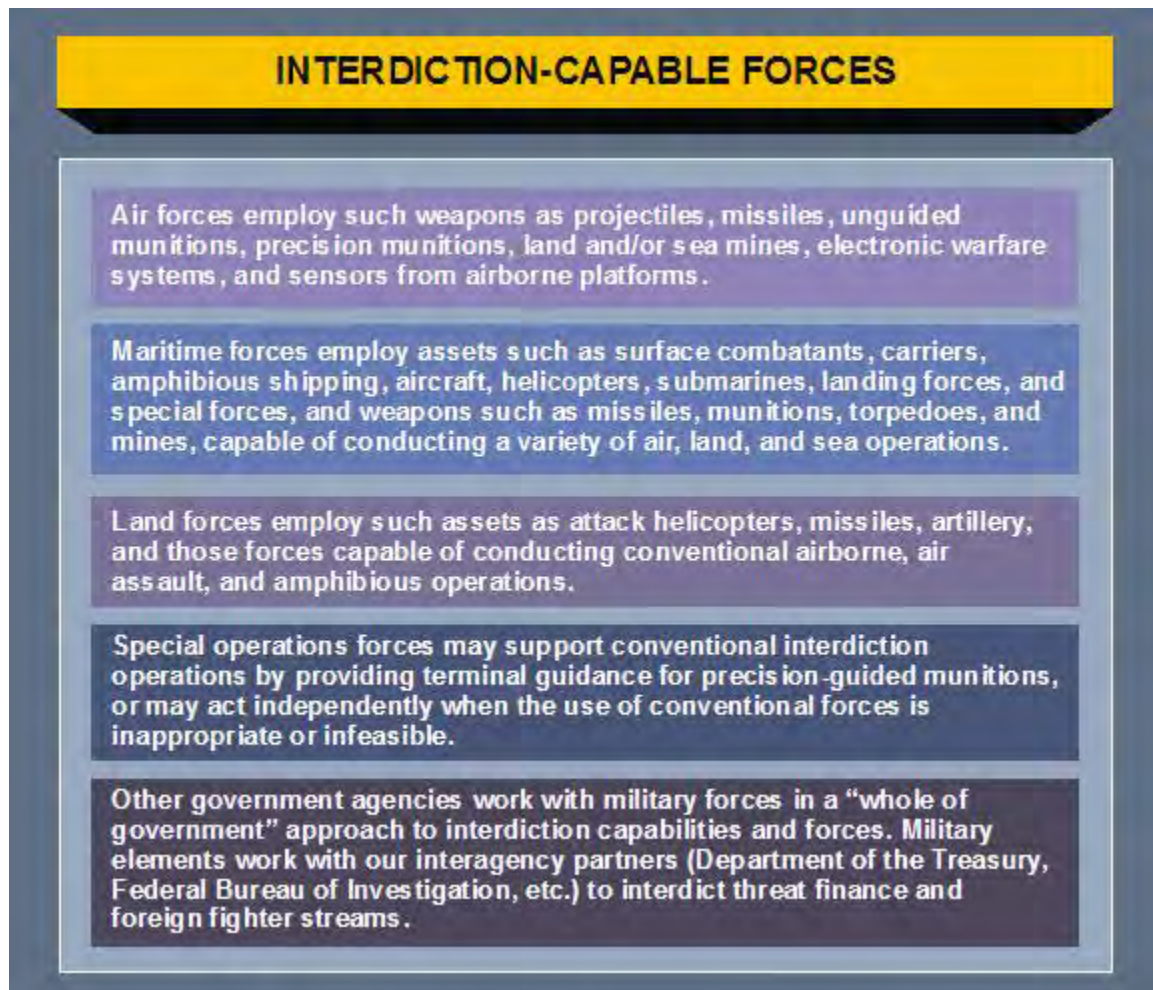


Figure III-2. Interdiction-Capable Forces

- (b) **Air Interdiction.** AI is generally conducted at such distances from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not normally required. AI may operate as a supported part of the overall JFC strategy or it may indirectly support the land component. When conducted as part of a joint operation, interdiction needs the direction of a single commander who can exploit and coordinate all the forces involved, whether air, space, surface, or information-based. To ensure unity of command and effort of air operations throughout a theater/JOA, the JFC normally delegates the planning and execution of theater/JOA-wide AI operations to the component commander with the preponderance of AI assets with

theater/JOA wide range and the ability to control them. The JFACC normally is designated the supported commander for the JFC's overall AI effort and will conduct JOA-wide AI in DS of the JFC's objectives. The JFACC, in coordination with other component commanders, recommends JOA-wide targeting and apportionment priorities and submits them to the JFC for approval.

- (c) **Interdiction in the maritime domain** can isolate an enemy from outside sea-borne support, halt undesired maritime activity, and enforce legal sanctions. It can also enhance free use of the sea lines of communications (LOCs) for such friendly operations as deployment of forces and can provide security for other naval operations. Interdiction in the maritime domain can be significantly different from operations in other domains due to the complexities of international law of the high seas.
- (d) Maritime capabilities, such as the TLAM, can be effective interdiction assets and provide a potent employment option to the joint force. Utilization of the TLAM weapon system may require coordination between strike planners in-theater and supporting mission planners out of theater (i.e., cruise missile support activities). Planning timelines will need to take this requirement into consideration.
- (e) The growing dependence on information, IT systems, and cyberspace by all forces and functions creates opportunities to use IO against the enemy. IO complements interdiction through a variety of means and can be used to accomplish interdiction objectives, ideally achieving the goals before friendly forces engage the enemy. Additionally, the synergistic effects of MISO, conducted in parallel with interdiction operations, can attack the enemy's will to fight simultaneously. The psychological shock of massed joint interdiction and IO can be overwhelming to the enemy's fielded forces, especially when those forces have already been strained by surface combat.

For additional information on interdiction, see JP 3-03, Joint Interdiction.

- (4) **Strategic Attack Operations.** A strategic attack is a JFC-directed offensive action against a target — whether military, political, economic, or other — that is specifically selected to achieve national or military strategic objectives. These attacks seek to weaken the adversary's ability or will to engage in conflict or continue an action and could be part of a campaign, major operation, or conducted independently, as directed, by the President or SecDef. Additionally, these attacks may achieve strategic objectives without necessarily having to achieve operational objectives as a precondition. Suitable targets may include, but are not limited to, enemy strategic COGs. All components of a joint force may have capabilities to conduct strategic attacks.

(5) **Airspace Control.** All missions involving the use of airspace are subject to airspace control, via the airspace control plan (ACP) and ACO, both developed by the ACA. Airspace control increases combat effectiveness by promoting the safe, efficient, and flexible use of airspace with minimum restraint placed upon the airspace users. Joint airspace control includes coordinating, integrating, and regulating airspace to increase operational effectiveness. It provides centralized direction for the use of airspace within the OA, and serves as a means to eliminate fratricide.

(a) Airspace control procedures provide flexibility through an effective combination of positive and procedural control measures. Airspace control procedures objectives are outlined in Figure III-3, Airspace Control Procedures Objectives.

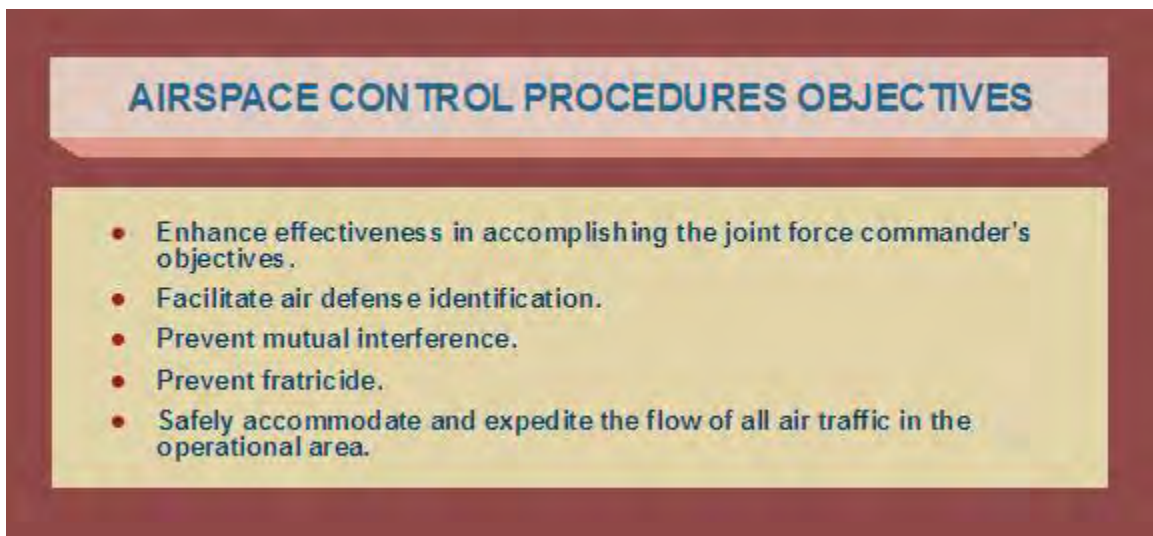


Figure III-3. Airspace Control Procedures Objectives

(b) The methods of airspace control vary across the range of military operations. They range from positive control of all air assets in an airspace control area to procedural control of all such assets, or any effective combination of the two (see Figure III-4, Methods of Airspace Control).

METHODS OF AIRSPACE CONTROL	
Positive Control	Procedural Control
<p><i>Positively identifies, tracks, and directs air assets using:</i></p> <ul style="list-style-type: none"> • Radars • Other sensors • Identification, friend or foe/selective identification feature • Digital data links • Other elements of the command, control, communications, and computer system 	<p><i>Relies on previously agreed to and promulgated ACM such as:</i></p> <ul style="list-style-type: none"> • Comprehensive air defense identification procedures and ROE • Low level transit routes • Minimum risk routes • Aircraft identification maneuvers • Fire support coordinating measures • Coordinating altitudes

Figure III-4. Methods of Airspace Control

- (c) AD operations must be integrated with other tactical air operations within the OA through the air defense plan (ADP). Weapons control procedures and airspace control measures for all AD weapon systems and forces must be established. These procedures must facilitate defensive air operations while minimizing the risk of fratricide.

For additional information on airspace control, see JP 3-52, Airspace Control; JP 3-30, Command and Control for Joint Air Operations; and JP 3-01, Countering Air and Missile Threats, and FM 3-52.1, AFTTP 3-2.78, MTPP for Airspace Control.

- b. **Information Operations Considerations.** The integration of IRCs to achieve the commander's objectives is managed through an IO staff or IO cell. JFCs may establish an IO staff to provide command-level oversight and collaborate with all staff directorates and supporting organizations on all aspects of IO. It is important to remember, IO is not about ownership of individual capabilities, but rather the use of those capabilities as force multipliers to create a desired effect. JFC's should consider the following IRCs when integrating IO with joint fires.

- (1) **Commander's Communication Synchronization.** Through commander's communication synchronization, public affairs, information operations, and defense support to public diplomacy are realized as communication supporting capabilities. Leaders, planners, and operators at all levels need to understand the desired effects and anticipate potential undesired effects of our actions and words, identify key audiences, and when appropriate, actively address their perspectives. Inconsistencies between what US forces say and do can reduce DOD credibility and negatively affect current and future missions. An effective combination of themes, messages, images, and actions, consistent with higher-level guidance, is essential to effective DOD operations.

- (2) **Joint Interagency Coordination Group.** Interagency coordination occurs between the DOD and other USG departments and agencies, as well as with private-sector entities, NGOs, and critical infrastructure activities, for the purpose of accomplishing national objectives. Many of these objectives require the combined and coordinated use of the diplomatic, informational, military, and economic instruments of national power. Due to their forward presence, the CCMDs are well-situated to coordinate activities with elements of the USG, regional organizations, foreign forces, and host nations. In order to accomplish this function, the GCCs have established joint interagency coordination groups (JIACGs) as part of their normal staff structures (see Figure II-4, Planning Process and Battle Rhythm). The JIACG is well-suited to help the IO cell with interagency coordination. Although IO is not the primary function of the JIACG, the group's linkage to the IO cell and the rest of the interagency is an important enabler for synchronization of guidance and IO.
- (3) **Public Affairs.** PA comprises public information, command information, and public engagement activities directed toward both the internal and external publics with interest in the DOD. External publics include allies, neutrals, adversaries, and potential adversaries. When addressing external publics, opportunities for overlap exist between PA and IO.
- (4) **Civil-Military Operations.** CMO activities establish, maintain, influence, or exploit relations between military forces, governmental and nongovernmental civilian organizations and authorities, and the civilian populace in a friendly, neutral, or hostile OA in order to achieve US objectives. These activities may occur prior to, during, or subsequent to other military operations. In CMO, personnel perform functions normally provided by the local, regional, or national government, placing them into direct contact with civilian populations. This level of interaction results in CMO having a significant effect on the perceptions of the local populace. Since this populace may include potential adversaries, their perceptions are of great interest to the IO community. For this reason, CMO representation in the IO cell can assist in identifying TAs, synchronizing communications media, assets, and messages, and provide news and information to the local population.
- (5) **Information Assurance.** Information assurance (IA) is necessary to gain and maintain information superiority. The JFC relies on IA to protect infrastructure to ensure its availability, to position information for influence, and for delivery of information to the adversary. Furthermore, IA and CO are interrelated and rely on each other to support IO.
- (6) **Space Operations.** Space capabilities are a significant force multiplier when integrated with joint operations. Space operations support IO through the space force enhancement functions of ISR; missile warning; environmental monitoring; satellite communications; and space-based positioning,

navigation, and timing (PNT). The IO cell is a key place for coordinating and deconflicting the space force enhancement functions with other IRCs.

- (7) **Military Information Support Operations.** MISO are planned operations to convey selected information and indicators to foreign audiences to influence their emotions, motives, objective reasoning, and ultimately the behavior of foreign governments, organizations, groups, and individuals. MISO focuses on the cognitive dimension of the information environment where its TA includes not just potential and actual adversaries, but also friendly and neutral populations. MISO are applicable to a wide range of military operations, such as stability operations, security cooperation, maritime interdiction, noncombatant evacuation, foreign humanitarian operations, counterdrug, force protection, and counter-trafficking. Given the wide range of activities in which MISO are employed, the military information support representative within the IO cell should consistently interact with the PA, CMO, JIACG, and IO planners.
- (8) **Intelligence.** Intelligence is a vital military capability that supports IO. The intelligence integration to support information operations greatly facilitates understanding the interrelationship between the physical, informational, and cognitive dimensions of the information environment.
- (9) **Military Deception.** One of the oldest IRCs used to influence an adversary's perceptions is MILDEC. MILDEC can be characterized as actions executed to deliberately mislead adversary decision makers, creating conditions that will contribute to the accomplishment of the friendly mission. While MILDEC requires a thorough knowledge of an adversary or potential adversary's decision-making processes, it is important to remember it is focused on desired behavior. It is not enough to simply mislead the adversary or potential adversary; MILDEC is designed to cause them to behave in a manner advantageous to the friendly mission, such as misallocation of resources, attacking at a time and place advantageous to friendly forces, or avoid taking action at all.
- (10) **Operations Security.** Operations security (OPSEC) is a standardized process designed to meet operational needs by mitigating risks associated with specific vulnerabilities in order to deny adversaries critical information and observable indicators. OPSEC identifies critical information and actions attendant to friendly military operations to deny observables to adversary intelligence systems. Once vulnerabilities are identified, other IRCs (e.g., MILDEC, CO) can be used to satisfy OPSEC requirements. OPSEC practices must balance the responsibility to account to the American public with the need to protect critical information. The need to practice OPSEC should not be used as an excuse to deny noncritical information to the public.
- (11) **Special Technical Operations.** IO need to be deconflicted and synchronized with special technical operations (STO). Detailed information

related to STO and its contribution to IO can be obtained from the STO planners at CCMD or Service component HQ. IO and STO are separate, but have potential crossover, and for this reason a STO planner is a valuable member of the IO cell.

- (12) **Joint Electromagnetic Spectrum Operations.** All information-related mission areas increasingly depend on the EMS. Joint electromagnetic spectrum operations (JEMSO), consisting of EW is the mission area ultimately responsible for securing and maintaining freedom of action in the EMS for friendly forces while exploiting or denying it to adversaries. JEMSO, therefore, supports IO by enabling successful mission area operations.
- (13) **Key Leader Engagement.** Key leader engagements are deliberate, planned engagements between US military leaders and the leaders of foreign audiences that have defined objectives, such as a change in policy or supporting the JFC's objectives. These engagements can be used to shape and influence foreign leaders at the strategic, operational, and tactical levels, and may also be directed toward specific groups such as religious leaders, academic leaders, and tribal leaders (e.g., to solidify trust and confidence in US forces).
- (14) **Cyberspace Operations.** Cyberspace is a global domain within the information environment consisting of the interdependent network of IT infrastructures and resident data, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers. CO are the employment of cyberspace capabilities where the primary purpose is to achieve objectives in or through cyberspace. Cyberspace capabilities, when in support of IO, deny or manipulate adversary or potential adversary decision making, through targeting an information medium (such as a wireless access point in the physical dimension), the message itself (e.g., an encrypted message in the information dimension), or a cyber-persona (e.g., an online identity that facilitates communication, decision making, and the influencing of audiences in the cognitive dimension). When employed in support of IO, CO generally focus on the integration of offensive and defensive capabilities exercised in and through cyberspace, in concert with other IRCs, and coordination across multiple LOOs and lines of effort.

For additional information on IO, see JP 3-13, Information Operations.

- c. **Cyberspace Operations Planning and Targeting Considerations.** It is important to understand the relationship between IO and CO. In the past, CO were considered a subset of IO and those operations incorporated in terms of computer network operations, computer network attack, computer network defense, and computer network exploitation. However, CO are used to create effects which support operations across the physical domains and cyberspace's global domain.

- (1) Successful execution of CO requires integrated and synchronized offensive, defensive, and Department of Defense information networks (DODIN) operations that are aligned with timely operational preparation of the environment. CO missions are categorized as offensive cyberspace operations, defensive cyberspace operations, and DODIN operations. All CO missions are informed by timely intelligence and threat indicators from a variety of DOD and non-DOD sources and assessments.
- (2) Cyberspace capabilities provide the means to gain and maintain a strategic and continuing advantage in the OE. The OE factors affecting CO vary in importance according to mission. For example, CO associated with an air mission may require transmission through the EMS, which may be significantly degraded by both congestion and/or an adversary EA. CO in support of an IO objective may be more affected by the political climate or an individual's communication habits.
- (3) With the continued rapid evolution of information and communications technology (ICT), governments and militaries are rethinking the context which they operate. State and non-state users of ICT can pose a significant threat to the US. The application of cyberspace capabilities provides a low cost, asymmetric alternative to costly weapons systems for those actors who do not possess the US's traditional military force capabilities. With this in mind, it is essential the JFC have a full grasp of the OE and information environment, while controlling key terrain in cyberspace.
- (4) CO capabilities should be considered during joint operation planning, integrated into the JFC's plan and synchronized with other operations during execution. Because of the increased reliance on cyberspace, especially in C2 and logistics functions outside DOD networks, the JFC should focus integration efforts on the following:
 - (a) Centralized CO planning for DODIN operations and defense
 - (b) Synchronization of fires and operations
 - (c) Deconfliction requirements between government entities
 - (d) Partner nation's relationships
 - (e) Relationships between CO and IO
 - (f) CO in the physical domains
 - (g) Legal issues related to CO (especially when crossing international and domestic boundaries)

- (5) Targeting, deconfliction, commander's intent, political/military assessment, and considerations on collateral effects all play into the CO planner's calculation and efforts. Similarly, all principles of joint operations, such as maneuver and surprise, are relevant to CO. However, second- and higher-order effects in and through cyberspace can be more difficult to predict, necessitating more branches and sequels during JOPP.
- (6) When incorporating CO into the JFC's targeting process, three aspects should be included:
 - (a) Recognizing cyberspace capabilities as a viable option for engaging designated targets;
 - (b) Understanding that a CO option may be preferable in some cases, because it may have a low probability of detection; and
 - (c) First-, second-, and third- order effects on targets may involve or affect the DODIN.
- (7) Cascading and collateral effects unique to CO should be considered when integrating CO capabilities into the targeting process. This is particularly true when recognizing the overlaps between military, civil, government, corporate, and private activities over shared networks. Effects can occur through a targeted system, often cascading into other systems. The cascading of direct and indirect effects usually flows from higher to lower, although in CO, that may not necessarily be the case. With this in mind, an execute order or applicable ROE may limit CO to those operations that result in no or minimal levels of collateral effects. The proposed CO must also be permissible under a LOW proportionality analysis.
- (8) Other CO planning considerations include:
 - (a) **Department of Defense Information Network Operations.** The US military's reliance on cyberspace is well-understood by our adversaries. DODIN operations underlie nearly every aspect of the JFC's operations, throughout the OE. However, it is often overlooked as a planning consideration. JFC planning to ensure DODIN resiliency, in the face of cyberspace threats, is essential.
 - (b) **Time.** The rapid pace of CO requires significant pre-operational collaboration, as well as constant vigilance upon initiation. This ensures activities in cyberspace and throughout the OE are coordinated and deconflicted in advance. Once CO are undertaken, planners and operators must maintain SA and assess the impacts to the joint force, including the security posture, configuration changes, and indications and warning (I&W) of adversary activity.

- (c) **Electromagnetic Spectrum.** Planners should also maintain SA of the EMS and its impact on mobile devices and wireless networks, including cellular, wireless local area networks, Global Positioning System (GPS), and other commercial uses of the EMS. CO and EA, to include offensive space control, must be deconflicted.
 - (d) **Insider threats** are a significant threat to the joint force. Because of their trusted relationship and access to DODIN, malicious activity may be far more reaching and intrusive than external entities attempting to gain access. JFCs must consider risk mitigation for this threat, including training to the joint force on insider threat activity recognition.
 - (e) **Navigation Warfare.** CO produces NAVWAR effects by assuring friendly access and/or denying adversary access to PNT information transmitted by global navigation satellite systems. Creation of global and theater NAVWAR effects is attained through the coordinated employment of CO, EW, and space operations.
- (9) Assessment of CO at the operational level follows along the same lines as the assessment phase in the JTC, where objectives and desired effects are developed by the JFC's staff, and pushed down to the tactical level to develop tactical-level objectives, tasks, and subordinate targeting objectives and effects. CO are a recent addition in the development of operational level MOPs and MOEs. Activities in cyberspace alone will have operational-level effects. For example, the use of cyberspace attack to take down or corrupt an adversary's headquarters' network may reverberate throughout the entire JOA.
- (a) CO assessment may be unique to a normal assessment cell, and the assessment cell may not have the expertise or capabilities to assess CO. Furthermore, CO typically involves multiple commands, such as the JFC; Commander, US Cyber Command; and other functional components. Therefore, CO assessments will require close coordination among each staff and across multiple commands. Coordination and federation of the assessment effort will require these efforts to be planned and in place well before execution.

For additional information on CO, see JP 3-12, Cyberspace Operations (Classified).

SECTION B. JOINT TARGETING CYCLE

1. Joint Targeting Cycle Introduction

- a. **Overview.** The JTC is a six-phase iterative process that provides a helpful framework to describe the steps that must be satisfied to successfully conduct joint targeting (see Figure III-5, Joint Targeting Cycle). This cycle is neither time-constrained nor time-dependent, and steps may occur concurrently. The purpose of joint targeting is to integrate and synchronize fires into joint operations by utilizing available capabilities to generate a specific lethal or nonlethal effect on a target. It can be conducted in multinational operations and may involve participation from other agencies, governments, and organizations. An effective, disciplined joint targeting process helps minimize undesired effects, potential for collateral damage, and reduces inefficient actions during military operations. It supports the successful application of several principles of war: mass, maneuver, and economy of force.

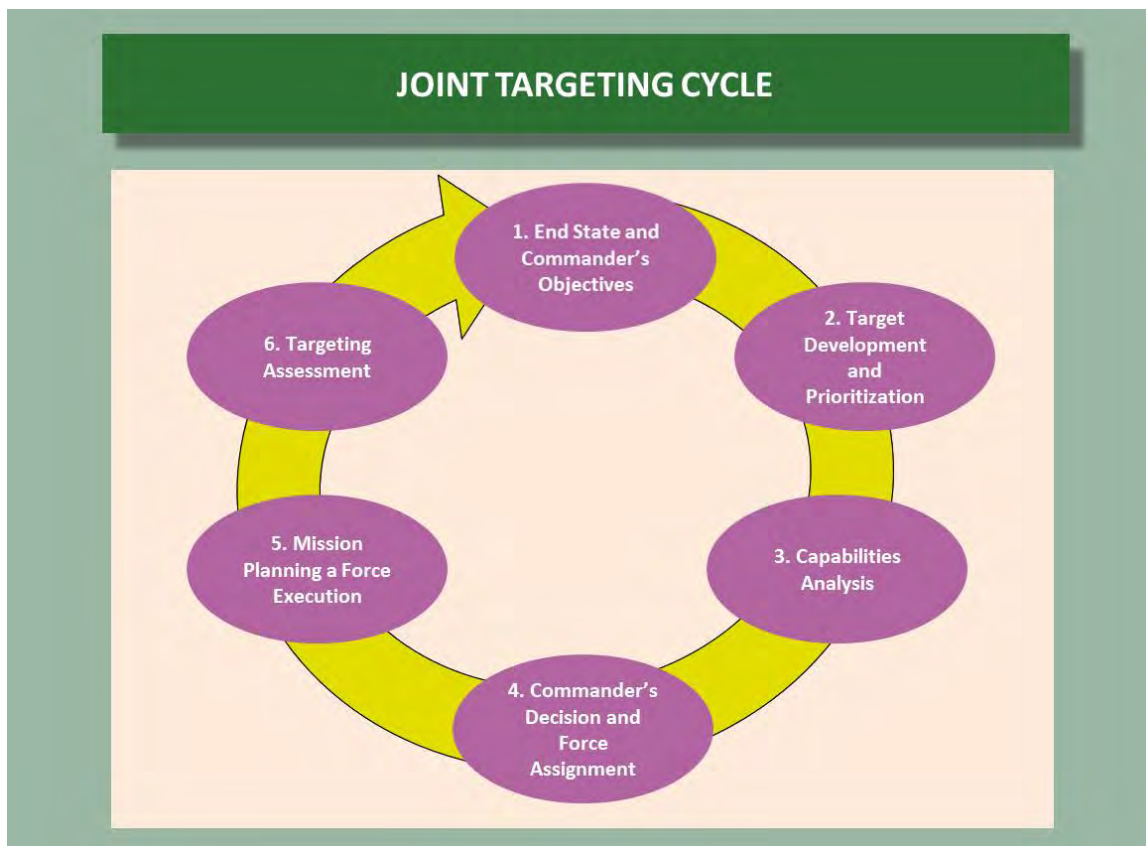


Figure III-3. Joint Targeting Cycle

- b. The joint targeting process integrates military capability to create effects in support of JFC objectives and end state. The deliberate and dynamic nature of the JTC supports joint operation planning and execution, providing the depth and flexibility required to support the CONOPS and commander's intent as opportunities arise and plans change. In consultation with component commanders, the JFC sets priorities, provides clear targeting guidance, and

determines the weight of effort to be provided to various operations. Component commanders ensure their schemes of maneuver comply with the JFC's guidance and priorities. If they do not have the capability to prosecute priority targets in a timely fashion, they may submit HVTs and HPTs for incorporation into the joint targeting process.

2. Phase 1 – End State and Commander’s Objectives

- a. **Overview.** Understanding the military end state, JFC’s intent, COGs, objectives, desired effects, and required tasks developed during operational planning provides the operational level initial framework for the targeting process. The military end state is the set of required conditions that defines achievement of the commander’s operational objectives. The commander’s operational objectives are developed during the mission analysis step of JOPP, typically derived from theater-strategic or national-level guidance. An important result of mission analysis is the commander’s intent statement and initial planning guidance (see Figure III-6, Mission Analysis). Commander’s intent is a clear and concise expression of the purpose of the operation and the military end state. This statement, which the commander revises throughout the course of planning, deals primarily with the military conditions that lead to mission accomplishment, so the commander may highlight selected objectives, desired effects, and required tasks. Commander’s initial planning guidance focuses the planning effort and should include: the mission statement, assumptions, operational limitations, a discussion of the national strategic end state, termination criteria, military objectives, the JFC’s initial thoughts on desired and undesired effects, address the role of agencies and multinational partners in the pending operation, and any related special considerations.

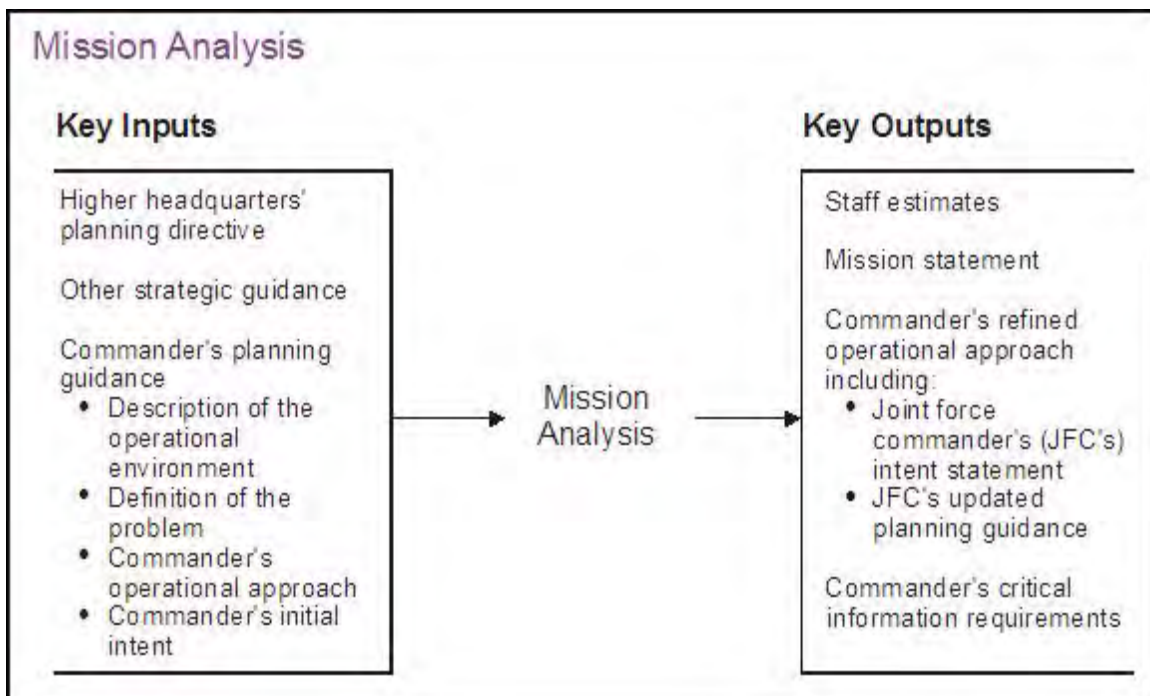


Figure III-6. Mission Analysis

- (1) Understanding the JFC's guidance, CONOPS, and intent is the most important and first activity of joint targeting because they document the set of outcomes relevant to the present situation and set the course for all that follows. Objectives are the basis for developing the desired effects and scope of target development, and are coordinated among strategists, planners, and intelligence analysts for approval by the commander. Attainment of clear, measurable, and achievable objectives is essential to the successful realization of the desired end state. The ability to generate the type and extent of effects necessary to achieve the commander's objectives distinguishes effective targeting.
 - (2) Equally important is the development of **observable**, **achievable**, and **reasonable** measures (such as **MOEs** and **MOPs**) and indicators to assess whether the effects and objectives are being or have been attained. Measures and indicators help focus target development within the joint targeting process and are critical to enable assessment. Measures and indicators are coordinated between operations, plans, and intelligence for approval by the commander.
 - (3) The commander must provide the direction and prioritization necessary for the effective conduct of intelligence activities, because intelligence assets are rarely sufficient to satisfy every requirement. The commander provides this focus through the articulation of the CCIRs. CCIRs are clearly spelled out in the CONOPS and detailed in the intelligence annex, which drives collection, exploitation, production, and dissemination efforts. Integrating timely and relevant intelligence into the targeting effort assists the JTCCB in developing recommended JFC targeting guidance. The pivotal role played by this guidance in the targeting process requires operations and staff members to continually monitor current intelligence for changes, and adjust accordingly.
- b. Joint Intelligence Preparation of the Operational Environment.** The JIPOE is the analytical process used by joint intelligence organizations to produce intelligence assessments, estimates, and other intelligence products in support of the JFC's decision-making process. It is a continuous process that involves four major steps: (1) defining the total OE, (2) describing the impact of the OE, (3) evaluating the adversary, and (4) determining and describing adversary potential courses of action (COAs), particularly the adversary's most likely COA and the COA most dangerous to friendly forces and mission accomplishments.
- (1) The process is used to analyze the physical domains (e.g., air, land, maritime, and space); the information environment (which includes cyberspace); PMESII systems; and all other relevant aspects of the OE, and to determine an adversary's capabilities to operate within that environment. JIPOE products are used by joint force, component, and supporting command staffs in preparing their estimates and are also applied during the analysis and selection of friendly COAs.

- (2) The J-2s at all levels coordinate and supervise the JIPOE effort to support joint operation planning, enable commanders and other key personnel to visualize the full range of relevant aspects of the OE, identify adversary COGs, conduct assessment of friendly and enemy actions, and evaluate potential adversary and friendly COAs.
 - (3) The JIPOE process is a fundamental step in the planning process and is important to target development. This is because JIPOE provides an understanding of the relationship between adversary COGs. This baseline intelligence illuminates which decisive points offer opportunity to attack the adversary's COGs (directly and indirectly), extend friendly operational reach, or enable the application of friendly forces and capabilities. Targeteers and planners should resolve any misunderstanding or unclear objectives. Along with a dynamic threat assessment, JIPOE products provide much of the substantive identification, baseline analysis, characterization of systems, functional capabilities that inform target development, and target systems analysis
 - (4) During planning, targeteers will evaluate the objectives and the adversary COGs, as described in JIPOE for selection of target systems. The purpose is to characterize the function, criticality, and vulnerabilities of each potential target. It is essential to link targets back to targeting objectives and MOEs developed during the end state and commanders objectives phase of the JTC to weigh resources toward the most relevant and valuable target systems.
- c. **Risk Management.** Risk is inherent in military operations. Risk management is the process of identifying, assessing, and controlling risks arising from operational factors and making decisions that balance risk cost with mission benefits.
- (1) Risk management is a function of command and a key planning consideration. Risk management is relevant at all levels of war, across the range of military operations, and through all phases of an operation and its branches and sequels. To alleviate or reduce risk, commanders may take a variety of actions, such as changing the concept of operations (CONOPS), changing the plan for employment of operational fires, or executing a branch to the original plan.
 - (2) When planning the application of forces and capabilities, the JFC should not be completely constrained by the strategic plan's force apportionment if additional resources are justifiable and no other COA within the allocation reasonably exists. The commander identifies and resolves shortfalls with a risk assessment as a part of the force planning. This includes a list of the specific hazards that the joint force may encounter during the mission and a list of risk mitigation measures. The additional capability requirements will be coordinated with the Joint Staff (JS) through the development process.

Risk assessments will include results using both allocated capabilities and additional capabilities.

- (3) Acceptable risk level can be presented in a risk table (see Table III-1). This table may also include guidance on who can approve tasking missions with high to extreme risks. The contents of this table should come from discussions between the JFC and the JFACC. By signing the AOD the JFC with input from the JFACC is approving the level of acceptable risk as described in this table.

RISK TABLE			
Risk Level	Definition	Clarification	
LOW	Losses only at expected training or peacetime attrition rates.	Force survival high priority.	
MEDIUM	Losses expected at historical combat rates. Accept neutral or disadvantageous engagements; can withdraw to prevent heavy losses.	Whenever possible, provide SEAD support to operations in known SAM envelopes and position recovery forces at FOBs.	
HIGH	Accept losses to achieve objective. Preserve future capability, if able.	Operations in known SAM envelopes without SEAD support. PR missions and recovery forces at FOL/ FARRP.	
EXTREME	Losses may result in complete force annihilation. Accept any losses necessary to accomplish mission.	Defense against WMD; where consequences of failure unacceptable.	
Legend			
FARRP	forward area refueling and rearming point	SAM	surface-to-air missile
FOB	forward operating base	SEAD	suppression of enemy air defenses
FOL	forward operating location	WMD	weapons of mass destruction
PR	personnel recovery		

Table III-2. Risk Table

- d. **Centers of Gravity Identification.** Using the systems perspective of the OE aids COG identification and analysis by mapping the nodes and links in each adversary system. A COG is defined as the source of power that provides moral or physical strength, freedom of action, or will to act. The COG will typically be well defended; therefore, the indirect approach will need to focus on the critical capabilities, critical requirements, and critical vulnerabilities of that COG.

- (1) Political considerations, military risk, the LOW, and ROE will influence the ways and means of attacks on the critical vulnerabilities. Further, the identification and use of decisive points, LOO, and other operational design elements allows the JFC and staff to consider a broader set of fires options that focus limited resources to create the desired effects in support of the JFC's objectives.
- (2) Where direct attacks against adversary COGs mean attacking an opponent's strength, JFCs must weigh the risk appropriately to determine if friendly forces possess the power to attack with acceptable risk. In the event a direct attack is not a reasonable solution, JFCs should seek an indirect approach until conditions are established that permit successful direct attacks. The effect of

properly planned IO is to provide the commander with a force multiplier that can potentially reduce risk and enhance success.

- e. **Operational and Targeting Objectives.** An objective is the clearly defined, decisive, and attainable goal toward which every military operation should be directed. Because objectives are essential to unified action, the JFC will identify one or more operational-level objectives during the JOPP and operational design. These will not be physical objectives (e.g., a definite tactical feature, the destruction of an enemy force without regard to terrain features), although occasionally they may overlap. Targeting objectives, in contrast, are typically physical, unless dealing in the non-physical environments of cyberspace or the information environment.

(1) **Targeting objectives must have the following characteristics:**

- (a) **Observable.** The targeting objective must strive for some visible change in an enemy's behavior. For example, "Destroy the (XXX Corps) if it moves out of its assembly area to eliminate its exploitation potential." From this objective, it is clear the JFC intends to contain the enemy unit to a particular location for a period of time.
 - (b) **Quantifiable.** The change in enemy behavior must be related to some quantifiable end. Specific levels of expected results must be identified (i.e., the percentage of destruction [the effect] created by strikes on a target). For example, "Destroy coastal mine storage sites capable of being employed in the Gulf of Jacksonville." It is very easy to quantify the relative success of this targeting objective through various collection assets available once the strikes are completed.
 - (c) **Achievable.** The assets and time available must be sufficient to accomplish the targeting objective—there must be room for a solution. Further, a targeting objective should not be defined in such a way it requires the attack of a specific target system or creation of a tactical effect that also prohibits fulfilling the objective. For example, "Reduce enemy capacity to refine crude petroleum by 50 percent, for a period of one year, without endangering civilian industrial facilities." Obviously, oil refineries are considered to be part of the civilian infrastructure, and it is not possible to significantly affect oil-refining capacity without attacking refineries, unless an indirect node and link can be identified.
- (2) The JFC's operational objectives, along with the military end state, provide foundation for developing the JFC's targeting guidance and priorities, and establish the fundamental criteria for mission success. These operational-level objectives are used to determine operational-level effects, which are then used, along with other operational design elements, to develop the JFC's targeting guidance and priorities, establish restrictions for the employment of forces, and develop operational-level tasks.

- (3) The operational-level tasks are specified in the OPLAN as tasks to subordinates. These specified tasks are analyzed by the subordinate commander/staff as part of their mission analysis and begins their planning process. This planning process develops the tactical objectives, effects, tasks, and provides criteria to link tactical-level tasks to the operational-level tasks and effects that support the operational-level objectives. Because of the fundamental role of the JFC's objectives in the targeting process, targeting personnel must fully understand them.
- (4) While a pre-developed, extensive target list will often exist in the modernized integrated database (MIDB), targeting (prioritizing targets and matching the appropriate response to them) cannot be performed without an understanding of the CONOPS, targeting guidance, objectives, and effects. This is often the least understood aspect of the targeting process. Specific targeting objectives are derived from JFC's operational-level objectives, effects and tasks, JOPP results, and operational design. An example of an operational task to subordinates might be, "Gain and maintain freedom of navigation east of the 76th parallel." A fires objective to support the operational task might be, "Neutralize coastal defense cruise missile sites vicinity Onslow beach." The targeting process then seeks to achieve the desired tactical effect (i.e., neutralize) through fires. Considering both lethal and nonlethal effects in targeting planning is required to develop a truly integrated and comprehensive range of targeting options that support the operational tasks, effects, and objectives. In the example above, the MOE could be coastal defense cruise missile sites are unable to engage friendly forces.
- (5) Development of targeting objectives must consider the following questions:

(Note: These eight questions outlined below do not emanate from doctrine. Rather, these questions were developed by the Joint Targeting School to aide in developing targeting objectives.)

- (a) **Whose behavior do we want to modify?** Identify the specific people, groups, or organizations whose behavior we wish to alter. For example, do we wish to modify the behavior of the political leader, military forces, the civilian population, or a combination of these three?
- (b) **What do we want to make them do?** Identify the behavior to be affected, changed, or modified.
- (c) **How much (to what degree) do we want to affect enemy activity?** State the criteria, using metrics which can be used to assess progress. Utilizing consistent assessment metrics at all levels of planning can help assessment analysts more quickly and accurately determine progress.

- (d) **What target effects do we want to create?** There is a wide variety of means at the disposal of the JFC, both lethal and nonlethal. However, the systems available and the situation may limit the JFC's options to create a desired targeting effect.
- (e) **When do we want to create the target effect and how long do we want it to last?** Five principal timing factors must be considered as follows:
1. **Timing of the Effect.** Determining the optimum time to create the lethal or nonlethal effect is critical. Timing is particularly important in missions against certain categories of targets where activity and productivity vary significantly over time, such as barracks, supply depots, airfields, and ports. For example, an attack against an empty barracks or a supply depot, just after the supplies were moved out, would accomplish little. Likewise, operational, environmental, or survivability factors may dictate a time on target (TOT). For example, there may be a case where enemy defenses may be more easily penetrated during cover of darkness and a TOT of sunrise would aid in target identification.
 2. **Synchronization of the Attack(s)**
 3. **“Critical Time” Parameters.** These parameters are time-sensitive tasks or activities that must be effectively and efficiently performed by the enemy for his plans to succeed. To target the enemy effectively, “critical time” periods must be determined.
 4. **The time from creation of lethal or nonlethal effect until its impact is felt by the enemy.** Attacking enemy supplies stored near the battle lines will have a more immediate effect on the battle than striking or attacking supplies stored in rear area warehouses or striking enemy factories. If the effects of friendly attacks need to be felt immediately, different targets may have to be selected than those selected if an immediate impact on the enemy is not required. Attempts to have an immediate impact may delay the achievement of longer-range goals. Such a trade-off must be considered in establishing the timing criteria.
 5. **Recuperation or Reconstitution Time.** The neutralization period will influence the type, amount, and frequency of force to be used. Recuperation time should also be considered when formulating CA criteria.
- (f) **Where do we need to create the effect to best impact the adversary activity?** The specific location (e.g., “nation-wide,” “the eastern sector,” “xxx city”) to be targeted should be stated in a targeting objective.

- (g) **Why do we want to create a given effect on the target?** Unfortunately, the “why” frequently is not well thought out, is poorly stated, or may be misunderstood. Not understanding “why” may result in analysis and/or recommendations that, at best, does not create the desired effect or, at worst, creates an undesired effect with catastrophic consequences.
- (h) **How much risk will be required to achieve the targeting objective and is it worth the risk?** Assuming a proposed targeting objective is achievable, an estimate of the associated risk (attrition of equipment and personnel, time, resources, manpower, etc.) and the potential benefit must be weighed carefully.

f. **Guidance**

- (1) Guidance begins broadly at the national level and becomes more narrow and specific as successive subordinate commanders issue guidance to devise their plans to employ forces. Some sources of higher-level guidance for the JFC and staff, pertinent to targeting, are the LOW, ROE, executive orders/directives, and existing OPLANS, OPORDS, and warning orders.
 - (2) The JFC issues initial targeting guidance early in the planning process. The JTCB further develops broad targeting priorities and other targeting guidance in accordance with the JFC’s objectives. This guidance will establish how air- and surface-delivered fires will be used to support the CONOPS. It likely will delineate target set priorities, target selection methods, dynamic targeting and TST guidance, munitions usage, and restrictions. Some considerations for developing the targeting guidance may include the need to protect key infrastructure, collateral damage IO implications, higher HQ guidance, ROE, host-nation restrictions.
- g. **Key Targeting Planning Elements.** The mission statement, JFC’s intent statement, and the CONOPS are key planning elements that result from mission analysis, operational design, and the JOPP. Joint targeting ultimately must fully support these key JOPP elements.
- (1) **Mission Statement.** The mission statement should be a short sentence or paragraph that describes the organization’s essential task (or tasks) and purpose — a clear statement of the action to be taken and the reason for doing so.
 - (2) **Initial intent statement.** The JFC’s initial intent statement is a concise expression of the purpose of the operation and the desired end state. It may also include the JFC’s assessment of the adversary commander’s intent and an assessment of where and how much risk is acceptable during the operation.
 - (3) **Concept of Operations.** The CONOPS describes how the actions of the joint force components and supporting organizations will be integrated,

synchronized, and phased to accomplish the mission, including potential branches and sequels.

- h. **Strategy Identification.** The OPLAN communicates the JFC's strategy. While designed to maximize the efficient use of joint force, the plan must balance efficiency against competing factors such as political restraints, ROE, and higher level guidance. A JFCs plan is not developed in a vacuum, but each component's planning efforts are closely integrated to support the overall strategy.
- i. **Targeting Based on Desired Effect.** During the targeting process, planners determine what specific targets or target sets must be detected and attacked while specifying the desired effects for each. The desired effects, asset capability, and environment are some of the criteria used, among other considerations, to determine the targeting ways and means.

TARGETING EFFECTS DEFINITIONS	
EFFECT	DEFINITION
Attrit	To destroy or kill (troops, for example) by use of firepower.
Compel	1) To force, drive, or constrain 2) To make necessary.
Convince	1) To overcome by argument 2) To bring to belief, consent, or a course of action (COA).
Damage	To reduce the soundness, effectiveness, or perfection of.
Deceive	To cause to believe what is not true.
Degrade	1) Damage done to the function is permanent, but only portions of the function were affected; that is, the function still operates, but not fully. 2) A function's operation is permanently impaired, but the damage does not extend to all facets of the function's operation.
Deny (operation)	1) To hinder the enemy the use of space, personnel, or facilities. It may include destruction, removal, contamination, or erection of obstructions. 2) Damage done to the function is only temporary, but all aspects of the function were affected. 3) A function's operation is impaired over the short term, but the damage extends to all facets of the function's operation.
Destroy	1) To damage the condition of the target so that it cannot function as intended nor be restored to a usable condition. 2) Damage done to the function is permanent, and all aspects of the function have been affected. 3) A function's operation is permanently impaired, and the damage extends to all facets of the function's operation.
Diminish	1) To make less or cause to appear less. 2) To reduce the effectiveness of an activity. This is similar to degrade without the kinetic overtones.
Disrupt	1) To break apart, disturb, or interrupt a function. 2) Damage done to the function is temporary, and only portions of the function were affected. 3) A function's operation is impaired over the short term and the damage does not extend to all facets of the function's operations.
Divert	To restrict the enemy's capabilities to pursue a particular COA.
Enhance	To increase or make greater the capabilities of a force or a people.
Exploit	To gather information that will enable opposition ability to conduct operations to induce other effects.
Expose	1) To make known or cause to be visible to public view. 2) To make visible, to reveal something undesirable or injurious.
Harass	To disturb the rest of the troops, curtail their movement and lower morale by threat of loss.
Influence	1) Selected projection or distortion of the truth to persuade the opposition to act in a manner detrimental to mission accomplishment while benefitting accomplishment of friendly objectives. 2) To cause a change in the character, thought, or action of a particular entity.
Inform	To impart information or knowledge.
Limit	To reduce the options or COAs available to the enemy commander.
Mislead	To create a false perception that leads the opposition to act in a manner detrimental to mission accomplishment while benefitting accomplishment of friendly objectives.
(Negate/) Neutralize	1) To render an enemy weapon system and maneuver units ineffective or unusable for a specific period of time. 2) To render ineffective, invalid, or unable to perform a particular task or function. 3) To counteract the activity or effect of.
Prevent	1) To deprive of hope or power of acting or succeeding. 2) To keep from happening to avert.
Protect/ Safeguard	1) To cover or shield from exposure, damage, or destruction. 2) To keep from harm, attack, injury, or exploitation. 3) To maintain the status or integrity of.
Shape	1) To determine or direct the course of events. 2) To modify behavior by rewarding changes those tend toward a desired response. 3) To cause to conform to a particular form or pattern.
Supress (ion)	1) Involves temporary or transient degradation of an actual or suspected enemy weapons system for the purpose of degrading its performance below the level needed to fulfill its mission objectives at a specific time for a specified duration. 2) Temporary or transient degradation by an opposing force of the performance of a weapons system below the level needed to fulfill its mission objectives.
Usurp	1) To seize and hold, as the power, position, or rights of another, by force and without right or authority. 2) To take over or occupy physically, as territory or possessions.

Table III-3. Targeting Effects Definitions

(1) The desired effects to be created from joint fires are typically stated as descriptive action terms outlined in Table III-2, Targeting Effects Definitions.

(2) Example of common targeting effects used in objectives:

- (a) **Disrupt.** JFLCC targeting objectives may include “disrupt the C2 capability of the X corps’ reserve from D+xx to D+yy, to degrade their ability to displace forward and reinforce success in the main attack.”
 - (b) **Delay.** The JFC may want to slow down the arrival of enemy reinforcements or exploitation forces. A component commander’s targeting objective might be to “delay southward movement and arrival of enemy division xx at the main battle area for 48 hours to permit coalition corps xxx to establish an area defense.”
 - (c) **Divert.** The JFC may want to divert the enemy from one possible avenue of approach or mobility corridor to a less favorable one. This interrupts the enemy commander’s operational tempo, forcing him from his intended COA. For example, “divert enemy division xx eastward into location yy to prevent it from linking up with its parent corps until D+xx.”
 - (d) **Destroy.** As a targeting objective, a component commander might want to destroy a target to deny an enemy commander specific capabilities on the battlefield. For example, “destroy IADSs threatening JFACC high value airborne assets not later than (NLT) D+xx to allow forward deployment.”
- j. **Operational limitations** are actions required or prohibited by higher authority and other restrictions that limit the commander’s freedom of action, such as diplomatic agreements, political and economic conditions in affected countries, and host-nation issues. Commanders must examine the operational limitations imposed on them, understand their impacts, and develop options that minimize these impacts to promote maximum freedom of action during execution. Many operational limitations are **commonly expressed as ROE**.
- (1) A **constraint** is a requirement placed on the command by a higher command that **dictates an action**, thus restricting freedom of action. For example, General Eisenhower was required to liberate Paris instead of bypassing it during the 1944 campaign in France.
 - (2) A **restraint** is a requirement placed on the command by a higher command that **prohibits an action**, thus restricting freedom of action. For example, General MacArthur was prohibited from striking Chinese targets north of the Yalu River during the Korean War.
- k. **Assessment Metrics.** Targeting is an iterative process where the results of assessment feed into the next planning phase. Although assessment is the final phase of the targeting cycle, assessment measures, and indicators are selected early in planning. When determining assessment metrics, planners must remember commanders are most interested in patterns: the changes to attributes of a system, node, link, task, or action.

- (1) **A measure is a data point** that depicts the degree to which an entity possesses an attribute — expressed by a unit of measurement.
- (2) **A metric is two or more measures** and shows a trend. It reveals whether an attribute is more prevalent or less prevalent at various times. Metrics are specifically designed to show change over time and are most applicable to assessing the effects on systems, nodes, and links.
- (3) **An indicator is a metric that can be compared to a standard or threshold.** It shows a trend relative to a predetermined standard. These thresholds can be minimums, maximums, or both. Unlike measures and metrics, indicators give commanders a sense of whether they are making progress. But determining relevant thresholds is often not knowable until sufficient measurement has taken place to show a pattern or trend, especially when assessing human behavior.
- (4) The staff should develop metrics to determine if operations are properly linked to the JFC's overall strategy and the larger hierarchy of operational and national objectives. These metrics evaluate the results achieved during joint operations. During target development, personnel should develop metrics for each specific target. These metrics should indicate the intended effects(s) on the target as a result of actions(s) against it. These metrics may be refined during the weaponeering process, as the choice of weapons, fuzes, and delivery tactics may further influence effects. These metrics should be posted in an electronic target folder (ETF).
- (5) Metrics can either be **objective** (using sensors or personnel to directly observe damage inflicted) or **subjective** (using indirect means to ascertain results), depending on the metric applied to either the objective or task. Both qualitative and quantitative metrics should be used to avoid unsound or distorted results. Metrics can either be inductive (directly observing the OE and building SA cumulatively) or deductive (extrapolated from what was previously known of the adversary and OE). Success is measured by indications that the effects created are influencing enemy, friendly, or neutral activity in desired ways among various target systems.
- (6) **Characteristics of Metrics:** Assessment metrics should be relevant, measurable, responsive, and resourced so there is no false impression of task or objective accomplishment.
 - (a) **Relevant.** MOPs and MOEs should be relevant to the task, effect, operation, the OE, the desired end state, and the commander's CCIRs/decisions. This criterion helps avoid collecting and analyzing information that is of no value to a specific operation. It also helps ensure efficiency by eliminating redundant efforts.

- (b) **Measurable.** Assessment measures should have qualitative or quantitative standards they can be measured against. To effectively measure change, a baseline measurement should be established prior to execution to facilitate accurate assessment throughout the operation.
 - (c) **Responsive.** Assessment processes should detect situation changes quickly enough to enable effective response by the staff and timely decisions by the commander. The staffs at all levels should consider the time required for an action or actions to produce desired results within the OE and develop indicators that can respond accordingly. Many actions require time to implement and may take even longer to produce a measurable result.
 - (d) **Resourced.** To be effective, assessment must be adequately resourced. Staffs should ensure resource requirements for data collection efforts and analysis are built into plans and monitored. Effective assessment planning can help avoid duplication of tasks and unnecessary actions, thereby preserving combat power.
- (5) **Measurement Types:** MOPs and MOEs are used to evaluate progress toward task accomplishment, effects creation, and objective achievement. Well-devised measures can help the commanders and staffs understand the causal relationship between specific tasks and desired effects.

KEY TERMS

Measure of effectiveness – A criterion used to assess changes in system behavior, capability, or OE that is tied to measuring the attainment of an end state, achievement of an objective, or creation of an effect. Also called MOE. JP 3-0.

Measure of performance – A criterion used to assess friendly actions that are tied to measuring task accomplishment. Also called MOP. JP 3-0.

Indicator – In intelligence usage, an item of information which reflects the intention or capability of an adversary to adopt or reject a course of action. JP 2-0.

- (a) **Measure of Performance.** MOPs are generally quantitative, but also can apply qualitative attributes to task accomplishment. MOPs are used in most aspects of CA, since it typically seeks specific, quantitative data or a direct observation of an event to determine accomplishment of tactical tasks. But MOPs have relevance for non-combat operations as well (e.g., tons of relief supplies delivered or noncombatants evacuated). MOPs also can be used to measure operational and strategic tasks, but will typically be broader than at the tactical level.

1. MOPs help answer questions such as, “Was the action taken?”, “Were the tasks completed to standard?”, or “How much effort was involved?”. Regardless of whether there was or was not a tactical, immediate effect, did the assigned force execute the “fires,” “maneuver,” or “information” actions as required by the specified or implied task? MOPs could be used by the commander to assess whether his directives were executed by subordinate units as intended or if the units were capable of completing the specified action. Typical measures might include whether or not the designated unit delivered the correct ordnance on a target, occupied the town, or dropped the right psychological operations pamphlets, etc. Another example could be, “Did the leaflet drop take more or less than the expected number of sorties?”, or “Did the leaflets disperse in the appropriate pattern / did they land in the proper location?”. Similarly, “How quickly/efficiently did we fill potholes in a particular neighborhood, or provide potable water to the village?”.
 2. The MOP might ask, “Were the weapons employed as intended on the planned target or did the expected physical or functional damage occur?”. For example, a task statement might read: “4th Brigade Combat Team (BCT) neutralize (target) during the period (time frame) in order to (purpose).” The MOP might include: time to accomplish (TOT or NLT D+1), physical damage required in quantifiable numbers (destroy x percent or specific number), and functional damage required on target.
 3. Measurement of combat tasks use MOPs supported by BDA measurements — usually based on physical evidence (e.g., visual, infrared or electronic) of death, injury, disruption, diversion, delay, dislocation, denial, degradation, needs met, support provided, etc. When selecting MOPs, planners should consider the indicators and means required to collect against them and provide guidance in the collection plan. These measures must be refined or amended during the tasking cycle, as the tactical situation or the status of the target changes and are normally approved by the next higher HQ in the chain of command.
- (b) **Measure of Effectiveness.** These measures are typically more subjective than MOPs, and can be crafted as either qualitative or quantitative. As much as possible, MOEs should be based on quantitative measures to minimize the possibility for error in subjective interpretation. MOEs can be used to reflect a trend and show progress toward a measurable threshold.
1. MOEs indicate progress toward attainment of each desired effect or indicate the avoidance of an undesired effect. Some MOEs may be

direct forms of measurement, like an eyewitness account of a bridge span being down; some may be more circumstantial indicators, such as measurements of traffic backed up behind a downed bridge.

2. MOEs are typically more subjective than MOPs, but can be crafted as either qualitative or quantitative indicators to reflect a trend, as well as show progress relative to a measurable threshold. For example, if the desired effect is that Brown government forces withdraw from the cities, the MOE could be stated as increase or decrease in level of forces in the cities. Progress toward this effect can be measured readily with ISR ways and means. However, if the desired effect is that the Brown government engages the terrorists to leave the country, a MOE such as increase or decrease in coercive content of diplomatic communiqués could be more difficult to track, measure, and interpret. While MOEs may be harder to measure than MOPs for a discrete task, they are nonetheless essential to the assessment construct.
- (c) It should be noted, there may be some tactical tasks that must be performed, such as establishing logistic and communications infrastructure, that are not directly linked to operational level tasks and effects. However, all operational-level effects will have assigned tasks and related MOE and MOP to help assess their attainment. Likewise, even though MOPs measure task accomplishment and will therefore fall within the realm of “Blue” activity, MOEs will not necessarily be restricted to “Red” activity. For example, an operational-/strategic-level objective of keeping the coalition together may have MOEs associated with it that are oriented on “Blue.” Likewise, operational and strategic effects and objectives may have supporting MOEs that are focused on neutral entities. Therefore, for simplicity, it can be generally stated MOPs fall within the realm of “Blue” activities, but MOEs can exist in all areas. The relationship between the tasked action and the targeted node is a start point in assessing attainment of effects. More importantly, if the tactical actions were correctly executed, did they achieve the desired effects? If an effect does not occur, was it because the executed action did not happen or only partially happened, or was the action insufficient or was it the wrong action in the first place?
- (6) The assessment process uses MOPs to evaluate task performance at all levels of war, and MOEs to determine progress of operations toward creating effects or achieving objectives. Both MOEs and MOPs can be qualitative or quantitative measurements. Whenever possible, quantitative measurements are preferred, because they are less susceptible to staff interpretation (i.e. subjective judgment; see Figure III-7). They demand more rigor/ proof and can be replicated over time even if the analysts and the users – the commanders – change. For these quantitative measures to have maximum utility, however, they should have three common characteristics: each

indicator must consist of at least one measure, metric, and a standard (or threshold).

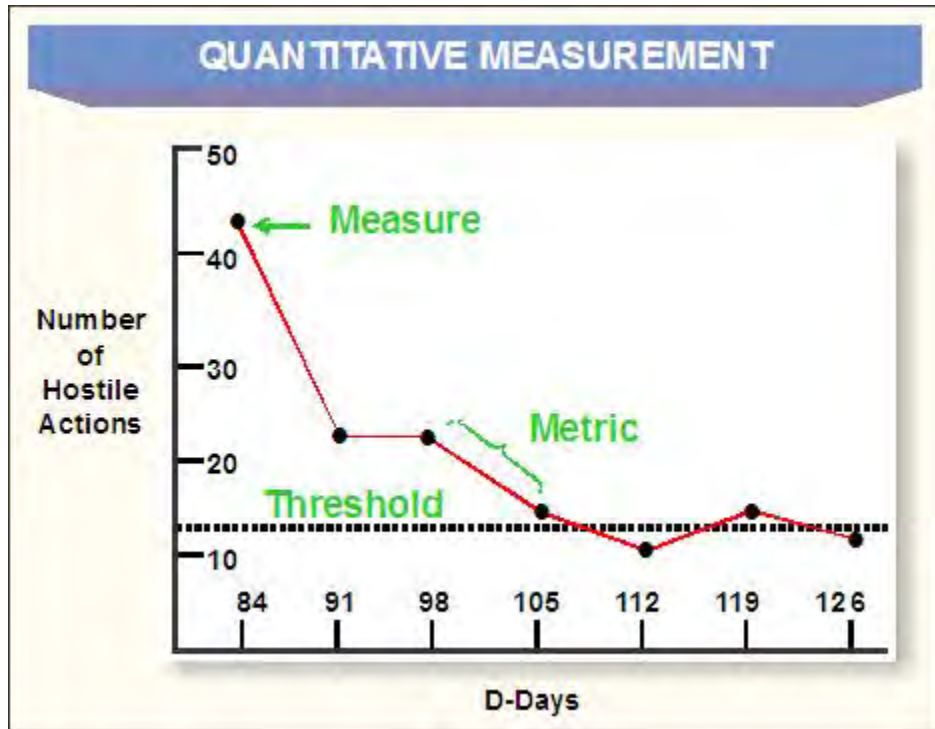


Figure III-4. Quantitative Measurement

- (7) The amount of quantitative data available to assess achievement of objectives is occasionally limited, in which case the analysis must be conducted using qualitative, sometimes subjective measures. Qualitative means primarily that judgment must be made in the absence of meaningful quantitative measures (see Table III-3, Notional Example of Qualitative Assessment Measures).

NOTIONAL EXAMPLE OF QUALITATIVE ASSESSMENT MEASURES					
STABLE REGIME				REGIME COLLAPSE	
LEADERSHIP	Coherent Message	Increased Rhetoric	Calls for Sacrifice	Calling for Citizens to Die for the Cause	
	Presence	Few Leaders Visible	Reliant on Lies	Leadership Disappearing	New Leaders Emerging
	Governance				
	Command & Control	Some Degraded Command & Control			Regime Command, Control & Communication Destroyed
SECURITY AFFAIRS	Stable Control Over Population				
	Military Control	Influence and Control Degraded	More Visible Control Attempts	Increase of Security Measures and Retribution	Fear & Power Base Destroyed
	Security Apparatus Functioning				
MILITARY	Volunteer / Special Forces	Regular Army Capitulating	Regular Army Capitulating	Volunteer / Special Forces Collapsing	Armed Forces Not Resisting
	Conscript / Regular Army				
POPULATION	Capital City	Uncertain Support for US	Accept US Actions	Civil Disobedience	
	Supportive Area				Active Support of US Actions
	Ambivalent Area	No Interference with US Actions	Covert Support for US Actions	Overt Support for US Actions	

Table III-5. Notional Example of Qualitative Assessment Measures

- (8) Military personnel tend to be less comfortable with qualitative than with quantitative measures, because they are generally trained to regard their profession as more of a science than an art. Pure quantitative data, involved in quantitative measures, however, can deceive and can, through their very seeming certainty, take on a life of their own, leading to actions that do not contribute to accomplishing objectives or the end state. For example, during Operation DESERT STORM, strategic attack missions took down key nodes to deny power within the Iraqi electrical system. This effect was accomplished with little destruction of Iraqi civilian electrical power infrastructure. Nonetheless, many power generator plants were destroyed later in the operation, in part because traditional quantitative measurements of electrical capacity showed the Iraqis still had substantial usable resources. This hampered civilian recovery following the operation. This example also points out the importance of integrating assessment early into employment planning and target development efforts.
- (9) When selecting assessment measures, planners must identify the essential elements of information requiring collection. If special ISR or other intelligence resources are needed, guidance must be provided in the collection plan and the requirement must be added to the joint integrated prioritized collection list (JIPCL). Measures and indicators will be determined during mission analysis and should be provided in the JFC's initial planning guidance; however, they must be refined or amended during staff estimates, COA wargaming, and as the tactical situation or the status of the target

changes. Selection and refinement of assessment measures is an iterative process.

3. Phase 2 – Target Development and Prioritization

- a. **Overview.** This phase of the JTC is comprised of three steps: TSA, entity-level target development, and target list management (TLM). The target development process generates several products and lists as it progresses, to include TSA, ETFs, and target lists, and the end products directly support the succeeding phases of the JTC. Target development is part of a larger intelligence planning effort and targeteers should understand the factors that lead to the initiation of target intelligence production. Target development entails the systematic examination of potential target systems (their components, individual target entities, and target elements) to determine the necessary type and duration of action that must be exerted on each target to create the required effect(s) consistent with the commander's objectives. IO target development also follows this same general methodology identifying target systems, components, and their critical elements, but uses a broader scope that accounts for information systems and psychological processes.
- b. **Target System Research.** While targets for consideration come from a variety of sources, the targeting process is reliant on the targeting tools of record (i.e., the Joint Targeting Toolbox [JTT] application and the MIDB).
 - (1) Intelligence in MIDB is the foundational intelligence maintained in peace time and is readily available for additional refinement for targeting, via the JTT interface, as required. The Defense Intelligence Agency (DIA) is the executive agent for the MIDB, but the intelligence is maintained by 14 different commands. The MIDB contains various data sets, including traditional intelligence on installations/facilities, units, and equipment, and intelligence on non-traditional targets, such as individuals, organizations, and virtual entities. The MIDB also contains the targeting specific data sets such as target lists, no strike lists, joint desired points of impact (JDPIs), nonlethal reference points (NLRPs), and other targeting intelligence required to assist in weaponeering methods. This allows planners the flexibility to quickly choose from a range of desired effects for various weaponeering options.
 - (2) Target system research within the tasking cycle often entails studying previously unidentified or un-located targets. The JAOC IO element may also be crucial to target research, especially in helping understand communications, intelligence systems, and human factors in the OE.
- c. **Target Systems and Target Development**
 - (1) Target systems are typically a broad set of interrelated, functionally associated components that generally produce a common output or have a shared task or mission and enable the adversary to conduct operations. In all

cases, target systems exist and operate in a complex “systems-of-systems” context, with shared interrelationships and dependencies that may not be readily apparent, or not conform to preconceived notions or biases.

- (2) Target development is both an intelligence analytic and application effort. As an analytic effort, target development examines each aspect of the targeting taxonomy from the system level downward. It identifies and describes adversary target systems, the target system components, related targets, and associated target elements. Target development begins after the receipt of the commander’s objectives and end state, but will continue in Phase 3 (Capabilities Analysis), Phase 4 (Commander’s Decision and Force Assignment), and Phase 6 (Targeting Assessment) of the JTC. The focus on continual target development in these phases will ensure the most current and accurate target intelligence is part of the commander’s decision process to execute against a particular target or targets.

- (3) Target developers systematically examine the enemy utilizing the targeting taxonomy, which hierarchically orders the adversary, its capabilities, and the targets which enable the capabilities into a clarifying framework (see Figure III-8, Target Development Relationships).

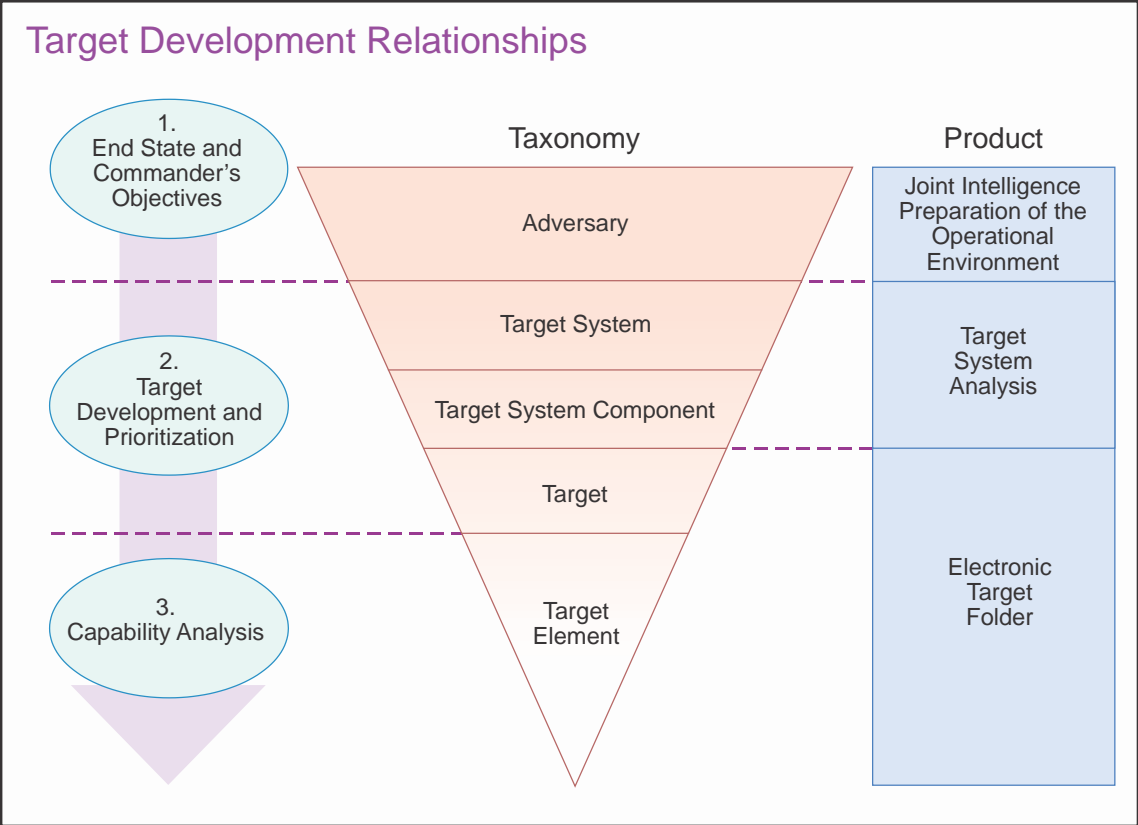


Figure III-6. Target Development Relationships

- (4) Target development always approaches adversary capabilities from a **systems** perspective. While a single target may be significant because of its own

characteristics, the target’s real importance lies in its relationship to other targets within an operational system. In many, but not all, cases, the entities that comprise a target system also share a particular geographic association. Examples of nation-state military target systems include ground, naval, and air forces. Other examples of target systems that could support a nation-state’s military forces might include the electrical power; petroleum, oil, and lubricant (POL); or transportation/LOCs target systems. Non-state actor target system examples could include violent extremist organization finance, leadership, or ideology target systems.

- (a) **Target system components** are described as a related group of entities within a target system that perform or serve towards a similar function. Examples include airfields as part of an air force, bridges and roads as part of a transportation system, or radio broadcast and newspapers as part of a mass media system (see Figure III-9, Example Target System Components and Elements). A non-state target system component example is the financial systems within a terror group finance target system.

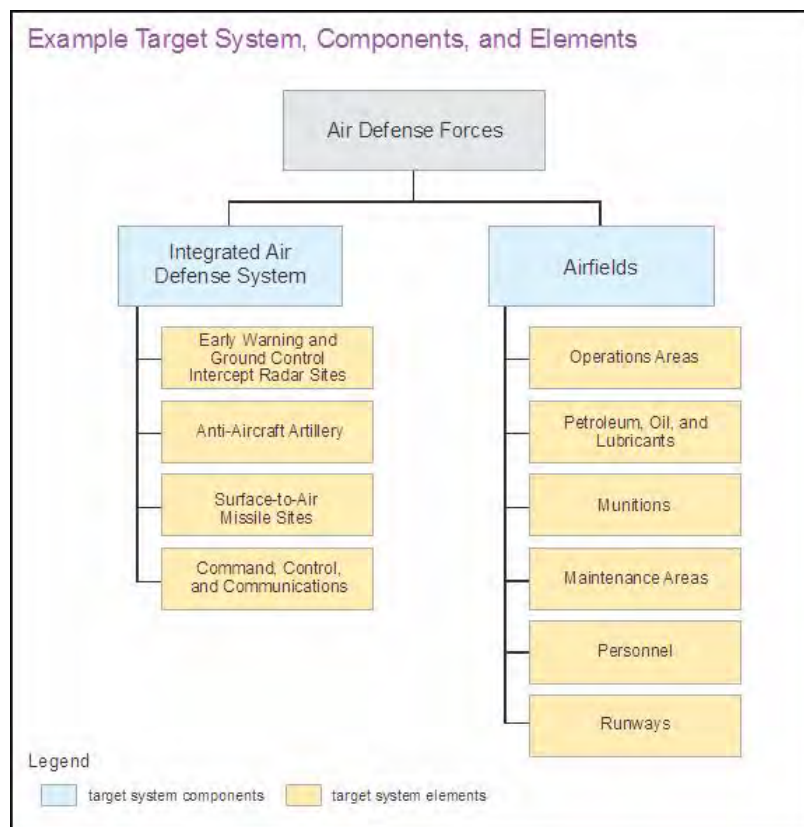


Figure III-7. Example Target System Components and Elements

- (b) **Targets** are an entities or objects considered for possible engagement. More specifically, a lawful target is an entity that, by its nature, use, location, and purpose, performs a function (or functions) for an adversary. **Targets usually fall into one of five target types: facility, individual, virtual, equipment, or organization.** Examples include a POL or

electrical power facility, a specific airfield, or an individual that has been characterized as the chief accountant of a terrorist group. See Figure III-10, Example of Petroleum, Oils, and Lubricants Target System and Components, for an example of POL target system components.

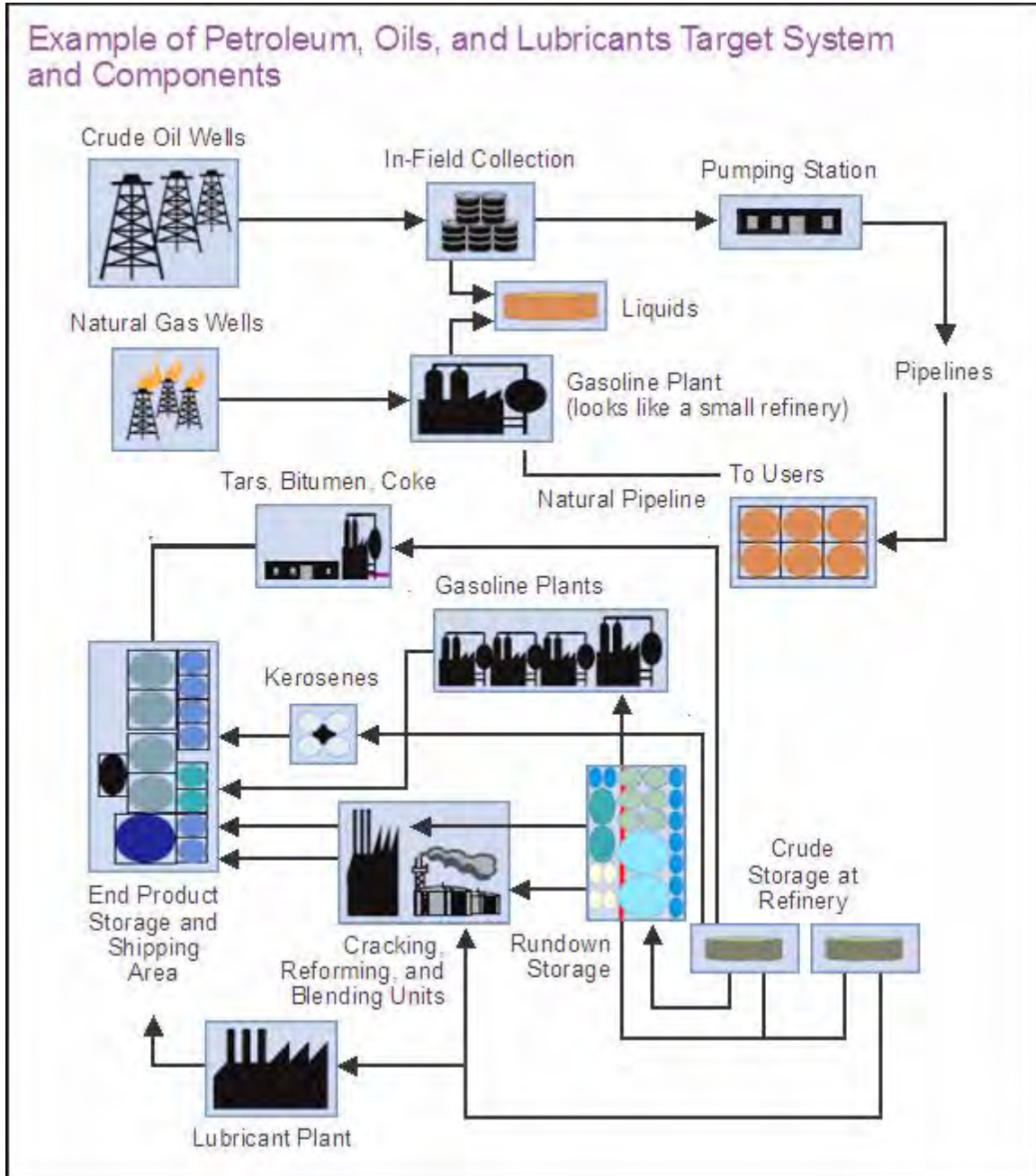


Figure III-8, Example of Petroleum, Oils, and Lubricants Target System and Components

- (c) **Target elements** are those specific features or objects that enable the target to function. Example target elements of a POL facility could include refinery petroleum distillation units, cracking towers, and storage areas. For an airfield, elements could include runway(s), aircraft, air

traffic control tower(s), and maintenance area(s). An element of an individual that is characterized as a terrorist group accountant could be an E-mail address, or even a virtual persona.

- (5) The following is a short explanation of the target development process:
- (a) Target development begins with the creation of a planning requirement. This is performed in the joint strategic capabilities plan, via JOPP, and results in a dynamic threat analysis.
 - (b) During planning, targeteers will evaluate the objectives and the adversary COG as described in JIPOE for selection of target systems. The purpose of this is to ensure target systems are logically and causally linked to the commander's objectives and to ensure personnel resources are weighted towards the most relevant and valuable target systems.
 - (c) Next is TSA. Performing TSA is the foundational process of system-level target development. TSA is equally applicable to both nation-state and non-state actors. The TSA process enables additional, more detailed stages of target development.
 - (d) Entity-level target development builds on TSA and conceptually occurs in three stages: **Basic**, **Intermediate**, and **Advanced**. Each stage is defined by a minimum set of essential data required to progress a target from initial identification and functional characterization to execution-level detail.
 - (e) Once an entity has been identified as a potential target (known as a target development nomination [TDN]), an ETF should be started. ETFs are used to store entity-level target intelligence, operational, planning, and legal information.
 - (f) TDN entities are further developed and when intermediate target development and command quality control standards are met, the entity is placed on a CTL. Candidate targets will be submitted to the IC for vetting.
 - (g) Vetting assesses the accuracy of the supporting intelligence. This includes verifying the candidate target's functional characterization, expectations statement, and target significance, as well as analyzing the target elements. For effective and efficient vetting, only one description and functional characterization of an entity can be presented to the IC.
 - (h) Once vetted, candidate targets then go through validation. Validation is a part of target development that ensures all vetted candidate targets meet the objectives and criteria outlined in the commander's guidance and ensures compliance with the LOW and ROE. Candidate targets go

through a target validation board or similar body to be validated, then are added to a JTL or RTL.

- (i) Depending on planning and operational considerations, commands select targets from the JTL and/or RTL, and compile TNLs to nominate targets for engagement. The TNLs are normally reviewed, combined, and prioritized at a JTCCB/Joint Effects Coordination Board (JECB) or at a similar review and approval session, to form the JIPTL.

d. **Target System Analysis.** Target systems are analyzed through an open-ended analytic process called TSA, utilizing all-source fused intelligence to choose potential targets that, when engaged, are most likely to create desired effects that contribute to achieving the commander's objectives. **TSA is a process of identifying, describing, and evaluating the composition of an adversary target system and its components to determine its various functions, capabilities, requirements, and vulnerabilities. TSA is also the name given to those products that result from the TSA process.** TSA is further refined to exploit target system vulnerabilities (e.g. target development at the entity level) that weaken the adversary's ability to engage in hostile operations.

- (1) TSA also reveals the functional, spatial/geographic, and temporal relationships among complementary target systems of the adversary being analyzed. While joint forces have the latitude to develop and produce target studies on more narrowly focused aspects, capabilities, or features of target systems (e.g., detailed target studies on specific adversary missile units, special forces units, weapons capabilities, or C2 networks), **TSA products are intended to provide a comprehensive, holistic assessment of the entire target system.**
- (2) When conducting TSA, targeteers must be cognizant of the environmental conditions surrounding the target system. Targeteers must understand an actor's ability to influence and define its surrounding environment can also lead to suitable conditions that allow for safe havens, material, and personnel needs. This understanding can lead to targeting strategies designed to either remove an ability to shape the environment or other strategies to change the basic environmental conditions to eliminate those that are favorable to the adversary. Constraints of an environment can impact the ability to function effectively, thereby creating identifiable critical vulnerabilities within the system. While this is especially important when analyzing non-state actors, it may also apply to nation states as well.
- (3) The purpose of TSA is to identify targeting strategies that enable a JFC to use targeting to accomplish objectives and to identify HVTs and HPTs that underpin those strategies. Targeteers should consider a target's criticality and vulnerability when evaluating its value or payoff, and how much its engagement will contribute to the targeting strategy. (See Table III-4, Factors in Target Selection.)

FACTORS IN TARGET SELECTION	
CRITICALITY	VULNERABILITY
Value Depth Recuperation Capacity	Cushion Reserves Dispersion Mobility Countermeasures Physical Characteristics

Table III-9. Factors in Target Selection

(a) **Criticality** measures a target's contribution to a target system's larger function and its relative importance within the target system. Target development focuses on identifying critical nodes within key target systems to achieve objectives and conform to JFC guidance. There are four factors that measure a target's criticality:

1. **Value** measures the target's importance to the adversary's target system and to a friendly force's ability to accomplish a mission or achieve an objective. Significance is the degree of concern in excess of the value assigned to its normal performance. This value measurement may reflect relative military, economic, political, psychological, informational, environmental, cultural, or geographic importance. Psychological significance assigned to a target reflects the thought processes of the adversary. For example, the birthplace of a political, religious, or cultural leader may hold greater psychological significance than its military value merits.
2. **Depth** is a measure of the time between the disruption of a target's activity and its measurable impact on system output. Average depth is a time construct designed to measure the average interval between the time the production of an item begins and the time the finished product appears in use by a tactical unit. Understanding the target's depth provides the targeteer with an important measure of the time available for the adversary to organize substitute consumption, alternate production, or procurement before the system is functionally degraded.
3. **Recuperation** is a measurement of the time and cost required for a target to regain its functional capability after being disrupted. By assigning each target a reconstitution or recuperation time factor, such as days required to rebuild the facility or perform the original function again, the amount of target value restored each day can be estimated. The target analyst can then determine the timing or necessity for a reattack.
4. **Capacity** is measured in two ways: current output and maximum output. Current output may be represented by such things as plant production based on the present labor force, economy of the country,

current demand for the product, and demonstrated production over the past two or three years. Maximum output is an assessment of full-capacity production based upon existing equipment and continuous operation over a 24-hour day.

(b) **Vulnerability** refers to the physical susceptibility to damage, disruption, intrusion, influence, or other desired effect. Vulnerability helps determine the size and types of force required to damage or disrupt a target (element), in addition to munitions and fuzing requirements. There are six characteristics that contribute to a target's vulnerability:

1. **Cushion** is a measure of the extent to which a single element or component can absorb a disruptive influence and continue to produce or provide the required product or service. Viewed from another aspect, cushion is that portion of the target that must be affected in order to achieve desired outcomes. Determining this point for an industry or a military activity requires detailed analysis of a system's operation, including idle plant capacity, replacement substitution and expansion capacity, civilian production use, production of nonessential military items or services, and production or provision of substitute materials or services.
2. **Reserves** provide a quantity of stored resources that may be use when the normal supply of the resource is disrupted. Assessment of reserves depends upon the estimation of the system use or flow rate. The measure of reserves is the percentage of the products used versus the total products available.
3. **Dispersion** is the geographic distribution of either the components in a target system or target elements within a target complex. An installation with a large number of dispersed elements presents a more difficult targeting problem than does a tightly concentrated installation. Alternatively, dispersion may degrade the adversary's capabilities by making his own operations more complex.
4. **Mobility** is a measure of the time required to shift a target's activity from one location to another. Mobility affects both location information perishability and friendly systems' ability to detect, locate, identify, and strike the target element.
5. **Countermeasures** are a measure of an adversary's ability to counter friendly systems attempt to disruptive activity of the target through active and passive means. Effective use of terrain, camouflage, emission controls, passive defenses (caves), and active defenses could negate the ability of the friendly system to exert an influence upon adversary activity.

6. Physical Characteristics are analyzed to determine the target's susceptibility to damage, disruption, or other effect. They include such elements as weight, shape, volume, construction, and sturdiness.

- (c) At the target component level, different elements should be geospatially identified on the installation and documented in ETFs. For example, an airfield has many elements that are required to operate effectively, such as personnel, munitions, runways, operations areas, ramps/parking aprons, hangars, and maintenance areas. It is also possible to assess the target's vulnerability using this methodology. The identification of links between target elements within a component allows the targeteer to more accurately define and highlight critical elements of a target, which facilitates aimpoint selection. Target element/component/set linkages, desired effects, objectives, and commander's guidance should be taken into account when highlighting critical aimpoints in the ETF. **ETFs built with clearly annotated critical elements will later allow for quicker JDPI and NLRP prioritization and selection in the weaponeering phase since critical JDPIs and NLRPs are already highlighted.**
- (4) **Modeling.** The next step in target development is to build an analysis model that explains the relationship between target elements and facilitates identification of HPTs. When preparing a model, the targeting analyst must estimate each target element's contribution to the overall activity to be affected or modified. After the model is developed, the analyst can then determine potential COAs for disrupting the desired component, set, or system.
- (5) **Identifying High-Value and High-Payoff Targets.** JFC components generate HVTs and HPTs as part of their normal targeting and target nomination processes.
 - (a) An HVT is a target the enemy commander requires for the successful completion of the mission. The loss of HVTs would be expected to seriously degrade important enemy functions throughout the friendly commander's area of interest. HVTs are identified by the J-2 during deliberate planning during the COA analysis phase. Once identified, a list of HVTs is compiled and used by the J-3 and J-5 to identify HPTs.
 - (b) HPTs are targets that are considered crucial for success of friendly component commanders' missions, but are not JFC-approved TSTs. HPTs are those HVTs that must be acquired and successfully attacked for the success of the friendly commander's mission. Time-sensitive and component-critical targets are usually special types of HPTs. Component and JFC target development and priorities will focus on these targets to ensure success of the mission.

- (c) Identification of HPTs continues throughout execution and provides focus for JFC target development and prioritization. Targets or target types identified as HPTs are included in operations directives and guidance on strike and assessment priorities. The HPT list is a prioritized list of HPTs by phase of the joint operation. The approved HPT list becomes a formal part of the fire support plan. HPTs should be specifically identified in CA products. Targeteers supporting the selection of HPTs must effectively communicate their rationale to the targets/CA team. Likewise, due to the dynamic nature of the OE and numerous changes this can bring to the JIPTL, targeteers need to work closely with planners to ensure all targeting priorities are continually clarified.

- (6) **Mobile Targets.** Target development of mobile targets suspected to be in a particular area, such as mobile missiles or HVIs, can identify the need for a geospatially-defined target area of interest (TAI) to help concentrate intelligence collection within the suspect area. Named area of interest (NAI) with desired points of impact (DPIs) can be created within the TAI to speed target execution once PID of the target is completed.

- (7) **Information and Cyberspace Operations Considerations for Target Development**
 - (a) IO target development fundamentals do not differ from those of traditional target development. The traditional methodology of identifying target systems, sets, components, and their critical elements remains valid. However, many IRCs require long lead time for development of the JIPOE and release authority. The J-2 identifies intelligence and information gaps, shortfalls, and priorities as part of the JIPOE process in the early stages of the JOPP. This expansion of the traditional concept of target systems will require an increase in the quantity and fidelity of intelligence collection. Likewise, there is an additional requirement for specific technical and analytical expertise.

 - (b) Due to the potential for long lead times, required to fulfill ICR's, target analysts must work to associate CO capabilities with potential target vulnerabilities and determine information gaps for those targets as early as possible. Furthermore, because of intense competition for scarce intelligence collection resources, stove-piped intelligence operations must be minimized and full data sharing must be required among target analysts and planners.

 - (c) Effective TSA will discern all the dimensions of an adversary's information systems and their inter-relationships. System dimensions include human factors, communications architecture, network topology, information flow, and functionality, among others. Target intelligence specialists must seek to include these interrelated elements when analyzing processes/systems to identify their critical elements.

e. **Entity-Level Target Development.** Entity-level target development is the second step of the JTC, phase 2, and builds on TSA. It conceptually occurs in three stages: basic, intermediate, and advanced. Each stage is defined by a minimum set of essential data required to progress a target from initial identification and functional characterization to execution-level detail. When these three stages are complete, the entity can be considered a fully developed target. Basic target development ensures the target has been uniquely identified. Intermediate target development ensures the target is sufficiently developed enough to be vetted. Advanced target development completes the target characterization process and defines the minimum information necessary to engage the target effectively. Entity-level target development textual data for all target types is databased in the MIDB and accessed, via interfaces of record such as JTT.

(1) Normally, basic target development begins after intelligence research and TSA. Basic target development can begin the process of identifying, locating, describing, functionally characterizing, and subsequently databasing entity-level target details. Basic target development analysis is required for all TDNs. When complete, basic target development will provide sufficient justification to assign the entity a unique entity identification (EID) (alphanumeric string in approved national databases), if one does not already exist. (See Figure III-11, Basic Target Development, for the minimum basic target development requirements.)

Target Development Requirements	Facility	Individual	Virtual	Equipment	Organization
1) Target Identification (Entity Identifier [EID])	Basic encyclopedia Number/O-Suffix	EID (Counterterrorism Identifier)	EID	EID	Unit ID/EID
2) Target Location	Geocoordinates	Last known location (minimum=country)	Physical (facility) or virtual (Internet Protocol address, etc.)	Last known location (minimum=country)	Primary Operating Area
3) Target Function	CATEGORY CODE	Functional Code	Functional Code	Functional Code	Functional Code
4) Target Significance		Addresses the Target's importance to the target system			

Figure III-10. Basic Target Development

(2) Intermediate target development completes characterization requirements for Phase 2 (Target Development and Prioritization) of the JTC, and ensures the entity qualifies as a candidate target and can be vetted. The requirements for intermediate target development include the basic level requirements, plus the following items found in Figure III-12, Intermediate Target Development.

Target Development Requirements	Facility	Individual	Virtual	Equipment	Organization
Target Significance (Continued)	Address target's importance to the target system				
Target Description	Describe the physical layout	Physical description (height, weight, eye & hair color, scars, tattoos, pattern of life, personal/familial history)	Describe physical attributes, content, and purpose	Describe physical makeup and purpose	Describe structure and mission
Functional Characterization	Elaborates on category/function code(s) and defines the specific actions/activities the target accomplishes and/or capabilities it provides for the target system				
Expectation Statement	The focus is not the target itself, but the effects on the target system				
ID Critical Elements	Those elements necessary for the target to perform its primary function				
Source Documentation	Provide a list of source data, to include serial numbers of associated reports				

Figure III-11. Intermediate Target Development

- (3) Advanced target development completes the target characterization process and defines the minimum information necessary to engage the target effectively. It normally occurs after a target has been validated by a target validation authority. Advance target development includes target vulnerabilities identification, weaponeering, aimpoint selection and development, and a collateral damage estimate. (In the event there are changes to target characteristics, such as location, physical makeup, function, etc., it may also be necessary to refine or adjust advanced target development data throughout the remainder of the JTC up to and including during Phase 5 - Mission Planning and Force Execution, of the JTC.)
- (4) Once an entity has been identified as a potential target (known as a TDN), an ETF should be started. ETFs are used to store entity-level target intelligence, operational, planning, and legal information. They are catalogued by an EID. Target materials (TMs) may be presentations of target intelligence and are stored in ETFs. TDNs are further developed and, when intermediate target development and command quality control standards are met, the entity is placed on a CTL. The CTL subsequently drives further target development and TLM.
- f. **Target Material Production.** TSA products include a list of potential targets and their associated ETFs. These folders contain target information, which includes validation data and approval messages, along with any identified potential collateral damage concerns or collateral effects associated with the target. ETFs should be continually updated as data is collected to reflect the most recent information regarding the target's status. An independent technical review of the compiled data helps to ensure mistakes do not proliferate through the rest of the targeting cycle. CJCSI 3370.01, *Target Development Standards*, contains detailed structure and content requirements for ETFs. These normally include:

- (1) Heading:
 - (a) Classification and Release
 - (b) EID Number
 - (c) Name
 - (d) Function/Cat Code (as appropriate)
 - (e) O-suffix (Facilities only)
 - (f) Location
 - (g) Country Code
 - (h) Original Production Date/Last Update
 - (i) Facility Description
 - (j) Facility Significance

- (2) Target Summary (Basic and Intermediate Target Development)
 - (a) Significance Statement (Intermediate for Facilities)
 - (b) Target Description (Intermediate)
 - (c) Functional Characterization (Intermediate)
 - (d) Expectation Statement (Intermediate)
 - (e) Critical Elements Description (Intermediate)
 - (f) IGL Concern Statements (Intermediate)
 - (g) Collateral Damage Considerations (Intermediate)
 - (h) Source Documentation (Basic and Intermediate)

- (3) Supporting Materials (Basic, Intermediate, and Advanced Target Development)
 - (a) Geospatial Intelligence (GEOINT)
 - (b) Other

- (4) Capabilities Analysis Support (Advanced Target Development)
 - (a) Target Vulnerability
 - (b) Suggested Weaponneering
 - (c) Aimpoint
 - (d) Collateral Damage Estimate
 - (e) Target Type Specialized Materials/Analysis

- (5) Assessment:
 - (a) Physical damage/change assessment
 - (b) Collateral Damage Estimate
 - (c) Functional damage/change assessment
 - (d) Munitions Effectiveness Assessment
 - (e) Reattack Recommendation
 - (f) Additional/Collateral Effects Assessment

- (6) Associated/Collocated:
 - (a) Units
 - (b) Equipment
 - (c) Facilities
 - (d) Individuals/Personnel

- (e) Groups/Organizations
- (f) Resources
- (g) Virtual

(7) End State and Commander's Objectives

(8) Related Information

g. **Target List Management.** TLM is the third step of the JTC Phase 2 and begins when a target is nominated for target development and ends with the creation and maintenance of a prioritized target list. TLM includes target vetting, validation, listing, nomination, and prioritization.

(1) Once a TDN meets basic target development criteria, it is entered into the MIDB, at which point the joint force may track the TDN via a TDN list. Because the MIDB is the DOD's authoritative database of finished general military intelligence, to include related targeting intelligence, a TDN will be cataloged in the MIDB to standards.

(2) Upon completion of TDN review and the determination that the target is sufficiently developed, the TDN can be considered a candidate target, eligible for vetting, and may be added to the CTL. In the event the TDN does not pass the TDN Review, it is not considered a candidate target and is returned to the nominator or developer, as appropriate, with detailed feedback on why it did not pass review.

(3) **Target Vetting.** Vetting is an intelligence function that helps mitigate operational risk by assessing the accuracy of the supporting intelligence to establish a confidence level in the characterization of the candidate target. Target vetting allows the joint force to engage the IC and other organizations' SMEs to establish a reasonable level of confidence in the candidate target's functional characterization based on a review of the ETF and supporting intelligence. Note: The importance of vetting cannot be overstated. Commanders may choose to forgo vetting, but this approach is not recommended and may significantly increase the commander's operational risk.

(a) Eleven elements are required to submit an entity for vetting, but vetting votes will be based on the following seven elements: target identification, target location, target function, target description, functional characterization of the target, critical elements, and sourcing. Agencies may identify considerations for target engagement restrictions by providing comments on target significance, target expectation statement, collateral damage considerations, and intelligence gain/loss concerns. The decision to validate a target to the Joint Target List (JTL) or Restricted Target List (RTL) with specific restrictions is informed by these additional four elements.

- (b) Vetting is initiated when the joint force sends a vetting request to points of contacts in the IC. The standard list of participating agencies will include the CIA, DIA, NGA, and NSA. The IC has limited capacity to vet targets, so targets submitted for vetting should normally include those of greatest risk (dual use, weak sourcing, etc.). Standard vetting requests will not exceed 20 targets per command within 10 working days. Vetting agencies vote on the accuracy of the characterization of the target presented in the ETF within their intelligence discipline. Vetting votes are not dependent on target engagement concerns. **The only four votes that can be cast are: CONCUR, CONCUR PARTIALLY, NONCONCUR, and NO REPORTING/EXPERTISE.** Agencies will also identify any engagement concerns of the target within their intelligence discipline and flag them for the CCMD/JFC to consider during prioritization, effects, and collateral damage processes by recording an additional response of NO CONCERNS or CONCERNS.
- (c) Vetting responses must be recorded and associated with the target in the MIDB and linked to the ETF. CIA, DIA, NGA and NSA will record their votes in the MIDB directly. For agencies without MIDB access, votes will be recorded by the joint force in the vetting remark in MIDB. If vetting votes are not received in the allocated time, the joint force will NOT record the missing vote as a “CONCUR” or as “NO REPORTING/EXPERTISE.” The joint force will exercise due diligence in obtaining a vote. If the joint force cannot obtain a vote from a vetting partner, it will document all efforts to obtain a vetting vote and enter “NO VETTING RESPONSE WAS PROVIDED” by that agency. This must be briefed to the commander or delegated target validation authority.
- (4) **Target Validation.** Target validation is a legal and operations function, and JFC responsibility that ensures all vetted targets meet the objectives and criteria outlined in a commander’s guidance. In addition, target validation ensures whether attacking the target would be in compliance with LOW and ROE. In bilateral or coalition environments, targets must also be validated against allied concerns. Target vetting and validation should be revisited as new intelligence becomes available or the situation changes. Validation authorities vary and can include the JFC or delegated to a properly appointed flag officer (typically the J-3). A legal advisor will make a recommendation to the target validation authority regarding the candidate target’s validity with respect to the LOW and ROE. Ultimately, the JFC is responsible for validating targets. Validation results shall be documented in the MIDB.
- g. **Target List Development.** Various target lists are created for use by the JFC. Responsive and verifiable procedures must be in place for additions or deletions to the lists. Commanders should be aware of the larger impact when individual targets are removed from the target list. The removal of one seemingly isolated target may cause an entire target set to be invalid and require a different grouping

of target components to create the same effect. Joint targeting has established the following target lists.

- (1) **Candidate Target List.** The CTL is a list of selected TDNs (see Figure III-13, Target Development, Nomination, and Prioritization) which have met intermediate target development criteria and are submitted to the JFC for vetting and validation. National agencies, the JTF staff, joint forces subordinate to the JFC, supporting unified commands, and components all submit TDNs to the JFC for inclusion on the CTL. If a candidate target is not assessed as a valid military target, it is removed from the CTL but not placed on the JTL or RTL. There is no prescribed list on which to place the rejected candidate target. However, in certain cases the entity could go on the NSL.
- (2) **Joint Target List.** If a candidate target is assessed as a valid military target and there are no target engagement restrictions, it is removed from the CTL and placed on the JTL of the appropriate plan. The JTL is a dynamic database; the JTF J-2 modifies this database to include periodic TDN inputs from national agencies, CCMDs, and assigned component forces. In simpler terms, what the **JTL** means to target development is it is **a list of all the valid targets available for nomination for some type of action**. The JTL is not a component specific list; these are targets available for any type of exploitation or attack, lethal or nonlethal, air, ground, or other delivery methods.
- (3) **Restricted Target List.** If the target validation authority decides there needs to be restrictions placed on the engagement of a valid target, that target will be removed from the CTL and annotated with the specifics of the restriction in a Strike Restriction remark in the MIDB and placed on an RTL. The nature of the restrictions placed upon a target can range from a nuanced limitation on when or how a target can be serviced, to a specific prohibition on engaging the target due to operational, political, and/or collateral damage concerns. **Regardless, these restrictions do not change the fact targets on the RTL are valid military targets.**
- (4) **Target Nomination List.** CCMD staffs, and JTF components and subordinates select targets from the JTL and/or RTL to compile their respective TNLs, and forward them to the JFC. The TNLs are then reviewed, combined, validated, and prioritized at a JTCB/JECB to form a draft JIPTL that is submitted to the JFC for approval. (Note: the JFC may designate the JTCB as approval authority.) Targets are checked against the NSL at each successive level. Component commanders must request the JFC (or the JFC's appointed representative) review and approve RTL targets nominated to the JIPTL before execution.
- (5) **Joint Integrated Priority Target List.** The JIPTL is formed from consolidating and prioritizing the component TNLs based on prioritized JFC objectives.

(6) The JFC may also prohibit or restrict joint force attacks on specific targets, entities, or objects based on military risk, LOW, ROE, or other considerations. Targeting restrictions fall into two categories, no strike and restricted.

(a) **No Strike List.** The NSL is a list of objects or entities characterized as protected from the effects of military operations under LOW, international law, and/or the ROE. Attacking these entities may violate the LOW (e.g., cultural and religious sites, embassies belonging to noncombatant countries, hospitals, schools) or interfere with friendly relations with other nations, indigenous populations, or governments. The NSL is compiled independently of, and in parallel to, the CTL. It is important to note, however, entities from the CTL may be moved to the NSL if, as a result of additional target development (vetting), it is determined attacking them may violate the LOW. Conversely, entities placed on a NSL may be removed and become subject to military action if their status as a protected object or entity has changed. **NSLs are not target lists, since the entities on the NSLs are not targets.**

For additional information on no-strike entities and NSLs, see CJCSI 3160.01 Series, No Strike and the Collateral Damage Estimation Methodology.

(b) **Restricted.** A restricted target is a valid target that has specific restrictions placed on the actions authorized against it, due to operational considerations. Actions that exceed specified restrictions are prohibited until coordinated and approved by the establishing HQ. Attacking restricted targets may interfere with projected friendly operations. Targets may have certain specific restrictions associated with them that should be clearly documented in the ETF (for example, day attack only, strike only with a certain weapon, etc.). When targets are restricted from lethal attacks, commanders should consider nonlethal capabilities as a means to achieve or support the commander's objectives. However, use of nonlethal capabilities in targeting should not be limited to the case where lethal capability use is restricted.

(7) Some targets may require special precautions, such as chemical, biological, or nuclear facilities or targets in close proximity to no-strike targets. When targets are restricted from lethal attacks, targeteers should consider nonlethal capabilities as a means to achieve desired effects or support the objectives.

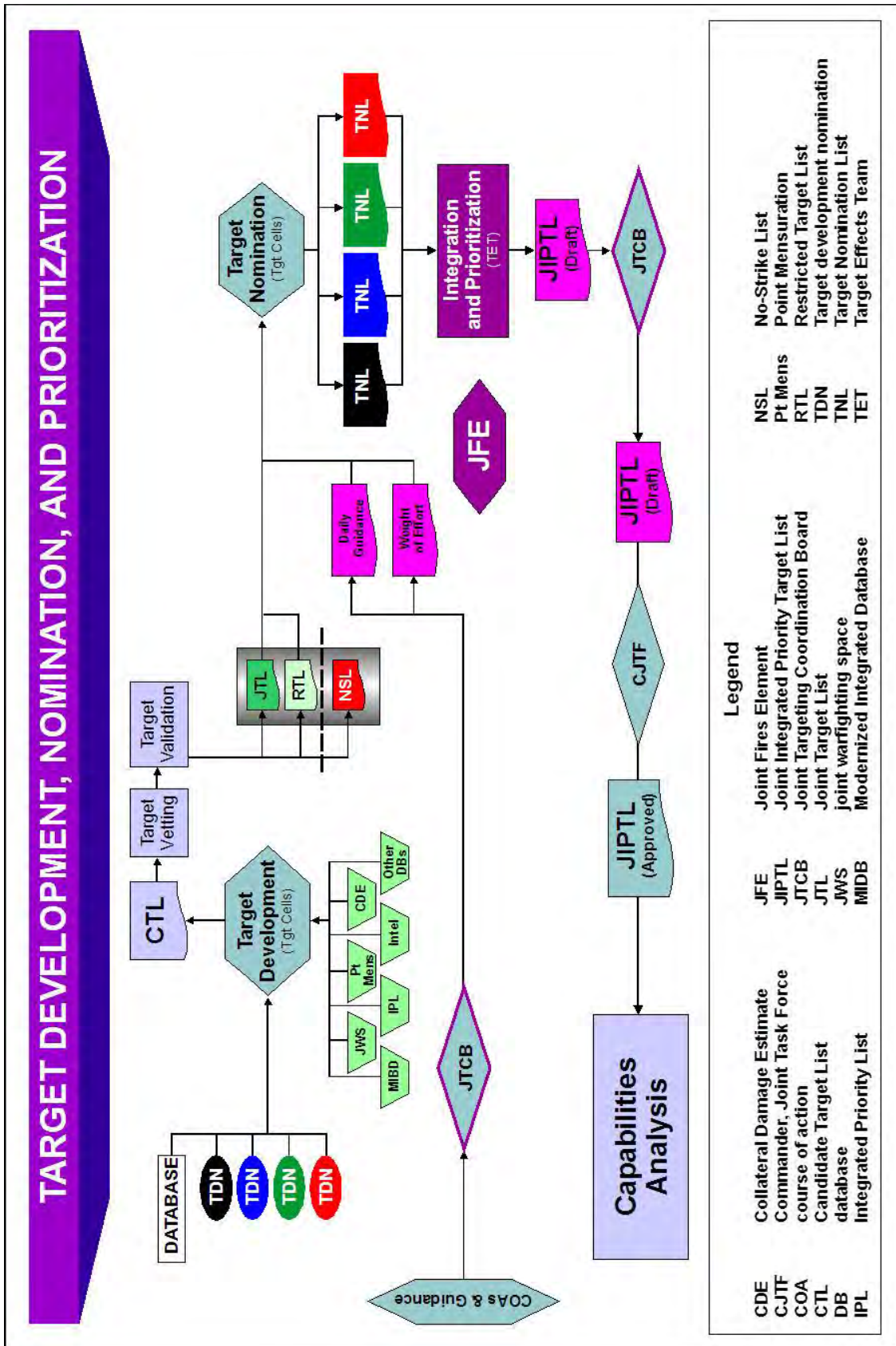


Figure III-12. Target Development, Nomination, and Prioritization

h. **Prioritization.** All joint force components provide their respective priorities during the JIPTL development process. Component priorities are reflected in their respective component prioritized target lists. The JFC or JFACC approves target priorities at the JTCB. JFC-designated approval authority has final approval for target prioritization. The TET chief acts as the JFACC's representative and maintains a JFC focus versus a more restricted air component focus when conducting TET duties, if the JFACC has been delegated the JFC targeting approval authority. Likewise, the JFE (if formed under the JTF J-3) coordinates and synchronized military fires for the JFC, but the TET considers all aspects of the PMESII and takes the broader perspective. Target prioritization must reflect JFC guidance and intent. The JAOC typically uses the strategy-to-task methodology to ensure each target on the JIPTL can be traced directly back to a JFC operational objective. (See Table III-5, Targeting Criticality Categories.)

TARGETING CRITICALITY CATEGORIES	
CATEGORY	CRITERIA
A	<p>Targets absolutely must be tasked for attack on the air tasking order (ATO) for which the joint integrated prioritized target list (JIPTL) is being built because:</p> <ul style="list-style-type: none"> • The target is essential for mission success in support of current objectives (or is a designated HPT [high-payoff target] or TST [time-sensitive target]) • It is crucial to the overall success of the operation • It will have immediate and compelling effects • Its timeliness as an urgent target may not exist in the future • If not targeted, negative consequences may seriously jeopardize future JTF [joint task force] operations
B	<p>Targets need to be tasked for attack on the ATO for which the JIPTL is being built because:</p> <ul style="list-style-type: none"> • Targets have substantial, but not immediate, impact on the battle • The cascading effects this target provides may not be realized in the future • If not targeted on this ATO, a significant level of effort may be required later • If not targeted, negative consequences may significantly hamper joint force commander (JFC) operations
C	<p>Targets desired to be tasked for attack on the ATO for which the JIPTL is being built because:</p> <ul style="list-style-type: none"> • It will contribute to the battle, but it is not critical to mission success • It will further the success of the operation • It will eventually require targeting due to the JFC's future plans • If not targeted on this ATO, negative consequences will probably not impede future operations

Table III-13. Targeting Criticality Categories

i. **Target Nomination.** Component commanders, national agencies, supporting commands, or the JFC staff submit prioritized target nominations (via TNLs) to the JFACC through their designated representatives in the JAOC. Service or functional components identify specific target nominations and submit them in a variety of formats or utilizing MIDB replication. The JAOC CPD then begins an early consideration of component nominations as candidates for ATO planning. This facilitates early identification of long lead CRs, conflicts, duplication, and prioritization issues. (See Table III-6, Example Target Nomination List, for an example of a TNL.)

- (1) Copies of Service or functional component TNLs are submitted to the JFC's designated representative (usually within the JTF J-3 or JFE, if formed) for review at the same time they are sent to the JFACC/JAOC.
- (2) Component representatives at the JTCB also receive copies of their TNLs. It is essential the component representatives at the JTCB are fully attuned to the priorities, objectives, and supporting rationale behind their commander's targeting efforts. Failure to receive timely targeting information will result in

an inability of component representatives to properly represent their commander's interest in the JTCB.

- (3) The JFC J-3 staff representative (often the JFE) reviews all Service or functional component TNLs in preparation for each JTCB. The JFE is focused at the JFC level and deals with coordination and synchronization of military fires. The JFE then provides input to the TET for joint targeting and to the components for organic targeting.
- (4) The TET also reviews the TNLs, but is more broadly focused on the entire PMESII. The TET takes input from the JFE, then coordinates any remaining issues and develops the draft JIPTL for JTCB consideration. The intent is to compare nominations with JFC target guidance and priorities to identify potential conflicts or problems before the JTCB meeting. This speeds up the targeting process and keeps the JTCB from becoming bogged down in working detailed coordination.
- (5) Unique target nominations outside of the process above must also be considered and are handled in the following manner.
 - (a) Special targets are often developed by higher HQ/authority, such as the President of the United States, SecDef, or the CCDR, and forwarded to the JFC for JIPTL inclusion. Mostly, these special targets are critical HPTs of strategic military or political importance. Special targeting and release authority for use of "national asset" weapons is normally controlled at the CCMD level.
 - (b) Components also submit HPTs that require "time-sensitive" treatment or dynamic targeting, since they cannot wait for servicing through the deliberate targeting process, such as targets that have become vital to their scheme of maneuver or immediately threaten to their forces.
 - (c) The JFC's targeting representative also reviews a prioritized list of JFC-level target nominations and transmits them to the JFACC/JAOC for inclusion by the TET in the recommended daily JIPTL.

Example Target Nomination List

Requested Air Interdiction Missions for Air Tasking Order K																																													
ARFOR Priority	BE# UIC	Name	Latitude	Longitude	Request#	Desired TOT	Desired Effects	JFACC Priority	Remarks																																				
1		HQ IV Corps SA-6 Bde	325000N	1040700W	3E2501N	251200Z	Neutralize point defense tactical SAM systems (MOE: Less than 20 % full systems engagements)		AY0010																																				
2		HQ IV Corps SA-6 Bde	325600N	1042100W	3E2502N	251215Z	Neutralize point defense tactical SAM systems (MOE: Less than 20 % full systems engagements)		AY0011																																				
3		HQ 42 MR Div SA-6 Bde	322500N	1054500W	3E2503N	251300Z	Neutralize point defense tactical SAM systems (MOE: Less than 20 % full systems engagements)		AY0023																																				
4		HQ 44 IN Div SA-6 Bde	321700N	1053300W	3E2504N	251245Z	Neutralize point defense tactical SAM systems (MOE: Less than 20 % full systems engagements)		AY0037																																				
5		HQ 64 IN Div SA-6 Bde	333600N	1050500W	3E2507N	251330Z	Neutralize point defense tactical SAM systems (MOE: Less than 20 % full systems engagements)		AY0044																																				
6		IV Corps SS-21 Bde	324800N	1040500W	3E2508N	251400Z	Attrit 30%		AY0006																																				
7		IV Corps Helicopter Bde	325000N	1041900W	3E2509N	251500Z	Attrit 30%		AY0007																																				
8		Rail Yard	325010N	1034501W	3E2510N		Neutralize for 72 Hrs		AY0085																																				
9		Rail Bridge	324904N	1021603W	3E2512N		Neutralize for 72 Hrs		AY0087																																				
Requested Special Missions																																													
		None for this ATO																																											
Pre-Planned ATacMS Missions																																													
1		SA-6 Battery	330100N	1035900W		250300Z	Neutralize for 24 Hrs		AY0088																																				
2		HQ 64 IN Div	333100N	1050000W		250300Z	Attrit 30%		AY0039																																				
3		HQ 43 IN Div	331100N	1045400W		250400Z	Attrit 30%		AY0025																																				
Pre-Planned Army Aviation Missions																																													
1		41 AR Div SS-21 Bn	325000N	1045000W			Attrit 50%		AY0018																																				
2		34 Tank Bde 42 MR Div	321700N	1043500W			Attrit 30%		AY0022																																				
<p>Legend</p> <table style="width: 100%; border: none;"> <tr> <td>AR</td> <td>armor</td> <td>IN</td> <td>infantry</td> </tr> <tr> <td>ARFOR</td> <td>Army Forces</td> <td>JFACC</td> <td>Joint Force Air Component Commander</td> </tr> <tr> <td>ATacMS</td> <td>Army Tactical Missile System</td> <td>MOE</td> <td>measure of effectiveness</td> </tr> <tr> <td>Bde</td> <td>brigade</td> <td>MR</td> <td>motorized rifle</td> </tr> <tr> <td>BE</td> <td>Basic Encyclopedia</td> <td>SA</td> <td>surface-to-air</td> </tr> <tr> <td>Bn</td> <td>battalion</td> <td>SAM</td> <td>surface-to-air missile</td> </tr> <tr> <td>Div</td> <td>division</td> <td>SS</td> <td>surface-to-surface</td> </tr> <tr> <td>Hq</td> <td>headquarters</td> <td>TOT</td> <td>time on target</td> </tr> <tr> <td>Hrs</td> <td>hours</td> <td>UIC</td> <td>unit identification mode</td> </tr> </table>										AR	armor	IN	infantry	ARFOR	Army Forces	JFACC	Joint Force Air Component Commander	ATacMS	Army Tactical Missile System	MOE	measure of effectiveness	Bde	brigade	MR	motorized rifle	BE	Basic Encyclopedia	SA	surface-to-air	Bn	battalion	SAM	surface-to-air missile	Div	division	SS	surface-to-surface	Hq	headquarters	TOT	time on target	Hrs	hours	UIC	unit identification mode
AR	armor	IN	infantry																																										
ARFOR	Army Forces	JFACC	Joint Force Air Component Commander																																										
ATacMS	Army Tactical Missile System	MOE	measure of effectiveness																																										
Bde	brigade	MR	motorized rifle																																										
BE	Basic Encyclopedia	SA	surface-to-air																																										
Bn	battalion	SAM	surface-to-air missile																																										
Div	division	SS	surface-to-surface																																										
Hq	headquarters	TOT	time on target																																										
Hrs	hours	UIC	unit identification mode																																										

Table III-14. Example Target Nomination List

- j. **Draft Joint Integrated Prioritized Target List.** The draft JIPTL is a consolidated list of all TNs and then prioritized based on JFC objectives. Normally, this is done by the TET in the JAOC. The strategy guidance team must identify priority of critical tasks and time/sequence factors related to critical tasks for inclusion in the AOD to provide initial prioritization of targets. Each tactical task, effect, and objective is linked and prioritized to support the JFC's operational effects and objectives. Targets are initially prioritized by their

associated tactical task. Targets must then be independently prioritized resulting in a draft JIPTL.

(1) Those compiling the draft JIPTL consider the estimated available capabilities and their ability to affect the targets on the list. The list usually contains more targets than there are resources available to take action. Thus, a draft JIPTL “cut line” is usually established. This “cut line” should reflect which targets will most likely have action taken against them for that ATO cycle. This prioritized listing of targets, with the projected “cut line,” is essential feedback for Services, functional components, as well as the JFC staff on how their specific target nominations do or do not fit into the creation of effects.

(2) It must be clearly understood the “cut line” simply reflects an estimate of resources available to take action against targets in priority order and does not guarantee that a specific target will be attacked. Other variables like TSTs, evolving JFC priorities, and changing resource availability will determine which targets are ultimately serviced

k. **Joint Integrated Prioritized Target List.** After the draft JIPTL is consolidated, prioritized, and deconflicted, it must be approved by the JFC (or designated representative) before the component commanders can use it to prepare their plans and orders.

(1) Intelligence support to this process includes ensuring target information is complete and accurate, targets are clearly related to objectives, and the selection rationale is clear and detailed. This may include specifying which targets must be serviced as integrated targets (sets or individually), the sequence, and which pose potential collateral damage concerns (see Table III-7, Notional Joint Integrated Prioritized Target List).

(2) Not all targets on the JIPTL are fixed. Although any component can nominate any type target, the ground component typically nominates most mobile targets for attack during this process. Ground component personnel do this by assigning a unit identification code to fielded forces they wish to target. Using the BE number is not useful because that number is linked to a garrison location and the intent is to attack forces as they move in the OE. The nomination of mobile targets should include desired effects and a predicted location, usually in a Global Area Reference System (GARS) format. Mobile targets will require location updates as they are tracked throughout the ATO cycle, which include the most recent update time, source of airborne sensors, and further refinement of target location. Even when the location of a target is not known 48 hours in advance, the target development team can still nominate those targets for inclusion on the JIPTL. A definitive aimpoint-servicing capability can be assigned to that target (based on desired effects) allowing a more accurate estimate of whether the target will make the list above the cut line. If strategy development and TET processes are accurate

and supported with timely intelligence information, the necessity to perform dynamic targeting in combat operations can be reduced.

NOTIONAL JOINT INTEGRATED PRIORITIZED TARGET LIST														
PRIORITY	BE# or UIC	Osfx	Cat	CC	Target	Location			Remarks	Nom by	JFACC task in priority	USER requested priority	Army track #	Previous target category nom
						Lat	Lon	Alt						
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
01					WEBB AFLD					ACC	01A3-1	01		A, B, C
02					REESE AFLD				Shut 24 Hrs	ACC	01A3-1	02		B, C
03					LUBBOCK AFLD				Shut 24 hrs	ACC	01A3-1	03		B, C
04					TERRY AFLD				Shut 24 hrs	ACC	01A3-1	04		C
05					NODONG STORAGE SITE				DESTROY	ARFOR	02W3-1	01	3E1501N	
06					SCUD C STORAGE SITE				DESTROY	ARFOR	02W3-1	02	3E1502N	
07					SCUD B STORAGE FAC				DESTROY	ARFOR	02W3-1	03	3E1503N	
08					SAN ANGELO SA-2 SITE 4 RDR FAC					ACC	03A3-4	15		
09					AMARILLO ADEF IOC AND RADAR FAC					ACC	03A3-4	16		A
10					SAN ANGELO ADEF IOC AND RADAR FAC					ACC	03A3-4	17		A
11					SEMINOLE AW SITE					ACC	03A3-4	18		B
12					FARWELL AW SITE					ACC	03A3-4	19		B

LEGEND	
(a)	JIPTL priority
(b)	BE, a specific identification number or point location of a facility or installation. Facility BE Number and OSFX may only be used if no other Geospatial Coverage category elements are supplied.
(c)	A specific identification number or point location, in conjunction with a Facility BE Number
(d)	Category code
(e)	Country code
(f)	Target Name
(g)	Location: 3 D coordinates
(h)	Location: 3 D coordinates
(i)	Location: 3 D coordinates
(j)	Desired effect
(k)	Nominator
(l)	Applicable tactical task
(m)	Nominator's priority order
(n)	Army track number
(o)	Previous targeting criticality category nominations

LEGEND (ACRONYMS)					
A/C	aircraft	BE	basic encyclopedia	JIPTL	joint integrated prioritized target list
ACC	air component commander	Cat	category	Lat	latitude
ADEF	air defense (foreign)	CC	country code	Lon	longitude
AFLD	airfield	FAC	forward air controller	Nom	nominated
Alt	altitude	Hrs	hours	RDR	Radar
ARFOR	Army forces	IOC	intelligence operations center	SA	selective availability (GPS)
AW	air warfare	JFACC	joint force air component commander	UIC	unit identification code

Table III-15. Notional Joint Integrated Prioritized Target List

I. Joint Integrated Prioritized Collection List.

- (1) Determining collection and exploitation requirements throughout the targeting cycle/steps is critical to creating efficiency and synergy in targeting efforts. This effort attempts to answer the question, “how will we know when we’ve created the desired effects or achieved the objectives?” Collection and exploitation requirements must be articulated as early as possible to support target development, execution, and assessment. Targeteers must work closely with collection managers (CMs) to ensure target development and pre-strike, post-strike, and tasking change requirements are integrated into the collection plan. Properly identifying collection and exploitation requirements is one of the keys to effective JIPOE. The product of this step should be a JIPCL.

- (2) The JIPCL is a prioritized list of intelligence collection and exploitation requirements needed to support I&W, analysis, future target development efforts, and to measure creation of desired effects and achievement of objectives. The ISR operations team uses the JIPTL and other CRs to produce the JFACC’s component prioritized collection list (CPCL). JFC CMs consolidate all component CPCLs into the JIPCL which is approved at the joint collection management board (JCMB). An approved JIPCL is a useful product for answering information gaps as well as the collection and exploitation requirements stage of target development. To ensure synchronization between the JIPCL and JIPTL, ISR operations personnel and targeteers coordinate the parallel processes.

4. Phase 3 – Capabilities Analysis

- a. **Overview.** This phase of the JTC involves evaluating available capabilities against targets’ critical elements to determine the appropriate options available to the commander for target engagement while highlighting the best possible solution under given circumstances. Commanders also consider risks to the force and collateral concerns in evaluating available capabilities. Estimates of required weapons or capabilities shape other planning considerations within the joint force. For example, weapons requirements will drive significant portions of theater logistic planning efforts. The primary purpose of capabilities analysis is to maximize the employment efficiency of forces through application of enough force to create the desired effects while minimizing collateral damage and waste of resources.
 - (1) During the capabilities analysis phase, the weaponeer estimates the most likely outcome resulting from employing selected capabilities against a specific target element to create a specific effect. These estimates may be generated using mathematical models (e.g., Joint Munitions Effectiveness Manuals [JMEMs]) that take into account the target’s critical vulnerabilities, performance data on the weapons contemplated for application against the target, and means of delivery. The weaponeer focuses on the target’s physical, functional, cognitive, and environmental characteristics to determine how to leverage vulnerabilities. Nonlethal capabilities should be considered as part of

this analysis. Effects estimates should also take into account estimated repair and recuperation times when matching capabilities with vulnerabilities. An account for reuse and reconstruction during later planning phases should also be included to avoid negatively affecting the end state.

- (2) All estimates generated during this phase are situation-specific, reflecting the pairing of forces against targets under particular conditions of employment. As such, users of this information are cautioned against assuming the estimated effectiveness of a force capability under one set of circumstances is broadly applicable to other circumstances. Relatively minor targeting variations may have a significant unintended impact on effects estimates. It is equally important to stress these estimates of performance are not designed to take into account considerations outside the realm of asset target interaction (ATI) (e.g., they do not address whether or not the delivery system will survive to reach the target). Estimates of consequences only consider the first order effects of ATI and do not model higher-order desired effects or unintended collateral effects.
 - (3) The capabilities analysis phase is also referred to in the air tasking cycle as the weaponeering/allocation phase. Although weaponeering is primarily an operational level function as performed during the joint targeting process, it may also be performed at the strategic and tactical levels of warfare.
 - (4) The IC, including federated partners, plays a role in capabilities analysis by ensuring the TMs they provide include the estimative analyses required to make valid assessments. The intelligence provided in this phase is also used to refine CRs.
- b. Capabilities analysis is comprised of four steps outlined below.

- (1) **Target Vulnerability Analysis.** Building on the critical target elements identified in Phase 2, target vulnerability analysis reveals all aspects of the target that, if engaged, would result in a reduction in the target's ability to perform its function for the adversary.
- (2) **Capabilities Assignment.** Once a target's vulnerabilities are known, appropriate target engagement capabilities are assigned. Target engagement capabilities may be either lethal or nonlethal weapons or capabilities. All target engagement types must be accounted for in capabilities analysis. Weaponeering is accomplished in this step for all lethal capabilities and some nonlethal capabilities from other mission areas (i.e., technical capabilities such as space, EW, and cyberspace capabilities). Once capabilities are assigned to vulnerabilities, a list of these ATIs is created and evaluated in the next step.
- (3) **Feasibility Assessment.** Each of the ATIs must be evaluated for feasibility. For example, a lethal weapon might be able to neutralize a particular target's function, but because the target is located in a country for which we have no

lethal authorities (and would not receive approval for), this ATI would be “unfeasible.”

- (4) **Effects Estimate.** Each feasible ATI should have first-, second-, and higher-order effects identified. Sometimes this is done by a command’s red team. Collateral damage is a second order effect. CDE is a process normally performed by trained and certified personnel at various echelons. CDE is intended to characterize the level and extent of collateral damage risk for a commander. Higher-order effects may include such actions as diplomatic and public relations consequences arising from collateral damage or the potential for post-hostility economic costs to restore damaged adversary infrastructure. Attrition calculations may be included in this step. These effects estimates are essential in gaining the JFC’s approval in Phase 4, Commander’s Decision And Force Assignment.
- c. **Weaponeering.** Weaponeering is the process of determining the quantity of a specific type of lethal or nonlethal means required to create a desired effect on a given target. Weaponeering considers such things as target vulnerability, enemy actions (the effects of actions and countermeasures), weapon characteristics and effects, munition delivery errors and accuracy, damage mechanism and criteria, probability of kill, weapon reliability, and trajectory. While keeping the JFC’s objectives, desired effects, tasks, and guidance in mind; the JTL, JIPTL, targeting objectives, and targeting effects provide the basis for weaponeering assessment activities. Weaponeering is conducted in the third phase of the JTC, but it is embedded into target development, force selection, and execution planning. It is a core competency of targeting, although many confuse targeting with weaponeering. Targeteers quantify the expected results of lethal and non-lethal weapons employment against prioritized targets to produce desired effects. Since time constraints may preclude calculations of potential effects against all targets, calculations should proceed in a prioritized fashion that mirrors the target list.
- (1) The Services, Joint Technical Coordinating Group for Munitions Effectiveness (JTCG/ME), DIA, Joint Warfare Analysis Center (JWAC), and the Defense Threat Reduction Agency (DTRA) have developed a number of quantitative techniques used to estimate weapons effectiveness and collateral damage risk. The JTCG/ME develops analytical methods for measuring and predicting weapons (munitions) effectiveness. Weapons effectiveness is a statistical estimate of the results expected from specific munitions effects, target environment, damage criteria, delivery accuracy, munitions reliability, and ballistics. This should be closely tied to MEA in CA. The JTCG/ME also produces a large body of scientifically valid data related to specific weapons, munitions, and appropriate targets. It results in probable outcomes given many replications of an event. It does not predict the outcome of every munition delivery, but represents statistical averages based on modeling, weapons tests, and data collected from the execution of real-world operations. With modern precision and near-precision weapons, however, the probabilities of accurate delivery and achieving intended direct effects are very high and are still

improving. The JTCG/ME devised mathematical models, which enable weaponeers to predict the effectiveness of weapons against most significant targets. Inputs to these methodologies include factors such as target characteristics (size, shape, and hardness) and delivery parameters (altitude, speed, dive angle, etc.). Model outputs include the amount of force required to achieve specified damage levels in terms of stated damage criteria, which provides weapons effectiveness comparisons.

- (2) Weaponeering is normally done by the ISRD targeting team prior to TET using methodologies prepared by the JTCG/ME and data found in the JMEM. The final weaponeering is chosen during the MAAP development. The output of weaponeering is a recommendation of the quantity, type, and mix of lethal and nonlethal weapons needed to achieve desired targeting effects while avoiding unacceptable collateral damage.
- (3) Targeteers must know the capabilities and availability of platforms, weapons, and fuzes for kinetic weapons. They must also be familiar with the standard conventional load for platforms operating in their OA and their delivery tactics. Weaponeering results will only be useful if the employment parameters assumed in the weaponeering process match those used in execution. Targeteers should work closely with the operations, logistic staff, and LNOs to obtain required information. As a rule of thumb, theater component targeting branches should request a copy of the time-phased force and deployment data to obtain units' expected input options selected from the JMEM's automated programs to provide realistic planning data. Weaponeering must also take into account the availability of the various weapons being considered. Certain high-value weapons, such as those capable of deep penetration or other special effects, are normally limited in number and should only be used against those targets that both require the weapon for successful attack and are of sufficiently high priority to warrant the expenditure of the resource. Making these decisions is part of "target allocation." Finally, some weapons, particularly certain IO capabilities, must be thought about early and included in the estimate process due to the requirement for long lead time in planning, deployment, and approval.
- (4) The weaponeering process is broken down into several general steps and is not tied to a specific methodology or organization. Because all of the steps are not rigid and may be accomplished in different order or combined, the weaponeer may use the following steps offered by JTCG/ME as a guide:
 - (a) Step 1 – Obtain needed target data
 - (b) Step 2 – Determine an appropriate desired effect
 - (c) Step 3 – Determine desired probability of damage (P_D)
 - (d) Step 4 – Determine available aircraft, ordnance/tactics to be evaluated

- (e) Step 5 – Evaluate, optimize, and validate weapons effectiveness
- (f) Step 6 – Prepare and present documentation and recommendation
- (g) Step 7 – Review Collection Requirements (CRs). Although not included as a general step in the weaponeering process, it is important for the targeting analyst to review the CRs to determine if they are adequate or will need modification. New requirements or changes in priority must be submitted immediately. Keeping track of CRs, keeping requirements current, and synchronizing collection efforts are ongoing critical tasks.

KEY TERMS

Desired point of impact [DPI] — a precise point, associated with a target, and assigned as the impact point for a single unitary weapon to create a desired effect. Desired Point of Impact is becoming more and more prevalent with the increased reliance on J series weapons because of the accuracies involved. JP 3-60.

Joint desired point of impact (JDPI) — a unique, alpha-numeric coded aimpoint identified by a three dimensional (latitude, longitude, elevation) mensurated point. It represents a weapon or capabilities desired point of impact or penetration and is used as the standard for identifying aimpoints. JP 3-60.

For additional information on the weaponeering process, see Joint Munitions Effectiveness Manual Weaponeering System (JWS).

- d. **Collateral Damage Estimation.** CDE begins in the target development phase and continues through execution. CJCSI 3160.01 Series, *No-Strike and Collateral Damage Estimation Methodology*, details a specific DOD-wide collateral damage methodology (CDM). Targets with associated collateral damage concerns that are expected to exceed theater (CCMD) thresholds are referred either to the SecDef or President using the STAR process detailed in CJCSI 3122.06 Series, *Sensitive Target Approval and Review (STAR) Process* (Classified).
 - (1) DOD policy requires the US military to comply with the principles and spirit of the LOW during all operations, unless otherwise directed by competent authorities. The LOW requires combatants to refrain from intentionally targeting civilian or noncombatant populations or facilities. In accordance with the LOW, the anticipated injury or loss of civilian or noncombatant life, damage to civilian or noncombatant property incidental to attacks (collateral damage), must not be excessive in relation to the military advantage expected to be gained. Failure to observe these obligations could result in excessive impacts on civilians and noncombatants, and be considered a LOW violation. This situation could subject the US leadership and military to global criticism -- potentially adversely impacting assigned military missions and national goals.

- (2) The CDM is a simple and repeatable process that encompasses the joint standards, methods, techniques, and processes for a commander to conduct CDE and mitigate unintended or incidental damage or injury to civilian or noncombatant persons or property or the environment. It assists commanders in weighing risk against military necessity and in evaluating proportionality within the framework of the JOPP. In short, the CDM is a means for a commander to adhere to the LOW. These joint standards and methods for conducting CDE apply across the range of military operations. In addition, the CDEs that result from the CDM are meant to inform decision makers and commanders and are not decisions themselves. The CDM assists senior leaders to evaluate collateral risk against military necessity during the planning and execution of combat operations.
- (3) The framework of the CDM is built around five mutually dependent CDE levels (CDE Levels 1 through 5) that supports the employment of conventional munitions across the range of military operations. Each level is based on a progressively refined analysis of weapon effects, the physical environment, target characteristics, and delivery scenarios with specific risk thresholds established for each of the five CDE levels. As the CDM moves through the CDE levels, the level of analysis and risk the commander accepts increases as do restrictions placed on the weapon's delivery. It is important to understand that the CDM and the products derived from CDE are not the only input to a commander's decision making. Operational objectives, end-state considerations, LOW, ROE, target characteristics, risk to friendly forces, and strategic risk are examples of the many factors that contribute to a commander's decision making. These factors, either alone or in combination, may outweigh the value of the CDM input.
- (a) CDE Level 1: Initial Analysis. Is the most important and complex step in the CDM. The information gained during CDE Level 1 is required to accomplish the remaining steps of the methodology. Level 1 evaluates the target's functionality for dual-use concerns, identifies potential CBR plume and environmental hazards, and identifies all collateral objects within the CDE Level 1 CER (resultant CHA). This step reveals those targets or collateral objects that may represent areas of strategic risk and therefore may also have to be evaluated via the STAR process.
- (b) CDE Level 2: PGM General Analysis. Begins the process of analyzing weaponing options that mitigate the potential for collateral damage. A single distinct analytical process for the PGM weapon class is employed within Level 2. CDE Level 2 PGM General Analysis is a means to estimate risk of collateral damage while enabling maximum tactical flexibility, limiting the restrictions on target engagement to either Unitary or Cluster PGMs.

- (c) CDE Level 3: Weaponeering Analysis. Begins the process of refining weaponeering options that both create the desired effect on the target and mitigate collateral damage. The goal of CDE Level 3 is to achieve a low collateral damage estimate while limiting the number of tactical weaponeering restrictions. Considering the weapon class and system, delivery platform, and/or PGM warhead type decisions from CDE Level 2, CDE Level 3 determines appropriate delivery systems, warhead, and fuze combinations that mitigate the risk of collateral damage while still creating the desired effect on the target.
- (d) CDE Level 4: Refined Analysis. Completes the process of defining weaponeering solutions that create the desired effect on the target and mitigate the potential for collateral damage.
- (e) CDE Level 5: Casualty Analysis. Is necessary when Levels 1 through 4 are insufficient for making a CDE low call. CDE Level 5 is also required when Level 1 analysis determines the presence of involuntary, unwitting, or status unknown human shields at the target, the target is a dual-use target, the target is a CBR hazard (target or collateral concern that cannot be mitigated), or an environmental hazard (target or collateral concern that cannot be mitigated). There are other unique situations that may elevate an attack to CDE Level 5 as well. At CDE Level 5, civilian or noncombatant casualties are expected and commanders must be aware they are assuming significant risk of collateral damage when engaging a target analyzed under CDE Level 5.

For additional information see CJCSI 3160.01 Series, No-Strike and Collateral Damage Estimation Methodology.

- e. **CJCSI 3122.06B, Sensitive Target Approval and Review (STAR) Process (Classified)**, provides guidance for the CCMDs for designating sensitive targets and nominating them for national-level review. The STAR process supports contingency and CAP. STAR products, which usually consist of a briefing slide or series of slides, are used to present sensitive targets for national-level review. CJCSI 3122.06 Series provides examples of STAR products, but does not require a certain format because STAR products may vary by CCMD and planning effort. The CDM outlined in CJCSI 3160.01 Series supports the STAR process by assessing and identifying collateral damage related to sensitive targets. The material used to determine the CDE will form the basis of the STAR products dealing with collateral damage.

For additional information see CJCSI 3122.06 Series, Sensitive Target Approval and Review (STAR) Process (Classified).

5. Phase 4 – Commander’s Decision and Force Assignment

- a. **Overview.** The force assignment process integrates previous phases of joint targeting and fuses capabilities analysis with available forces, sensors, and weapons systems. It is primarily an operations function, but requires considerable intelligence support to ensure ISR assets are properly integrated into the plan. The process of resourcing JIPTL targets with available forces or systems and ISR assets lies at the heart of force assignment. Once the JFC has approved the JIPTL, either entirely or in part, tasking orders are prepared and released to the executing components and forces. The JTC facilitates the publication of tasking orders by providing amplifying information necessary for detailed tactical-level planning of operations.
- (1) During any current operation, the joint targeting process also documents the logical linkage between tasks, effects, objectives, and guidance. This documentation traces the analytical reasoning that supported the nominated targets and the details of the capability effectiveness estimates. The work of mission planners is significantly enhanced when they are furnished with detailed insights into the reasoning that resulted in their unit tasking. Furthermore, because the pairings of capabilities against targets are made using nominal weapon and weapon system performance data, there may be divergences with more current and/or specific data used by unit-level planners. Making the factors used in joint force assignment available to the mission planners, and providing them real-time collaboration capability with other targeting specialists, enables adjustment and fine-tuning of mission planning. It also provides a channel to discuss the mitigation of risk for the attacking force, since variations in tactics may be required that could affect the results created at the target. The joint targeting process must account for these variations and adjust expectations accordingly. This is a critical path of information flow during execution that reduces the likelihood of confusion between joint force assignment expectations and actual achievement. Ultimately, the exchange of information during Phase 4 and the reconciliation of a COP are critical elements during Phase 6 of the JTC where outcomes are analyzed and future actions are determined.
 - (2) Targeteers work closely with planners to balance the available employment options with their expected effects. The targeteers' recommendations should reflect an objective assessment of the most appropriate capability to create the effect required to meet the commander's objective, no matter the source. During force assignment, targeteers also provide updated target status, effectiveness analysis, and collateral damage estimates.
 - (3) At the component/JFACC level, weaponeering information is used to analyze force selection to determine the likely impact on a target element's physical and functional capability. For lethal force, this is based on P_D and probability of arrival for a weapon system. For nonlethal force, this is based on expected effects.

b. **Five general steps in force assignment** are described in the following paragraphs.

(1) **Consolidate Target Development and Capabilities Analysis Results.** In this step, targeting personnel assemble the necessary data from the work done in Phases 2 and 3. To make this complex data more useful to their operations counterparts, the targeting personnel must prepare summary files with worksheets on pertinent information collected on each potential target. Target files should contain four types of information: target development data, capabilities analysis or number of assets required, CDE, and attrition calculations.

(a) **Target Development Data.** The process of target development produces extensive, detailed target folders and supporting products for each target on the JIPTL. While crucial for the overall JTC, this mass of detail may very quickly overwhelm the force assignment team unless distilled down into a summary containing only the essential information needed to perform the force assignment function. To condense the material, targeteers prepare target briefs summarizing the contents of the target folder. Mandatory information includes all information necessary for the JFC to decide how the target's engagement contributes to the JFC's objectives.

For additional information on ETF structure and contents, see CJCSI 3370.01, Target Development Standards, Appendix A, to Enclosure E.

(b) **Capabilities Analysis.** During capabilities analysis, estimates on weapons effects and damage criteria are typically arrayed using the following factors: forces, delivery systems, weapons fuzing/reliability, and delivery parameters/arrival conditions. The results from the capabilities analysis provide multiple calculations, which estimate the physical damage resulting from planned actions against the target. Targeting personnel may also provide the projected effects of nonlethal applications on the target. The force assignment team will normally require several possible weaponeering solutions for each JDPI or on each target, arranged in order of effectiveness.

(c) **Collateral Damage Estimation.** Every target where a weaponeering solution was determined should also have an estimate of the projected collateral damage resulting from each anticipated weapon type. Estimates should reflect the collateral damage projected to occur from the use of the weapons required to create the desired effects. When presented alongside weaponeering results, CDE facilitates the commander's application of the LOW principle of proportionality, and provides a mechanism to highlight strategic risk due to collateral damage.

- (d) **Attrition Calculations.** Intelligence analysts provide data on the enemy defensive posture, capabilities, and intentions. Working with planners, weaponeers run attrition models to estimate the probability of the weapon system arriving at the target, and include probability of release or probability of arrival. Other factors include maintenance failure, adversary defenses, and weather. Weaponeers should factor any attrition analysis and probability of release or probability of arrival data into their P_D calculations.
- (2) **Assemble Data on Friendly Force Status, Factoring in Operational Limitations and Apportionment Guidance.** Planners and their logistics counterparts assemble data on the current status and availability of friendly forces and munitions. The JFC approves specific apportionment guidance describing the division of military effort among the different missions. Apportionment affects how the force assignment team tasks dual- or multi-role platforms, sequences force activities, and directs force packages to operate in different parts of the OA. Other issues affecting force assignment include the maintenance status of combat and support assets, battle damage to equipment from previous missions, operator and munitions availability, and location of stockpiles relative to combat assets. However, simply knowing what forces are available does not give the complete operational picture. Planners should consider weather, adversary operations, force protection concerns, OE management issues, LOW, ROE, and SPINS constraints. Packaging, timing issues, OAs, required support assets (e.g., availability of air-refueling aircraft for aerial missions), and other considerations also affect which targets can be acted against.
- (3) **Assigning Forces to Specific Targets and Supporting Missions.** In this step, planners assign forces, munitions, nonlethal capabilities, and ISR assets to specific targets and aimpoints. They develop force packages, assign supporting assets, and resolve timing, sequencing, and deconfliction issues. Operational limitations may require modification to targeteers' initial recommendations. Timing, event sequencing, and interaction of combat forces with supporting assets become crucial in crafting an effective and actionable CONOPS and fire support plan. The operational characteristics of a particular weapons system when tasked against a specific target may require adjustments to the overall plan or order. Often, targets are not attacked in the same priority order as they appear on the JIPTL. Targeting personnel must be ready to assist in evaluating the impact of these changes upon the entire targeting effort. As changes are made due to operational and special limitations (such as collateral damage restrictions), it is important to ensure achieving the commander's objectives does not result in inadvertently violating existing constraints or restraints.
- (a) Component commanders make air capabilities/forces available to support the JFC's mission and CONOPS. These air capabilities/forces are tasked by the JFACC based on the JFC's approved air apportionment and

prioritization decision. **Only the JFC has the authority to reassign, redirect, or reallocate a component's organic air capabilities/forces.**

- (b) When a component does not have enough organic air capabilities/forces to support their assigned mission, the component will nominate targets for joint tasking.
 - (c) Component organic assets, not under joint tasking, should also appear on the ATO to enable coordination and minimize the risk of fratricide. The inclusion of component organic air assets in the ATO does not imply any command or tasking authority over them, nor does it restrict component commanders' flexibility to respond to OE dynamics. Component organic air capabilities/forces though not available for joint air tasking must still comply with the established ROE, ACP, ACO, area air defense plan, and SPINS.
- (4) **Present Joint Targeting Recommendations to the Joint Force Commander for Approval.** The commander's decision in Phase 4 is to either approve the draft JIPTL, approve targets to be added to or removed from the JIPTL, or approve a particular way or ways of engaging a particular target or targets. The force assignment team also prepares a comprehensive briefing on the recommended plan, explaining the rationale behind the targeting decisions and target selection. The plan is briefed to the JFC as part of the JTCB process. Generally, operations and intelligence staffs work together to produce and brief the recommended plan.
- (a) Planners must inform the submitting component commander if a component-submitted HPT cannot be attacked, targeting effect created, or targeting objective achieved. That component commander may modify the targeting effect or objective or accept the fact the targeting objective will not be achieved during this cycle.
 - (b) If necessary, the component commander can seek modifications to operational objectives, targeting guidance, or prioritization from the JFC, via the JTCB process, to enable servicing of the submitted HPT.
- (5) **Issue Tasking Orders to Forces.**
- (a) Once the plan developed by the force assignments team is approved, tasking orders to the assigned combat and support forces must be prepared and issued. It is important to include tasking for intelligence organizations supporting mission planning and CA during this phase.
 - (b) **Mission Statement.** The joint force staff translates the JFC's operational planning guidance and approved COA into tasks to subordinate units, contained in the CONOPS. The JFACC SD does the same process at the JAOC for the JFACC level to develop the JAOP. Tactical mission tasks

describe the results or targeting objectives and targeting effects the commander wants to achieve/create – the what and why of a mission statement. Thus, a mission statement is a short sentence paragraph describing the unit's task (or tasks) and purpose that clearly indicate the action(s) to be taken and the reason(s) for doing so. The mission statement normally contains the elements of who, what, where, why, and when, but seldom specifies how. The how is normally defined in the CONOPS.

1. The “who,” “where,” and “when” of the mission statement is straightforward. The “what” and “why,” however, are more challenging to write clearly and can be confusing to subordinates if not written well.
2. The “what” in the mission statement is the tactical mission task to be accomplished. “What” is typically expressed either in terms of an intended targeting effect (e.g., block, canalize, defeat, destroy) or in terms of an action by a friendly force (e.g., contain, destroy, isolate). The commander and staff should carefully choose the term that best describes either the action to be taken by the friendly force or the commander's intended targeting effect to be created.
3. The “why” (or purpose) of a mission statement puts the task into context by describing the reason for performing the task. The purpose is normally described using a descriptive phrase and is often more important than the task. The following example includes a purpose in the mission statement: “NLT 031100Z JUL 03 (**When**) 1st BCT (**Who**) secures (**What/task**) OBJ BRAVO (**Where**) to prevent enemy forces from crossing the BLUE RIVER (**Why/purpose**).”
4. Normally, the staff develops the task by adding the phrase “in order to” and then provides the task's purpose. “In order to” phrases might include “divert, deny, enable, deceive, prevent, open, envelop, surprise, cause, protect, allow, create, influence, support, etc.”
5. Task statements normally do not specify “how.” There may be occasions, however, where an activity (e.g., raid, ambush, infiltrate) provides a needed overarching doctrine of how to accomplish a task that will enhance clarity and provide context. Here is an example of a mission task statement that includes an activity: “At 211000Z Aug 2006 (**When**) 1st BCT (**Who**) infiltrates (**How/activity**) to seize (**What/task**) Objective BRAVO (**Where**) in order to prevent enemy forces from interfering with the rapid crossing of 3rd (US) Infantry Division over the Blue River (**Why/purpose**).”

c. **Apportionment.** Apportionment is, in the general sense, the distribution for planning of limited resources among competing requirements. Air apportionment is the determination and assignment of the total expected effort by percentage or

by priority that should be devoted to the various air operations for a given period of time. The total resources made available to the JFACC are determined by the JFC in consultation with component commanders on the basis of assigned operational objectives, effects, and tasks in the CONOPS. For example, the JFC may determine counterair is the first priority for Phase 1 and should include 50 percent of the available air assets, based on his intent for operations on those specific days. His second and third priorities may be AI and CAS, comprising 30 percent and 20 percent of the available air assets, respectively.

- (1) The air apportionment recommendation provided by the JFACC is a vital part of the joint air planning and tasking process. Apportionment helps the JFC ensure the weight of the air effort is consistent with the operational objectives, effects, and tasks for each phase. The apportionment percentages will vary throughout the operation, depending on the enemy's air, ground, and sea capabilities; intentions; and phasing of the OPLAN. In determining apportionment, the JFC will normally use one or more of the following methods to assign priority or percentages of effort:
 - (a) By geographic areas.
 - (b) Against assigned mission-type orders.
 - (c) Against target sets.
 - (d) By the type of fires (e.g., strategic attack, interdiction, counterair, maritime support, CAS)
- (2) Apportionment considerations may be discussed at JFC planning, JTCB, or JFACC TET meetings. Component commanders or their designated representatives present the following at the meetings:
 - (a) Component concept(s) of operational maneuver supporting the JFC plan and intent. This includes the component commander's targeting objectives, requirements (including timing and coordinating instructions), and the targets requested for attack.
 - (b) Associated general or specific HPTs that have been identified as critical to the components scheme of maneuver. **Note: The component commander (or designated representative) must be the advocate for component nominated HPTs to ensure their inclusion in the JIPTL.**
 - (c) Associated target priorities and timing of attack.
 - (d) Rationale for target designation, priorities, and desired targeting effects.

- (3) The JFACC should determine how best to achieve targeting effects to meet the other component commander's targeting objectives and recommend the necessary apportionment of JFACC-assigned forces/capability to the JFC.
- d. **Allocation.** After the JFC promulgates the apportionment decision, the JFACC and staff conduct the allocation process. There are two types of allocation relevant to the air tasking cycle.
- (1) The first is "target allocation" and it starts early in the targeting process. Prior to the TET target coordination meeting, the MAAP team determines how many aimpoints can be serviced on the given ATO day from the MAAP team. The TET then goes over the lists of nominated targets and determines which "make the cut" on that day's proposed JIPTL. The TET must work closely with the SD and the MAAP team to ensure the prioritized list ties into the JAOP and AOD appropriately. The SD must ensure the TET understands how effects and objectives are prioritized, how they are to be achieved over time, and that it has a macro-level idea of the number of targets associated with each objective. The TET then collects target nominations from other sources and works a daily allocation of targets that have been planned against the effects and objectives to build the daily JIPTL.
 - (2) The second type of allocation is "force allocation" (or air allocation as it is customarily thought of). This is the translation of the air apportionment decision into the total number of sorties or missions by weapon system type available for each operation or task. Force allocation is the responsibility of the CPD MAAP team, which takes the final prioritized list of weaponized targets and allocates airpower by melding available capabilities and resources with the TET's weaponizing recommendations. Although not complete until the MAAP is produced, force allocation starts early. The result is a translation of the total weight of air effort into the total number or sorties or missions required to achieve desired effects.
 - (3) Allocation of aircraft and weapons must fulfill the JFC's original targeting guidance and intent. Aircraft or weapons should not be diverted to other targets unless unanticipated changes in the situation so dictate. If diversions occur, appropriate modifications to the ATO may be required to support the JFC's apportionment decision and intent for subsequent phases of the operation.
- e. **Master Air Attack Plan Development.** The MAAP is the JFACC's time-phased air and space scheme of maneuver for a given ATO period. The MAAP synthesizes commander's guidance, desired effects, supported components' schemes of maneuver, friendly capabilities, and allocates friendly resources against approved targets. The MAAP is usually presented in the form of a decision briefing for the JFACC. The CPD MAAP team is responsible for producing the MAAP.

- (1) **Allocation Request Message.** On the basis of the JFC's apportionment decision, internal requirements, and air support request messages, each air capable component sends an allocation request (ALLOREQ) message to the JFACC (timed to coincide with the beginning of the MAAP part of the tasking process, usually NLT 36 hours prior to the start of a given ATO day). ALLOREQ messages contain the following information:
 - (a) Number of sorties by assigned mission and type aircraft to be flown during the air tasking day.
 - (b) Excess sorties not needed by the air capable component and available for tasking by the JFACC.
 - (c) Request for additional air support beyond the capability of the air capable component making the request.

- (2) **Sortie Allotment Message.** The JFACC reviews each component's ALLOREQ and sends a sortie allotment message (SORTIEALOT), with JFC concurrence, back to the components 12-18 hours before ATO day commences. The SORTIEALOT informs commands which mission requests will be fulfilled and which will be delayed during that ATO cycle. The SORTIEALOT confirms the ALLOREQ and provides general guidance for planning operations. The SORTIEALOT contains three kinds of instructions:
 - (a) Revisions, if any, to the components planned allocation of sorties. With JFC concurrence, the SORTIEALOT could convey revisions or redirection of missions outside of the apportionment guidance.
 - (b) Approval or changes to the component requests and allotment of excess sorties.
 - (c) Revisions to mission data in component requests, such as a changed mission priority or TOT. Component liaison elements (such as the BCD) and the JFACC usually coordinate such revisions in advance.

- (3) **Master Air Attack Plan Team.** The MAAP team works with the TET to support JIPTL production. Once the JIPTL is approved, the MAAP team takes input from the TET, component liaisons, the JAOC AMD, and others to produce the MAAP. With the support of liaison representatives, the MAAP team determines an overall sortie flow for the ATO period and determines how that flow should be divided into "packages." Packages are discrete sets of missions and sorties designed to complement each other or provide required support (for example, tankers and EW assets "packaged" with the strike assets they are supporting). The MAAP team also determines required TOT or time on station. Packages are arranged in sequence and used to determine a timeline flow and resource requirements for the ATO period.

Each package must be deconflicted in time, space, and effect. The end result is a MAAP.

- (4) Another part of the allocation and MAAP development portions of the tasking process is creation of an ISR and assessment plan. Theater ISR assets must be carefully orchestrated to ensure optimal coverage of the OE. ISR assets should be positioned to provide tactical assessment of targets planned for attack, detect emerging targets, and be flexible enough to collect against them as well. At the same time, ISR assets must continue to monitor the “bigger picture,” to help discern whether desired effects are being created and whether the enemy is adapting his COAs to our actions. The assessment plan must be closely coordinated with all other planning efforts.
 - (5) Targeting personnel assist air operations planners in balancing expected effects with available employment options when supporting the force assignment process. Their recommendations should reflect an objective assessment of the most appropriate capability to achieve the effect required to meet the targeting objective. During this process, targeting personnel provide current target status (including BDA), effectiveness analysis, and collateral damage estimates.
 - (6) The JAOC should establish procedures to ensure organizations nominating targets receive continuous feedback on the status of their nominations throughout the tasking cycle. For example, not all nominated targets will be approved for inclusion in the JIPTL, nor will all targets on the JIPTL be included on the ATO. There must be a feedback mechanism to ensure targets not attacked, for any reason, are reported to the nominating authority for consideration for future submissions.
 - (7) Collection planning and target planning are consolidated in MAAP development to enable production of a comprehensive ATO, SPINS, ISR synchronization matrix, etc. Consolidation ensures the targets selected for inclusion in the ATO are matched with CRs for pre-strike verification as well as post-strike physical and functional assessment.
- f. **Air Tasking Order Production.** After the MAAP development process is complete, the ATO production process merges the ATO data with any inputs to SPINS, communications notes, and the ACO. The consolidated orders are electronically transmitted to all users via the TBMCS.
- (1) JFC and JFACC guidance, the AOD, target worksheets, the MAAP, and component requirements are used to finalize the ATO, SPINS, and ACO. During execution of the operation, detailed capabilities analysis at the tactical level is used to optimize weapons delivery parameters, validate ordnance loads, and support ongoing mission planning to support daily ATO cycles.

- (2) Airspace control and AD instructions must be provided in sufficient detail to allow subordinates to plan and execute all missions listed in the ATO. These are usually captured in the ACO and the day's SPINS. These instructions must facilitate combat operations without undue restrictions, balancing combat effectiveness with the safe, orderly, and expeditious use of airspace. Instructions must also provide for quick coordination of task assignment/reassignment and must direct aircraft identification, engagement procedures and ROE appropriate to the nature of the threat. These instructions should also consider the volume of friendly air traffic, friendly AD requirements, identification, friend or foe technology, weather, and adversary capabilities. Instructions contained in the SPINS and the ACO are updated as frequently as required.
- (3) The ATO, ACO, and SPINS provide operational and tactical direction at appropriate levels of detail. The level of detail should be very explicit when forces operate from different bases and multi-component or composite missions are tasked. By contrast, less detail is required when missions are tasked to a single entity or base.

6. Phase 5 – Mission Planning and Force Execution

- a. **Overview.** Upon receipt of tasking orders, detailed planning must be performed for the execution of operations. The joint targeting process supports this planning by providing planners with direct access to detailed information on the targets, supported by the nominating component's analytical reasoning that link the target with the desired effect (Phase 2). This will provide the background information necessary for the warfighter to focus on the JFC's objectives as the operation unfolds.
 - (1) Combat operations are dynamic. During force execution, the OE changes as a result of actions from the joint force, adversary, and other actors. The joint targeting process monitors these changes in order to allow commanders to decisively use joint force capabilities to seize and maintain the initiative. These dynamic changes require particular attention to PID, CID, and target validation.
 - (2) Target validation during this phase includes analysis of the situation to determine if planned targets still contribute to achieving operational objectives (including changes to plans and objectives), if targets are accurately located, and how planned actions will impact on other friendly operations.
- b. Lessons learned from recent operations have demonstrated the need for a distinct focus on DT during Phase 5. Phases 1 through 4 of the JTC collectively produce targeting tasks, products, and the commander's guidance for all targeting, whether deliberate or dynamic.
 - (1) In coordination with joint components and other agencies, the JFC and staff develop dynamic targeting guidance, which should include both priorities for

dynamic targeting and identification of component requirements for dynamic targeting action, at a minimum. Guidance should also include TST criteria and procedures for component critical targets as well as guidance for acquisition and action against the targets. The JFC should articulate risk tolerance sufficiently to let on-scene commanders understand his intent when DT requires accelerated coordination.

- (2) DT has often been called F2T2EA or the “kill chain” and has also been used for specifically engaging TSTs (see Figure III-14, Phase 5 Targeting Steps). F2T2EA’s applicability extends to all targets whether developed during deliberate targeting or DT. TOO have been the traditional focus of DT because decisions on whether and how to engage must be made quickly. However, planned targets are also covered during this phase but the steps simply confirm, verify, and validate previous decisions (in some cases requiring changes or cancellation).

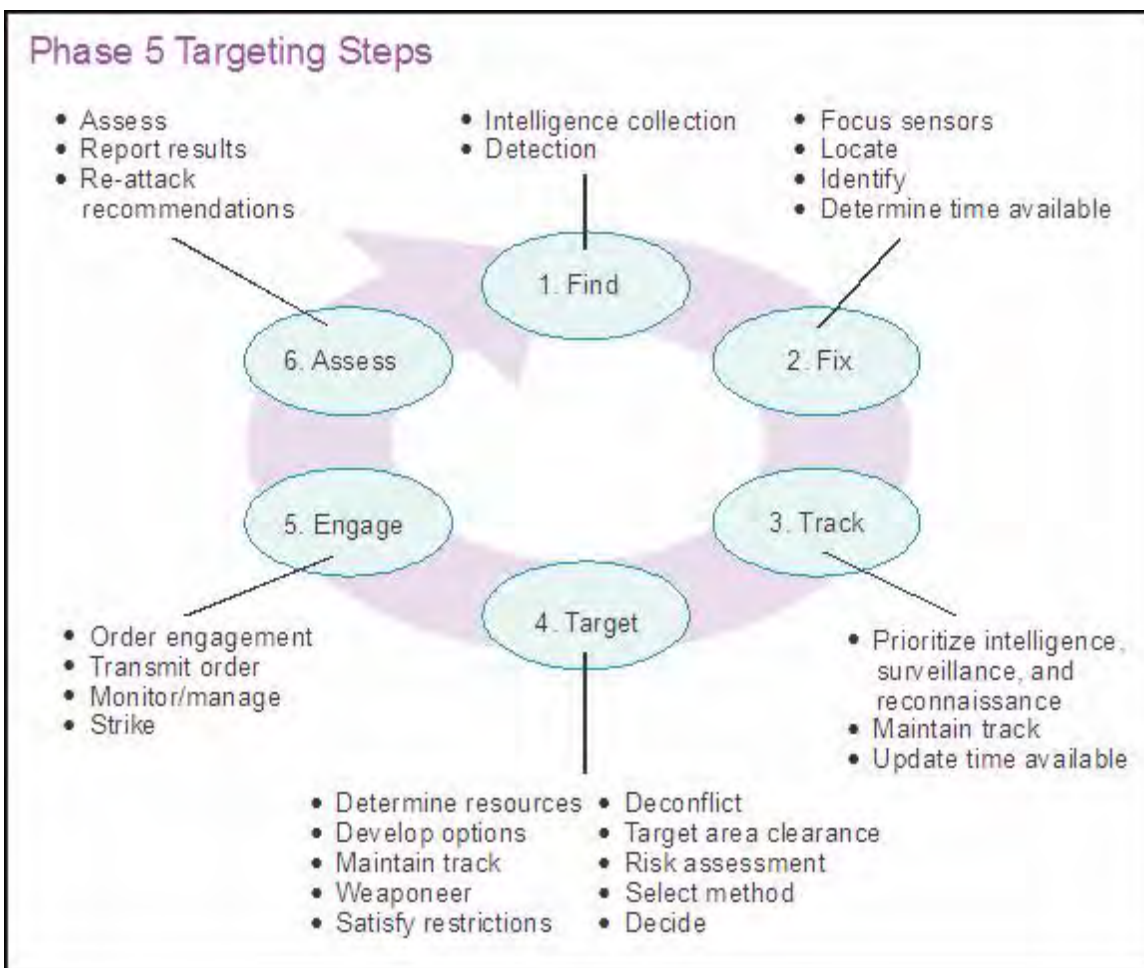


Figure III-16. Phase 5 Targeting Steps

- (3) The steps of DT may be accomplished iteratively or in parallel. The find, fix, track, and assess steps tend to be ISR-intensive, while the target and engage steps are typically labor-, force-, and decision-making intensive.

- (4) Dynamic is different from deliberate targeting in terms of time available, but not much different in the substance of the steps. Targets requiring immediate response may be fully anticipated and planned in advance as deliberate actions in the joint targeting process for execution by designated forces. However, if their nature precludes detailed advanced execution planning (e.g., a mobile ballistic missile threat), they may be initially identified during the deliberative analytical and planning phases of the JTC (with appropriate advance ISR tasking). Once detected they may then be prosecuted using dynamic targeting.
- (5) The primary focus of dynamic targeting should be the prosecution of:
- (a) Time-Sensitive Targets. The JFC is ultimately responsible for TST prosecution and relies upon the component commanders for conducting TST operations.
 - (b) Component HPTs that are not TSTs, but are considered crucial for success to friendly component commanders' missions because of their fleeting nature or threat to friendly forces.
 - (c) Targets scheduled to be struck on the current ATO in execution, but which have changed status in some way (such as FSCM changes). (Also called "On-call [Planned] targets.")
 - (d) TOOs and those emerging during execution that friendly commanders deem worthy of targeting.
- (6) To avoid unnecessary diversion of assets from the overall plan, it is important to limit the total number of targets designated as TSTs to only those meeting the definition in JP 3-60, *Joint Targeting*, and JP 1-02, *Department of Defense Dictionary of Military and Associated Terms* – "A joint force commander validated target or set of targets requiring immediate response because it is a highly lucrative, fleeting target of opportunity or it poses (or will soon pose) a danger to friendly forces." It is also important to provide clear guidance to all levels of C2 (and force application) on what constitutes a TST or component HPT.
- (7) In addition to TST guidance, the JFC establishes specific guidance on how coordination, deconfliction, and synchronization will occur among functional/Service components assigned in the OA. The components use this guidance to establish planned and reactive procedures for attacking the prioritized TST and immediate targets. Some examples of JFC guidance to facilitate TST prosecution include:
- (a) Establish planned FSCMs (with definable trigger events) against specific TST and immediate targets.

- (b) For those targets that component commanders consider the component equivalent of a TST, the applicable component commanders should coordinate relative priorities and establish guidance at the JTCB, through the JFE, or via other appropriate means.
 - (c) Designate TST and immediate target engagement authority based on the JFC OA, assigned functional mission, or a combination thereof. If necessary, specify those exceptional circumstances when component commanders have the authority for immediate engagement of TST regardless of assigned OA or mission. The JFC should determine those situations, if any, where the immediate destruction of the imminent target outweighs the potential for friendly fire, collateral damage, or duplication of effort. This determination would allow a component to bypass the requirement for informing, coordinating, deconflicting, or synchronizing with other components. However, if time allows, these efforts should always be accomplished before engagement.
 - (d) Identify specific data links and communication requirements between component C2 elements to conduct rapid coordination. This includes authorizing direct liaison and coordination authority.
 - (e) Establish priority “quick fire” sensor-to-shooter communication links with defined conditions for circumventing or bypassing normal command/coordination channels (to improve timeliness of response).
- (8) Successful DT requires a great deal of prior planning and coordination within the JAOC and with other components. If DT is to be done correctly, air planners must develop CONOPS that make capability available to the combat operation division prior to the start of execution. This can be done in a number of ways. Among the most common methods are:
- (a) Preplanned target reference methods and FSCM, such as kill boxes/ joint fires areas.
 - (b) Pre-positioned or on-call ISR and strike packages for rapid response to emerging targets.
 - (c) Using JIPOE to determine the most probable areas where targets will emerge during execution.
 - (d) Coordination and synchronization of DT operations by streamlining and developing procedures for rapid handover of the mission tasking to another component for mission execution if the primary component cannot attack a target that emerges.
- (9) Error prevention and mitigation is an important consideration in planning for dynamic targeting. Primary issues for consideration are:

- (a) Ensuring aircrew have the most current information pertaining to the location of SOF, friendly ground forces, and no-strike target lists.
 - (b) Ensuring robust ROE and related legal considerations are understood by all participants.
- (10) **Combat Identification Progression.** For prospective targets, there are essentially three levels of CID that are relevant to those tasked to carry out actions against immediate and TSTs. At the first level, the track or entity is identified as friendly, foe, or neutral. At the next level, the prospective target's type of platform is identified. This will aid in determining the nature of tactical action required against it and will assist in prioritizing the target. Finally, a third level entails determining the prospective target's intent (such as by its track relative to friendly forces) when possible. This will further aid in establishing the prospective target's priority, and may sometimes entail reclassifying a target as a TST based on its potential threat to friendly forces.
- (11) **Liaison Officers.** LNOs from other functional components or Services may be very helpful during the dynamic targeting process. For example, the SOLE may be able to provide the JFACC with additional options for dealing with emerging targets, provide locations and activities of SOF and other friendly forces, assist with the prosecution of targets, or assist in deconfliction. However, with other components, direct cross component watch station-to-watch station coordination may provide the best means to rapidly coordinate dynamic targeting and avoid delays or possible miscommunication through liaison elements. Liaison elements may not have access to component asset availability needed to coordinate re-allocation decisions.
- c. **Phase 5 Steps.** Both deliberate and dynamic target categories are prosecuted during this phase. Because scheduled deliberate targets have already completed the find, fix, and tracks steps of Phase 5, due to being previously known fixed targets, much of the following discussion will focus on dynamic target execution, where appropriate.
- (1) **Step 1 - Find.** During this step, emerging targets are detected and characterized for further prosecution.
- (a) Inputs to step 1 include:
 - 1. Clearly delineated JFC dynamic targeting guidance and priorities.
 - 2. Focused JIPOE, to include identified NAIs, target areas of interest, and cross cueing of intelligence disciplines to identify potential target deployment sites or OEs.
 - 3. Collection plans based on the JIPOE.

- (b) The find step involves intelligence collection based on the JIPOE. Traditional ISR, nontraditional ISR such as aircraft targeting pods and radar warning receiver indications, and SOF may provide initial detection of a potential target for both deliberate and DT. In this section, the term “sensor” refers both to traditional and nontraditional ISR means.
- (c) The term “emerging target” is used to describe a detection that meets sufficient criteria to be evaluated as a potential target. The criticality and time-sensitivity of an emerging target, and its probability of being a potential target, is initially undetermined. Emerging targets normally require further ISR and/or analysis to develop, confirm, and continue the targeting process. During step 1 (see Figure III-15, Find Step Determinations and Actions), an emerging target will be:
1. Validated as a target meeting requirements established during deliberate targeting.
 2. Designated a potential target or TST requiring DT.
 3. Designated a potential target not requiring dynamic targeting and passed to deliberate targeting.
 4. Continued to be examined or analyzed by sensors as a potential target (that is, continuing the "find" step).
 5. Discarded completely or entered on the NSL.
- (d) If an emerging target is detected, identified, and determined to be a potential target by a system capable of engaging it, this may result in the find and fix steps being completed nearly simultaneously without the need for traditional ISR, and the target and engage phases being completed with a much abbreviated coordination and approval process. For example, use of aircraft systems that carry ISR and weapons capability may enable accomplishment of Steps 1-5 and assessment using a single platform.
- (e) Output of the find step: potential targets detected and nominated for further development.

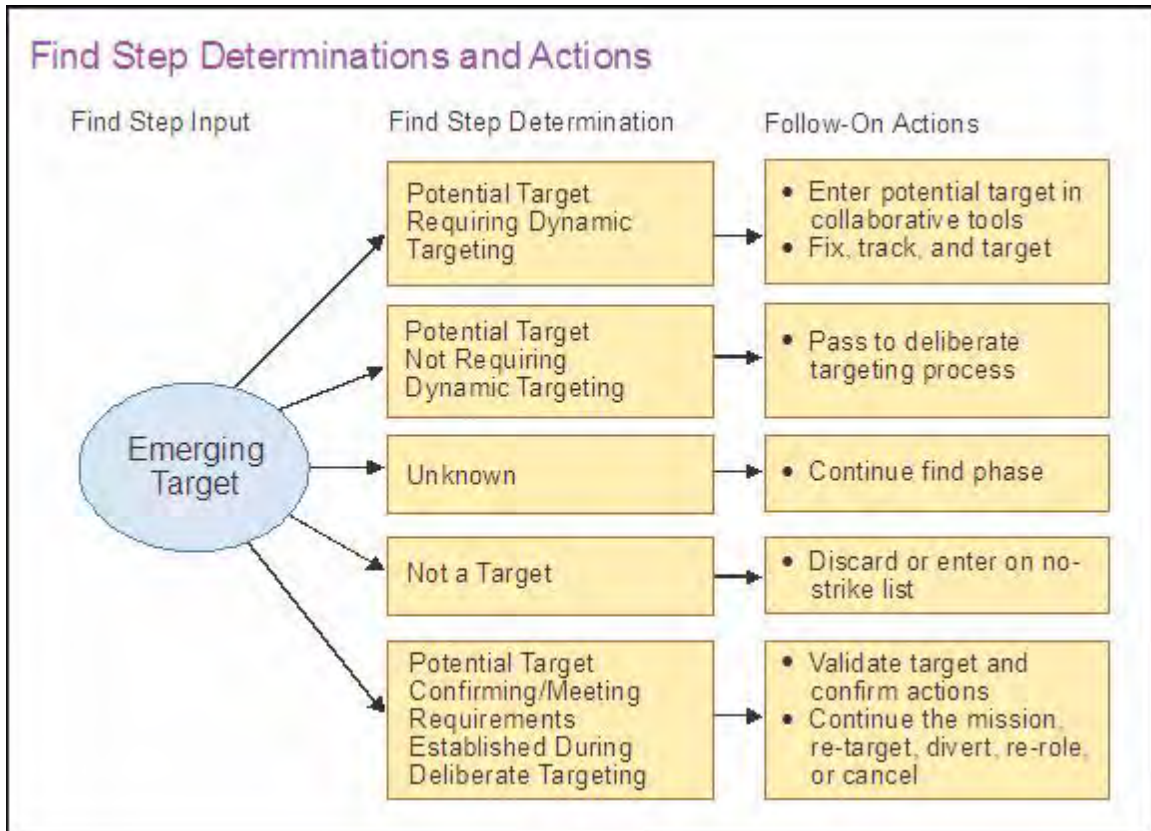


Figure III-17. Find Step Determinations and Actions

(2) **Step 2 - Fix.** A “fix” is a position determined from terrestrial, electronic, or astronomical data. The fix step of this phase includes action to determine the location (fix) of the potential target for DT and on-call target for deliberate targeting.

(a) Inputs to step 2 include:

1. Potential targets requiring dynamic targeting.
2. Sensor information on the target.
3. On-call targets for deliberate targeting.

(b) The fix step begins after potential targets requiring dynamic targeting or on-call targets for deliberate targeting are detected. When a potential target is identified, sensors are focused to confirm target identification and its precise location. The correlation and fusing of data confirms, identifies, and locates the target and it may then be characterized as a TST or other target requiring dynamic or deliberate targeting. TSTs receive the highest priority in dynamic targeting.

- (c) A determination or estimation of the target's window of vulnerability frames the timeliness required for prosecution and affects the required prioritization of assets and risk assessment.
 - (d) Output of step 2 are:
 - 1. PID.
 - 2. Target location accuracy refined to a level required for target engagement.
 - 3. Determination or estimation of target time characteristics.
- (3) **Step 3 - Track.** During this step the target is observed and its activity and movement are monitored.
- (a) Inputs to step 3 include:
 - 1. A positively identified target.
 - 2. Target location and plot of movement (if applicable).
 - (b) The track step begins once a definite fix is obtained on the target and ends when the engagement's desired effect upon the target is determined. Note some targets may require continuous tracking upon initial detection as an emerging target. Sensors may be coordinated to maintain SA or track continuity. Target windows of vulnerability should be updated when warranted. Relative priorities for ISR requirements are based on JFC guidance and objectives. TSTs generally receive the highest priority. If track continuity is lost, the fix step will likely have to be repeated (and potentially the find step as well).
 - (c) Output of step 4 are:
 - 1. Track continuity maintained on a target by appropriate sensor or combination of sensors.
 - 2. Sensor prioritization scheme.
 - 3. Updates to target window of vulnerability.
- (4) **Step 4 - Target.** During this step the decision is made to engage the target in some manner to create desired effects and the means to do so are selected and coordinated.
- (a) Inputs to step 4 include:

1. Identified, characterized, located, and prioritized target.
 2. Restrictions: CDE guidance, WMD consequences of execution, LOW, ROE, NSL, and RTL, component boundaries, and FSCMs.
 3. SA on available assets from all components.
- (b) The target step begins with target validation. That is, operations personnel ensure all vetted targets meet the objectives and criteria outlined in the commander's guidance. Additionally, validation reviews the target's compliance with LOW and ROE and ensures it is not otherwise restricted. The target phase matches available engagement and sensor assets against the desired effect. Restrictions are resolved, the actions against the target are coordinated and deconflicted, and a risk assessment is performed. The target is weaponeered, engagement options are formulated, a recommendation is nominated, an option is selected to affect the target, and assessment requirements are submitted. The target phase can be time-consuming due to the large number of requirements to satisfy. Target step actions can be initiated and/or completed in parallel with previous phases to enable timely decisions.
- (c) Output of step 4 are:
1. The target is validated.
 2. Target data information or intelligence products are finalized in a format useable by the system that will engage it.
 3. Asset deconfliction and target area clearance considerations (to include interagency and multinational partner deconfliction) are resolved.
 4. Target execution is approved (decision) in accordance with JFC and component commander guidance is validated.
 5. Assessment CRs are submitted.
 6. Collateral damage estimates are performed.
 7. Collateral affects estimates for chemical, biological, or radiological targets and environmental concerns are performed.
- (5) **Step 5 - Engage.** In this step, action is taken against the target.
- (a) Inputs to step 5 include:
1. Target approval decision.

2. Selected engagement option.

(b) During the engage step, the engagement is ordered and transmitted to the selected asset. Engagement orders must be transmitted to, received by, and understood by those engaging the target. The engaging component manages and monitors the actual target engagement. The CID process is conducted prior to target engagement and continues throughout the engagement, in coordination with the controlling agency for any changes to the OE that may affect the engagement decision.

(c) Output of step 5 are:

1. Issuing and passing of the engagement order.

2. Engagement direction and control.

3. Target engagement via lethal or nonlethal means.

(6) **Step 6 - Assess.** In this step, initial assessment of action against the target is performed.

(a) Input to step 6 is target engagement.

(b) During the assess step, initial assessment of the physical or functional status of the target takes place. For attacks in the physical environment, the assessment confirms impact of the weapon on the target and makes an initial estimate of the damage. For nonlethal weapons, the initial assessment attempts to detect changes in functionality indicating a successful engagement.

(c) For both lethal and nonlethal weapons, this initial assessment is part of BDA, Phase I. Attack recommendations are generally not made using BDA Phase I information. However, in cases of a confirmed miss, a reattack may be authorized based on target priority and weapon availability.

(d) Further assessment takes place in phase 6, targeting assessment.

7. Phase 6 – Targeting Assessment

a. **Overview.** The targeting assessment phase is a continuous process that assesses the effectiveness of the activities that occurred during the first five phases of the JTC. The targeting assessment process helps the commander and staff determine if the ends, ways, and means of joint targeting have resulted in progress toward accomplishing a task, creating an effect, or achieving an objective. Targeting assessment occurs at the tactical, operational, and strategic levels of war. The

assessment of target engagement results must be integrated to provide the overall joint targeting assessment.

- (1) The targeting assessment phase is common to both deliberate and dynamic targeting of the joint targeting process and examines the results of the target engagement. Effective assessments in phase 6 require detailed, continuous inputs from the first five phases of the joint targeting process.
- (2) Assessment is used to measure progress of the joint force toward mission accomplishment. Commanders continuously assess the OE and the progress of operations, and compare them to their initial vision and intent. Commanders adjust operations based on their assessment to ensure tasks are completed, effects created, objectives achieved, and the desired end state reached. The assessment process is continuous and directly tied to the commander's decisions throughout planning, preparation, and execution of operations. Staffs monitor key factors that can influence operations and provide the commander timely information needed for decisions. The assessment process helps the commander and staff decide what and how to measure to determine progress toward accomplishing a task, creating an effect, or achieving an objective. Commanders and their staffs determine relevant assessment actions and measures during planning. They consider assessment measures as early as mission analysis, and include assessment measures and related guidance in commander and staff estimates. They use assessment considerations to help guide operational design because these considerations can affect the sequence and type of actions along LOOs. Phase 6 is a continuous process that measures the overall effectiveness of employing joint force targeting capabilities during military operations. It supports the commander's decisions within the JTC and contributes to the overall operation or campaign assessment process.
- (3) During conflict, the US will use all instruments of its national power against the full spectrum of adversary systems – PMESII and others. Organizationally diverse, yet operationally interconnected, instruments of national power must be synchronized to achieve the desired objectives. Assessment must parallel this multidimensional approach. Friendly, adversary, and neutral diplomatic, informational, and economic actions applied in the OE can impact military actions and objectives. Conversely, military actions will influence the employment and effects of diplomatic, informational, and economic instruments of national power in the OE. The commander should plan to assess the results of these actions. This typically requires collaboration with other agencies such as elements from the Department of State (DOS) or the Department of Homeland Security (DHS), national intelligence agencies, multinational partners, intelligence sources, and other CCMDs to generate a complete and accurate assessment.
- (4) The outputs from phase 6 are CDA, MEA, and reattack recommendations (RR).

b. **Assessment and the Levels of War.** Assessment occurs at all levels (see Figure III-16, Assessment Levels and Measures) and across the range of military operations. Even in operations that do not include combat assessment (CA), progress is just as important and can be more complex than traditional CA. As a general rule, the level at which a specific operation, task, or action is directed should be the level at which such activity is assessed. To do this, JFCs and their staffs consider assessment ways, means, and measures during planning, preparation, and execution. This properly focuses assessment and collection at each level, reduces redundancy, and enhances the efficiency of the overall assessment process.

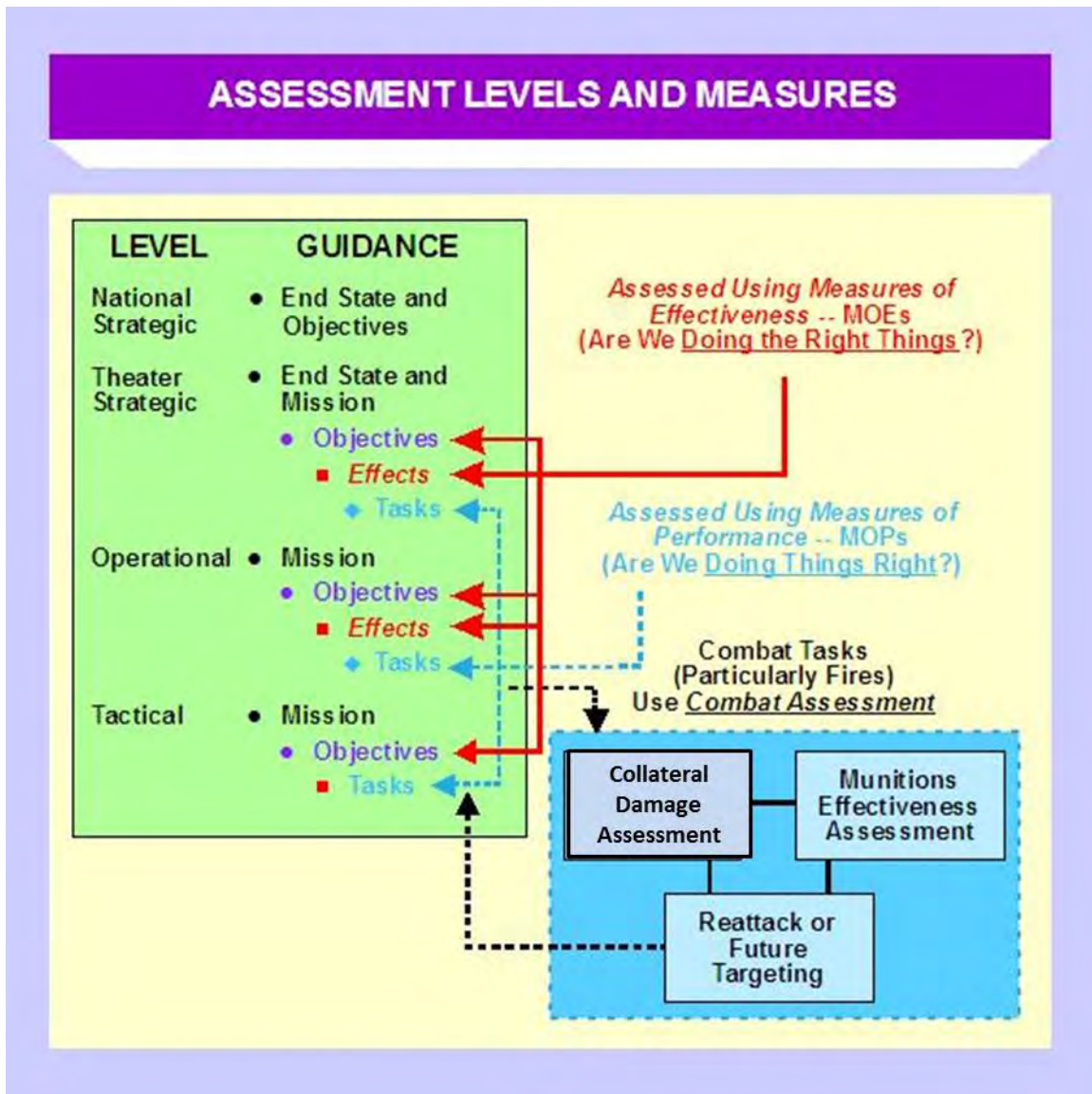


Figure III-18. Assessment Levels and Measures

(1) **Operational and Theater Strategic-Level Assessment.** Assessment at the operational and strategic levels typically is broader than at the tactical level

(e.g., CA) and uses MOEs that support strategic and operational mission accomplishment. Strategic- and operational-level assessment efforts concentrate on broader tasks, effects, objectives, and progress toward the end state. In general, assessments should answer two questions: “Is the joint force doing things right?”, and “Is the joint force doing the right things?”. The JFC also can use MOEs to determine progress toward success in those operations for which tactical level CA ways, means, and measures do not apply. Strategic and operational level assessment helps the JFC adjust planning and execution as necessary, and also provides the President and SecDef a way to measure progress towards national-strategic objectives.

- (2) **Tactical Level Assessment.** Tactical level assessment typically uses MOPs to evaluate task accomplishment. The results of tactical tasks are often physical in nature, but also can reflect the impact on specific functions and systems. Tactical level assessment may include assessing progress by phase lines (PLs), neutralization of enemy forces, control of key terrain or resources, and security, relief, or reconstruction tasks. Assessment of results at the tactical level helps higher level commanders determine operational and strategic progress, so JFCs must have a comprehensive, integrated assessment plan that links assessment activities and measures at all levels.
- c. **Combat Assessment.** CA encompasses many tactical-level assessment actions and has implications at the operational level as well. CA typically focuses on determining the results of weapons engagement with lethal or nonlethal capabilities, and thus is an important component of joint fires and the joint targeting process. To conduct CA, it is important to fully understand the linkages between the targets and the JFC’s objectives, targeting guidance, and desired effects. This linkage begins with targeting tasks, effects, and objectives which support assigned operational tasks, effects, and objectives. It is important to understand the difference between operational objectives/effects, targeting objectives/effects, and munitions effects. CA is composed of three related elements: BDA, MEA, and RR (or future targeting).
- (1) CA effectively “closes the loop” and feeds the other elements of the targeting process. To determine the performance of an operation, three questions need to be answered. First, were the assigned tasks completed at the target and with respect to the larger target system (BDA)? Second, did the forces assigned perform as expected (MEA)? Finally, if the desired targeting outcomes were not achieved, or if the employed forces did not perform as expected, what should be done now (RR)? From the answers to these questions, an assessment can be made and future targeting options can be recommended.
 - (2) The CCMD and the subordinate JTF should establish a CA management system and combine the expertise of operations and intelligence staffs. A comprehensive CA program greatly assists the JFC in determining future

targeting requirements, facilitates planning and supports more efficient execution.

- (3) **Battle Damage Assessment.** The purpose of BDA is to compare post-execution results with the projected/expected results generated during target development. Effective BDA requires a coordinated and integrated effort between joint force intelligence and operations functions. Traditionally, BDA is composed of physical damage/change assessment, functional damage/change assessment, and functional assessment of higher-level target system. BDA takes a three-phased approach to proceed from a micro-level examination of the damage or effect inflicted on a specific target element, to ultimately arriving at macro-level conclusions regarding the functional outcomes created in the higher-level target system. Phase 3 analysis suggests BDA, and consequently CA, can have both tactical and operational impact. These three assessments require different sensors, analytical elements, and timelines, and are not necessarily subcomponents of each BDA report.
- (a) BDA is primarily an intelligence responsibility, requires inputs and coordination from operations, and can be federated throughout the IC.
- (b) The most critical ingredient for effective BDA is a comprehensive understanding of the linkage between the specific targeting effect, objective and the operational level task, effect, and objective it supports. For BDA to be most effective, a comprehensive plan must be developed which incorporates intelligence architecture and ISR resources, and provides information support that ensures timeliness. Pre-conflict planning requires CMs with a thorough understanding of collection systems capabilities (both organic and national), as well as their availability. Targeting personnel should also have a basic understanding of the collection systems supporting the operation.
- (c) During combat, BDA reporting should follow standardized formats and timelines, and be passed to command planners and force executors immediately. The CJCSM 3162.01series "Joint Methodology for Battle Damage Assessment" establishes joint methodology for conducting BDA and provides analysts with the definitions, methodology, and principles of reporting required to conduct BDA. This manual also bridges the gap between doctrinal guidance in Joint Publications and the Combatant Commands BDA Concepts of Operations. Another useful guide, the DIA *BDA Reference Handbook*, contains detailed technical information to support BDA analysis during military operations and to assist in providing basic training for BDA team members. The three phases of BDA are described below.
- (d) **Battle Damage Assessment Phase 1 - Initial Target Assessment.** Initial Target Assessment reports on physical/change assessment (target element) and functional damage (target). A physical damage assessment is an

estimate of the quantitative extent of physical damage (through munitions blast, fragmentation, or fire damage) to a target element based on observed or interpreted damage. This post-attack target analysis should be a coordinated effort among combat units, component commands, the subordinate joint force, the CCMD, primary theater BDA cell, national agencies, supporting commands, and the JIOC. Some representative sources for data necessary to make a physical damage assessment include the ATO or MAAP, mission reports (MISREPs), aircraft cockpit video, weapons system video, visual/verbal reports from ground spotters or combat troops, controllers or observers, artillery target surveillance reports, signals intelligence (SIGINT), human intelligence (HUMINT), imagery intelligence (IMINT), measurement and signature intelligence (MASINT), or open-source intelligence.

1. Key factors in determining the extent of physical damage are target type and size: Was the attacked target/element a piece of equipment or a building or bunker? How hard is the target? How big is the target?
2. To quantify physical damage, the assessment is conducted against critical elements. Destruction of an entire building may not be required if the stated objective is to destroy a specific portion of the building based on the function (critical element) conducted within that section of the building. Assessments of “NO DAMAGE” or “DESTROYED” are easily defined and understandable. The difficulty comes in subjective judgment specifying the level of damage between these two extremes. Intermediate damage definitions are dependent on target type and the ease of assessing damage. For example, in buildings, “LIGHT”, “MODERATE”, and “SEVERE” damage is determined by the percent of the target area/building damaged. In contrast, when assessing armored vehicles, only the “DAMAGED” category is used. Likewise, runways have more specific categories that include “CRATERED”, “CUT”, and “INTERDICTED.” In assessing physical damage, consider whether the enemy may have used camouflage, concealment, and deception techniques to either minimize or amplify the apparent extent of physical damage, thereby distorting the assessment.
3. In determining the level of physical damage, we assign a confidence level to the assessment. The three terms used to identify confidence are CONFIRMED (95 percent or greater confidence), PROBABLE (greater than 50 percent confidence), and POSSIBLE (less than 50 percent confidence). Detailed information and definitions of these confidence levels, along with physical damage definitions for specific target elements, may be found in CJCSM 3162.01 series, Joint Methodology for Battle Damage Assessment. The joint force may provide additional guidance reporting when certain confidence levels are appropriate.
4. Collateral damage is also assessed and reported during BDA.

5. Initial reports are often based primarily on visual observation of the target and usually derived from a single source. Further analysis continues with all-source reporting resulting in further supplemental reports. The command designated BDA cell is responsible for collating reports and making the final assessment.
6. BDA Phase I is usually the first indicator of problems with weapons systems or tactics assessed during MEA.
7. Change Assessment: Change Assessment is identifying and assessing measurable change to the target element resulting from weapons that do not create physical change. This type of assessment is the nonphysical damage equivalent of physical damage assessment. Both physical damage and change assessments required a confidence call.
8. Functional Damage Assessment (FDA). A FDA is an estimate of the degradation or destruction of the functional/operational capability of a target/target system to perform its intended mission. Functional assessments are inferred from the assessed physical damage and all source intelligence information. This assessment must include an estimation of the time required for recuperation or replacement of the target's function. BDA analysts need to compare the desired targeting effect or objective for the attack with the current status of the target to determine if the targeting objective was met. FDA's are performed in all three phases of BDA reporting. In Phases 1 (Initial Target Assessment) and Phase 2 (Supplemental Target Assessment) a FDA is conducted at the target level and in Phase 3 (Target System Assessment) at the target system level.

(e) Battle Damage Assessment Phase 2 - Supplemental Target Assessment.

Like Initial Target Assessment (Phase 1), Supplemental Target Assessment (Phase 2) reports on the physical/change (target element) and functional (target) damage levels. However, in this phase all-source intelligence is provided and more time is available to provide a detailed reassessment, due to, damage levels based on cumulative effects. Analyst functional damage assessment on the target in Phase 2 is required.

1. Functional damage assessment reviews all physical damage assessments and amplifies the initial analysis. A key step in functional damage assessment is identifying and establishing the installation or target's critical elements and their interconnectivity. A critical element is defined as one which, if destroyed or not operating, will preclude the installation from functioning. Additionally, the target's "normal" level of operation must be quantified. If it is an industrial target, what does it produce? If it is a military installation, what basic purpose does it serve? Without these pre-attack assessments, wartime functional damage assessments may be

inadequately stated. Ideally, BDA will be performed by (or with) the input of the targeteer who originally targeted the facility/equipment.

2. An estimate of the recuperation time required for the enemy to repair or reconstitute should always be part of a battle damage assessment report (BDAREP). This time (expressed in hours, days, etc.) is an estimate based upon type, degree, and location of the physical damage. Factors used to calculate recuperation times include the availability of spares, backup or alternate replacement functions, operational tempo, expected duration of hostilities, and the enemy's determination to repair or replace. This phase requires the integration of theater and national source information. The theater JIOC has access to these sources and provides significant support. SIGINT, IMINT, and MASINT sources are also useful during this phase.
3. Often, BDA analysts have relatively little information by which to make a functional damage assessment. Therefore, it is important for analysts to verify the target critical elements were properly identified, weapons effects were reasonably predicted beforehand, and all available and relevant intelligence information is considered in the assessment.
4. Developing appropriate indicators and collection plans ahead of time is crucial to timely Phase II assessments, especially if the damage cannot be directly observed. These indicators allow analysts to rapidly identify the critical elements, what sources are capable of collecting the required information, best collection time, what specific change in activity the sensor should collect, and how this change in activity determines the target's functional status. This facilitates BDA collection planning since optimal collection times are more easily determined well in advance. Examples of such indicators and collections plans may be found in various DOD agency products, such as the JWAC's "*Functional Damage Assessment (FDA) Guides for Electric Power Industry, Lines-of-communications, Petroleum-Oil-Lubricants Industry, and Telecom Networks.*"

(f) **Battle Damage Assessment Phase 3 - Target System Assessment.** Target System Assessment reports on the functional damage assessment at the target system level. This phase provides a broad assessment (based on all source reporting) of the overall impact on an adversary target system relative to the targeting objectives established. These assessments are typically conducted at the national-level by fusing Phases 1 and 2 BDA reporting on targets within a target system. A typical timeline associated with this report is collection dependent.

1. Phase III produces a target system assessment for the theater of operations. SMEs compile the functional damage assessments of the individual targets within a system and apply it to the current system

analysis or enemy order of battle (EOB). Although different weapons are involved, the process described above applies to BDA of targets attacked with nonlethal fires as well. SIGINT will often be the most capable collection asset of determining the actual functional damage to the target in these cases.

- (g) **Federated Battle Damage Assessment.** Federated BDA allows the supported CCDR to establish pre-planned partnerships to share responsibilities and leverage appropriate expertise from outside the theater. The CCDR may request federated BDA support from multiple commands and agencies through the JS J-2. Upon approval, each agency in the partnership will be assigned specific targets, either by individual target sets/categories or by geographic region. The JS J-2 will work with the requesting command to form the best federated partnership based on available resources and capabilities.

For additional information on the BDA process, see Chairman of the Joint Chiefs of Staff Manual 3162.01, Joint Methodology for Battle Damage Assessment.

- (4) **Munitions Effectiveness Assessment.** MEA is an element of CA as the assessment of the military force applied in terms of the weapons system and munitions effectiveness to determine and recommend any required changes to the methodology, tactics, weapon system, munitions, fusing, and/or weapon delivery parameters to increase force effectiveness.
 - (a) The purpose of MEA is to compare the actual effectiveness of the means employed to their anticipated effectiveness calculated during the capability analysis phase of the JTC. The results of MEA support both near term improvement in force employment and long-term improvements in lethal and nonlethal capabilities. Consequently, a critical ingredient for effective MEA is detailed familiarity with all inputs to the calculations performed in capability assessment that resulted in weapon system selection.
 - (b) MEA is conducted concurrently and interactively with BDA assessments. MEA is primarily the responsibility of component/Service commanders, with inputs and coordination from the IC. MEA evaluates weapons parameters such as delivery accuracy, fusing, and damage mechanisms (blast, fragmentation, and penetration). MEA targeting personnel seek to identify, through a systematic trend analysis, any deficiencies in specific weapons systems, tactics, munitions performance, or combat tactics by answering the question, “Did the employed forces perform as expected?”. If a deficiency is identified, the operators, targeteers, and analysts make recommendations for weaponeering or procedural changes, different tactics, or system modifications. Using a variety of intelligence and operations inputs, to include Phase 2 functional damage assessments, operators prepare a report assessing munitions performance and tactical applications. The report details weapon performance against specified

target types. Such information could have a crucial impact on future operations. Of note, MEA efforts can continue years after the conflict has ended, by using archived data and information collected later by on-site inspections of targets struck during the conflict.

- (5) **Future Targeting and Reattack Recommendations.** Future target nominations and RRs merge the picture of what was done (BDA) with how it was done (MEA) and compares the result with predetermined MOEs that were developed at the start of the JTC. The purpose of this phase in the process is to determine degree of success in creating desired targeting effects, achieving targeting objectives, to formulate any required follow-up actions, and to indicate readiness to move on to new tasks in the path to supporting the overall JFC objectives.
- (a) This activity develops recommendations on which targets may require reattack based upon the enemy's remaining capability, capacity, and potential for recuperation. In doing so, it also attempts to solve deficiencies identified during the BDA and MEA processes. Reassessments of objectives, target selection, vulnerabilities, timing, tactics, weapons, and munitions all factor into the new recommendations.
 - (b) Future targeting recommendations range from attacking different targets to changing munitions or delivery tactics. The RR and future targeting is a joint operations and intelligence function and must be assessed against the relative importance of the target to the current targeting effort/operation. At the tactical/component level this activity prompts decisions on immediate reattack. At the operational/strategic level, the daily operational assessment is incorporated into strategy development, future target selections based on updated targeting objectives, targeting guidance and intent, review of the ROE, and guidance to components for immediate reattack of operational critical targets.
- (6) **Information Operations Considerations for Combat Assessment.** IO employment methods can differ from traditional force application and may require different mechanisms to measure the weapons effect on a target in support of the targeting objective. Targeting analysts performing CA should work very closely with operations personnel and members of the IO cell to ensure all potential CA indicators are evaluated.
- (a) The typical methodology for IO BDA uses a change assessment, functional damage assessment, and higher-level target system assessment to determine the effectiveness of the weapons and tactics employed to achieve the stated targeting objective. Change assessment is based upon observed or interpreted battle damage indicators at selected monitoring points. It uses a systematic understanding of complex target systems and leverages intelligence capabilities to identify and assess changes associated with the target. The quantitative change during assessment is

used to assess the resulting functional damage. This assessment is not limited to the intended target system, and may even encompass several systems in order to ascertain and justify the assessment results. IO MEA and RR are similar to traditional CA processes described above.

(b) Unlike conventional collateral effects, it is possible for intended and unintended effects of IO to not be directly observable. Specialized sensors may be required to detect results. Therefore, a more detailed analysis of the entire target system is warranted.

d. **Estimated Damage Assessment (EDA).** EDA is an analysis technique or change assessment process that supports a physical damage assessment by anticipating damage using probability of weapon success to support EDA. This action is performed when BDA-related intelligence is not available but an assessment is required. The current CA process relies on phased BDA analysis as a major part of assessing combat task completion. If no data is available for a target, the assessment is usually left blank or unknown. Based on the BDA scenario and commander's targeting guidance, analysts may try to provide a prediction of the estimated damage for both individual target elements and higher-level target components/sets/systems based on the initial predictions as place holders for the probabilities of success. This process is facilitated by the precision and reliability of many modern weapon systems. As the operation is executed, the predictions for targeting effects on individual target elements are updated continually with the latest available information on the action taken. Such updates might be definitive BDA or it may be information, which, while not definitive, helps refine the estimate (e.g., confirmation that a joint direct attack munitions successfully dropped through the clouds on the programmed coordinates). Combining the latest information on individual target elements means an assessment cell can provide a more refined estimate of success. As more definitive data becomes available, the assessment becomes less of an estimate and more an actual assessment of what was or was not achieved. Empirical data from the Joint Munitions Effectiveness Manual (JMEM) aids the analyst in determining the probability of weapons damage or effects based on historical testing and operational data. Analyst who use EDA should report a confidence level of "POSSIBLE" (less than 50 percent confidence) and note this information in the BDA report.

(1) The overall goal of this approach is to provide the JFC with the best estimated assessment of the progress of the joint operation at any given time, using all information available. For lethal strikes, this means using assessed effects where BDA is available. It then predicts the effects for strikes where BDA is not yet available. Such predictions should be based on historical data of previous strike performance and analyses of likely success given the specific planned weapon/target pairings (e.g., JMEM data). Finally, assessment agents (assessors) should continuously refine effects predictions based on the success of intermediate steps in the execution chain. This means, even where final/definitive BDA is not available for a given strike, assessors should

update the prediction of likely strike success as soon as it is known whether the planned task was actually performed, update again as soon as it is known whether the weapon was successfully released, and update again as soon as it is known if the weapon successfully guided to target.

- (2) A key aspect of this iterative predictive approach is that it addresses the need for a smooth transition between assessing a plan prior to execution (when only predictions are available), to assessing a plan in the midst of execution (when partial BDA information is available), and finally through assessing success at the end of an operation (approaching full BDA availability). Estimation can also facilitate undertaking higher level assessments of more complicated, interdependent systems.
 - (3) Estimating higher level effects based on estimates of what happens at specific target elements has advantages and limitations. A key advantage is that by using the predictive approach discussed earlier assessors will have a more specific basis for estimating what happens at specific target elements. This estimate will be based on a combination of prediction and, when available, execution data. These estimated targeting effects on specific target elements can then serve as the input to the model of the higher-level target component/set/system in estimating higher-level effects. A key limitation is that the fidelity of the estimate diminishes the further one gets from the initial, direct targeting effects of the action or task accomplishment.
- e. **Collateral Damage Assessment.** CDA leverages the information and analysis from Phases 1 and 2 of BDA to identify and characterize the location, magnitude, and cause of collateral damage that occurred during target engagement. CDA evaluates direct and indirect targeting effects on nearby collateral objects and the noncombatant population addressing “the who, what, when, where, and why of collateral damage.” The outputs of CDA feed the JFC’s evaluation of COPS and provide the information and analysis to guide future development of collateral damage mitigation techniques.
- f. **Post-Combat Assessment.** The joint targeting process does not end when hostilities cease. During the stabilize and enable civil authority phases of the joint operation, there is normally a critical need to collect all available information to feed both BDA and MEA analysis. This data collection effort is essential to 1. Evaluate the full extent of target physical and functional damage, 2. Determine the true effectiveness of employed delivery systems and munitions, and 3. Critique and improve the assessment analysis and reporting process.
- (1) Although there are many different types of data to collect for follow-on analyses, generally they can be grouped into the areas of: operational data, intelligence, and MEA exploitation. Collection of operational or mission-specific data includes all executed mission type orders (to include all executed ATOs), all MISREPs, and copies of aircraft or weapon system recorded data at a minimum. This includes both national and tactical intelligence gathered

during the operations, as well as continued post conflict damage assessment and analysis of reconstruction activities.

- (2) Finally, the optimal method to analyze munitions effects is to deploy MEA exploitation teams (engineers, tacticians, and intelligence analysts) to conduct on-site analyses of the damage from the ground-level perspective. The goal of these “ground truth” operations is to bridge the gap of knowledge that exists between the level of damage the BDA collection assets have assessed during hostilities and what actual physical, functional, and cognitive effects were created in the adversary targets and systems. Due to the perishable nature of critical data at many targeted sites, planning for ground truth exploitation needs to be fully integrated into appropriate plans (i.e., OPLANS) for immediate execution following combat operations. If feasible, initial exploitation can also be accomplished during ongoing operations by ground forces.

CHAPTER IV PRODUCTS AND PROCESSES

SECTION A. LAND AND MARITIME COMPONENT INPUTS

1. General

- a. The targeting process uses and generates an enormous amount of information and data. To make that information and data usable, a number of tools and products exist to assist in the development and management of targeting products that support the targeting process. The commander, the targeting working group, and supporting and supported units use them. The products allow them to control and synchronize targeting in an effective and efficient way. In the majority of cases, formats for tools and products are not rigidly prescribed. Each unit may develop techniques and tools that work best for them. However, tools and products contributing to joint fires networked systems (see Appendix C, “Joint Fires Networked Systems”) must be interoperable. Additionally, tools and products must be continually updated to reflect changes in the OE. Some factors to consider in developing tool formats include:
 - (1) Type and level of the command.
 - (2) OE.
 - (3) Assets available.
 - (4) Missions.
 - (5) Standing operating procedures.
 - (6) Existing C2 tools of record.
- b. Each Service component has established unique doctrine and tactics, techniques, and procedures for targeting. Several publications address targeting procedures through their emerging doctrinal manuals. The habitual integration of resources from one or more Service components has been developed to support the targeting requirements of another Service component and multinational forces. The tools and products described in this section are those doctrinally used by the land and maritime components, and those organizations involved in supporting the decide, detect, deliver, and assess (D3A)/TST decision-making process.
- c. D3A uses targeting tools and products to support decision making regarding what targets should be acquired and attacked, where and when the targets likely will be found, who can locate them, how the targets should be attacked, and if BDA is required. Some of the more common tools and products of D3A include:

- (1) **Target spreadsheets/folders** – Detailed description of the HVT, to include expected actions, configuration, and relative worth.
- (2) **High Payoff Target List** – Prioritized list of HPTs
- (3) **Target Selection Standards (TSS)** – Accuracy requirements or other specific criteria that must be met before targets can be attacked.
- (4) **ISR Plan** – Where and when should targets be found and who can find them.
- (5) **Attack Guidance Matrix (AGM)** – Matrix outlining desired effects, when, and how targets should be attacked.
- (6) **Targeting synchronization matrix (TSM)** – Prioritized matrix of targets that should be acquired and attacked during the upcoming cycle or phase.
- (7) **Delivery standards matrix** – Provides criteria for the attack of HPTs in each phase of the battle. It also facilitates objective decision making for attacking targets at the lowest level possible. These seven products are discussed in greater detail later in this section.

For additional information on D3A, see FM 3-60, The Targeting Process.

2. Decide, Detect, Deliver, and Assess Target Value Analysis

- a. **Target value analysis** occurs during the decide function of D3A and yields HVTs for a specific enemy COA. It involves a detailed analysis of enemy doctrine, tactics, equipment, organizations, and expected behavior for a selected COA. The target value analysis process identifies potential HVT sets associated with critical enemy functions that could interfere with the friendly COA or that are vital to enemy success.
- b. If an HVT can be successfully acquired, is vulnerable to attack, and such an attack supports the JFC's scheme of maneuver, the target may be nominated as a HPT.
- c. **Wargaming.** Wargaming helps identify which target acquisition assets will be tasked, how information will be processed, which means will be used to attack, what requirements exist for CA, and target sets. During wargaming, a decision support template is developed. In addition, other products from these wargaming efforts are the HPT list, AGM, TSS, and ISR plan. See Figure IV-1, Combined High-Payoff Target List Target Selection Standards Attack Guidance Matrix (Sample). Of note, these products are not recognized as joint terms, but may be found in FM 3-60, *The Targeting Process*. They are specific to D3A.

Phase: II		DTG: 030530 Jun02					
HIGH-PAYOFF TARGETS							
Priority		1	2	3	4	Remarks	
Descriptions		Field Artillery	ADA	Maneuver	Command Post		
A T T A C K S Y S T E M	Fires Bn	1 100 m 2 Btry 3 Stat 4 1 hr	5	2	3	3	
	Fires Bde	1 100 m 2 Btry 3 Stat 4 1 hr	2	1	2	2	
	MLRS	1 100 m 2 Btry 3 Stat 4 1 hr	1	1	2	2	
	ATACMS	1 100 m 2 Btry 3 Stat 4 1 hr	1	1	1	1	Must request from corps
	MNVR	1 1-km 2 Btry 3 Stat/Move 4 1 hr	6	5	6	6	
	ATK Aircraft	1 500 m 2 Btry 3 Stat 4 1 hr	3	3	4	4	
	CAS	1 500 m 2 Btry 3 Stat 4 1 hr	4	4	5	5	

Reference: Target Selection Standards

1. Required TLE	3. Activity
2. Size	4. Time acquired
3. Activity	<input type="checkbox"/> Priority of attack

Legend:

ADA	air defense artillery	hr	hour
ATACMS	Army tactical missile system	km	kilometer
ATK	attack	m	meter
Bde	brigade	MLRS	multiple launch rocket system
Bn	battalion	MNVR	maneuver
Btry	battery	Stat	stationary
CAS	close air support	TLE	target location error
DTG	date-time group		

Figure IV-1. Combined High-Payoff Target List Target Selection Standards Attack Guidance Matrix (Sample)

KEY TERM

Decision support template — A combined intelligence and operations graphic based on the results of wargaming. The decision support template depicts decision points, timelines associated with movement of forces and the flow of the operation, and other key items of information required to execute a specific friendly course of action. JP 2-01.3.

- d. After wargaming all of the COAs, the staff compares them and recommends a COA to the JFC for approval. Upon approval of the COA, the targeting products for that COA become the basis for targeting for the operation. The targeting team meets to finalize the HPT list, TSS, AGM, and input to the ISR plan. The team also performs any additional coordination required. After accomplishing these tasks, targeting team members ensure targeting factors that fall within their functional areas are placed in the appropriate part of the OPLAN/OPORD.

For additional information on target value analysis see FM 3-60, The Targeting Process, Chapter 2, The Targeting Methodology.

3. High-Payoff Target List

- a. **The HPT list is a prioritized list of the HPTs by phase of the joint operation.** While target value is usually the greatest factor contributing to target payoff, other things to be considered include:
 - (1) The sequence or order of appearance.
 - (2) Ability to detect, identify, classify, locate, and track the target.
 - (3) Degree of accuracy available from the acquisition system.
 - (4) Ability to engage the target.
 - (5) Ability to defeat the target on the basis of attack guidance.
 - (6) Resource requirements necessary to accomplish all of the above.
- b. The column headings on the HPT list include (see Table IV-1, High-Payoff Target List):
 - (1) **Priority** – The priority of the targets is listed.
 - (2) **Category** – Identifies the target category, including designation as a TST.
 - (3) **Target** – The title or a brief description of the intended target is listed.
- c. Targets are prioritized according to the considerations above within specific time windows. The targeting working group sets priorities for the targets according to

its judgment and the advice of the fires cell targeting officer and the field artillery intelligence officer. Target spreadsheets give a recommended priority and attack sequence. If the target spreadsheet or wargaming departs from the commander's guidance, it is noted on the proposed HPT list to inform the commander of the conflict. The target category of the HPT is shown, either by name or by number, on the list. The category name and number are shown on the target spreadsheet.

- d. One way to organize the HPT list is to group all HPTs into target sets that reflect the capabilities and functions described in the targeting objectives. Target sets are identified and prioritized for each phase of the operation. Within the sets, individual targets are rank-ordered by target value, sequence of appearance, importance, or other criteria that satisfy the targeting objectives. In this way, the targeting team reduces, modifies, and reprioritizes HVTs while ensuring HPTs support the CONOPS.
- e. The JFC's guidance may require changes, which should be annotated on the HPT list. The target name or number and description are placed on the list for specific HPTs in each category. Once the JFC approves or amends the HPT list, it goes back to the targeting team to help them develop the AGM and collection plan.

HIGH-PAYOFF TARGET LIST		
PRIORITY	CATEGORY	TARGET
1	8 N/CH (TS)	PRTB, NUCLEAR DEPOT
2	1 C3 (TS)	DIVISION, ARMY CP
3	2 FIRE SUPPORT (TS)	DIVISION, ARTY CMD BTRY
4	2 FIRE SUPPORT	ARTY BN FDC, COP BTRY
5	1 C3	REGIMENT MAIN CP, DIV FWD CP
6	3 MANEUVER	BN ASSY AREAS, FORMATIONS
Legend ARTY artillery ASSY assembly BN battalion BTRY battery C3 command, control, and communications CMD command, control, and communications COP common operational picture CP command post DIV division FDC fire direction center FWD forward N/CH nuclear/chemical PRTB mobile repair technical base (rocket and missile) TS time-sensitive		

Table IV-2. High-Payoff Target List

For additional information on high-payoff target lists, see FM 3-60, The Targeting Process, Chapter 2, The Targeting Methodology.

f. Target Selection Standards

- (1) TSS are criteria applied to enemy activity (acquisitions and battlefield information) and used in deciding whether the activity is a target. TSS put

nominations into two categories: targets and suspected targets. Targets meet accuracy and timeliness requirements for attack. Suspected targets must be confirmed before any attack.

(2) TSS are based on the enemy activity under consideration and available weapon systems by using the following:

(a) **Weapon system target location accuracy requirements** (target location error [TLE]). Special consideration must be given to TLE for the employment of guided precision munitions.

(b) **Size of the enemy activity** (point or area).

(c) **Status of the activity** (moving or stationary).

(d) **Timeliness of the information.**

(3) Considering these, different TSS may exist for a given enemy activity based on different weapons system. For example, an enemy artillery battery may have a 150-meter TLE requirement for attack by cannon artillery and a 1 kilometer requirement for attack aircrafts. TSS are developed by the fires cell in conjunction with the military intelligence (MI) personnel. Intelligence analysts use TSS to quickly determine targets from battlefield information and pass the targets to the fires cell. Weapon system managers, such as fires cells, fire control elements, or fire direction centers, use the TSS to identify targets for attack quickly. Commands can develop standard TSS based on threat characteristics and doctrine matched with the standard available weapon systems.

g. **Target Selection Standards Matrix.** This product summarizes TSS and is usually comprised of the following essential elements. (See Table IV-2, Target Selection Standards Matrix.)

(1) **High-Payoff Target** – This refers to the designated HPT the CM is tasked to acquire.

(2) **Timeliness** – Valid targets are reported to weapon systems within the designated timeliness criteria.

(3) **Accuracy** – Valid targets must be reported to the weapon system meeting the required TLE criteria. The criteria are the least restrictive TLE considering the capabilities of available weapons system.

TARGET SELECTION STANDARDS MATRIX		
HIGH-PAYOFF TARGET	TIMELINESS	ACCURACY
Common operational picture	3 hours	150 meters
Reconnaissance, intelligence, surveillance, and target acquisition	30 minutes	150 meters
M-19 152mm howitzer self-propelled	30 minutes	500 meters
M-46 130mm towed gun	30 minutes	500 meters
Air defense artillery	15 minutes	500 meters
Command posts	3 hours	500 meters
Ammunition	6 hours	1 kilometer
Maneuver	1 hour	150 meters

Table IV-3. Target Selection Standards Matrix

h. Target Selection Standards Worksheet. This product incorporates TSS into a document that can be used to track and confirm or deny targets generated by each sensor source. The column headings are described below. (See Table IV-3, Target Selection Standards Worksheet.)

- (1) **High-Payoff Target** – This column lists the HPT from the HPT list.
- (2) **Source** – Sensor agent.
- (3) **Target Location** – Location by grid coordinates.
- (4) **Accuracy (Target Location Error)** – Sensor reliability, normally stated in meters.
- (5) **Time of Target** – Record the date-time group the sensor acquired the target.
- (6) **Time Limit** – How old the acquisition can be and still be attacked.
- (7) **(Validity) Confirmed** – Confirmation by a second source is recorded by using YES or NO. Confirmation by another sensor may not be necessary depending on the sensor.
- (8) **Clearance Cleared** – Who or what agency cleared the target for attack, which is especially critical where the potential for fratricide exists.

TARGET SELECTION STANDARDS WORKSHEET							
HIGH-PAYOFF TARGET	SOURCE	TARGET LOCATION	ACCURACY (Target Location Error)	TIMELINESS		VALIDITY CONFIRMED	CLEARANCE CLEARED
				Time of Target	Time Limit		

Table IV-4. Target Selection Standards Worksheet

- i. **For nonlethal attacks, the J-3 may have to develop descriptive criteria to supplement or replace criteria developed by the FSE.** For example, nonlethal TSS during a peace operation may describe what constitutes a hostile crowd (such as, a group larger than 25 people, armed with sticks or other weapons, and with leaders using radios or cellular telephones to direct it). To do this, the J-3 identifies specific pressure points, such as one's credibility. The J-3 then attacks these pressure points with specific means/products, delivered to a specific communications node or system, to cause a specific effect.

For additional information on TSS, see FM 3-60, The Targeting Process, Chapter 2, The Targeting Methodology.

4. Intelligence, Surveillance, and Reconnaissance Plan

- a. ISR is a continuous combined arms effort led by the operations and intelligence staffs in coordination with the staff that sets reconnaissance and surveillance in motion. The PIR and other intelligence requirements (IRs) drive the collection effort. The commander takes every opportunity to improve his situational understanding about the enemy and terrain. Commanders integrate reconnaissance and surveillance to form an integrated ISR plan that capitalizes on their different capabilities. The ISR plan is often the most important part of providing information and intelligence that contribute to answering the CCIR.
- b. The ISR plan provides a framework that CMs can use to determine and evaluate intelligence needs and then use the plan to meet those needs. Because of the diversity of missions, capabilities, and requirements, the ISR plan has no prescribed doctrinal format. However, a dynamic ISR plan should:
 - (1) Use the JFC's IRs (PIRs and CCIRs) as its baseline.
 - (2) Help the JFC see as deep in depth and time as possible.
 - (3) Cover the JOA.

- (4) Have a four-dimensional OE approach: width, length, height, and time. [Note: some components may add a fifth dimension: EM.]
 - (5) Cover the collection capabilities of higher and adjacent units.
 - (6) Be flexible enough to respond to changes as they occur.
 - (7) Cover only priority requirements.
 - (8) Be a working document.
 - (9) Contain precise and concise language.
- c. **Information Collection Matrix.** The information collection matrix is the requirements planning tool that links PIRs, essential elements of information, indicators, and specific information requirements with NAIs and TAIs. Constructed in spreadsheet format and composed of individual worksheets (as required), the matrix provides detailed collection and reporting requirements. The information collection matrix is not a tasking document. Although not published as part of the base order, the matrix is a key tool used by intelligence and the operations staffs in the execution of the information collection plan. (See Figure IV-2, Sample Information Collection Matrix.)

Sample Information Collection Matrix

Priority Intelligence Requirement (PIR)	Essential Element of Information (EEI)	Indicators	Specific Information Requirement (SIR)	NAI	Start Time	End Time	XX - Primary — R - Requests															
							Brigade Combat Team (BCT)											Division/Higher				
							1st BN	2nd BN	3rd BN	Q36/Q37	LMCR	Engineer	RECON	SHADOW FMV	BCT HUMINT	BCT CI	PROPHET	FMV	HUMINT	CI	COMINT	IMINT
Approved PIR. Normally one sheet per PIR.	EEIs are a subset of requirements that are related to and answer a PIR.	Indicators are positive or negative evidence of threat activity or any characteristic of the AO that: <ul style="list-style-type: none"> • Points toward threat vulnerabilities. • Points toward the adaptation or rejection of a particular activity. • May influence the commander's selection of a COA. 	SIRs facilitate taskings by matching requirements to asset capability.				XX											R	R	R	R	R
NOTE. XX - Organic asset nominated to the operations staff for tasking. R - Requests for collection submitted by the intelligence staff to nonorganic assets.																						

Legend

AO	area of operations	HUMINT	human intelligence
BN	battalion	IMINT	imagery intelligence
CI	counterintelligence	LMCR	liquid-metal-cooled reactor
COA	course of action	MTI	moving target indicator
COMINT	communications intelligence	NAI	named area of interest
FMV	full motion video	RECON	reconnaissance

Figure IV-5. Sample Information Collection Matrix

- d. Intelligence, Surveillance, and Reconnaissance Synchronization Matrix. The ISR synchronization matrix is a product used by the intelligence officer to ensure collection tasks are tied to scheme of maneuver in time and space, effectively linking reconnaissance and surveillance to maneuver and effects. The ISR synchronization matrix is typically constructed in spreadsheet format and is always accompanied by an ISR overlay that graphically depicts the information contained in the matrix. The intelligence officer uses the matrix to synchronize reconnaissance and surveillance tasks in the same way the operations officer uses the maneuver synchronization matrix to synchronize the overall unit scheme of maneuver. This product may also be referred to as a collection synchronization matrix. (See Table IV-4, Sample Intelligence, Surveillance, and Reconnaissance Synchronization Matrix.)

Sample Intelligence, Surveillance, and Reconnaissance Synchronization Matrix

DTG	LOCAL	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300			
ENEMY	IED OPNS ALONG MSRs										ATK LN SECURITY/CIVIL/POLITICAL/INFRASTRUCTURE										IED OPNS							
FRIENDLY	RTE CLEARANCE/C-IED/TARGETING										LOCAL SECURITY AND NATION BUILDING OPNS														C-IED OPNS			
FOCUS	PRIORITY OF SUPPORT: C-IED/FORCE PROTECTION/INDICATIONS AND WARNING/TARGET DEVELOPMENT																											
52 ID	E-8 JSTARS	MTI ON BORDERS AND IED HOTSPOTS (NAI 3106, 3107, 3108, 3109, 3110, 3111, 3113, 3117, 3122)																										
	MQ-1 PREDATOR	ISO OF THEATER REQUIREMENTS; ON CALL FOR 52d ID AD HOC REQUESTS																										
	EC-130 COMPASS CALL															ISO OF THEATER REQUIREMENTS; ON CALL FOR 52d ID AD HOC REQUESTS												
	MQ-58 HUNTER	ISO 52d ID REQUIREMENTS, ON CALL FOR 3/52 AD HOC REQUIREMENTS																										
	EA-6B PROWLER	ISO THEATER REQUIREMENTS, ON CALL FOR 52d ID AD HOC																				ISO THEATER REQUIREMENTS, ON CALL FOR 52d ID AD HOC						
PROPHET	24-HOUR GROUND-BASED SIGINT																											
30 BCT/52 ID (35-2)	HCT 10	HUMINT COLLECTION OPNS IVO MEDINA WASL																										
	EOD TM1	ISO C-IED OPNS																				ISO C-IED OPNS						
	EOD TM2	ISO C-IED OPNS																				ISO C-IED OPNS						
	WT 1																											
	CIVIL AFFAIRS TM	COORDINATE AND ASSIST LOCAL GOVERNMENT TO INCREASE CIVIL CAPACITY, RESTORE ESSENTIAL SERVICES, AND SUSTAIN ECONOMIC DEVELOPMENT																										
4-77 CAB	RQ-7B SHADOW											ISO 3/52 REQUESTS								ISO 3/52 REQUESTS								
4-77 CAB	A CO	STABILITY OPNS IN VICINITY OF NAHIAT AL-BAB AL-SHARQ (NAI 3113, 3117)																										
	B CO	STABILITY OPNS IN VICINITY OF MEZRA'S MAZIK AHMAR (NAI 3110, 3121, 3124)																										
	RECON	RECON OF IED HOTSPOTS ON ASR LONG ISLAND (NAI 3110, 3111)																										
	ENGINEER	MSR/ASR RTE CLEARANCE (NAI 3110, 3111)																										
	HCT 40 (DS)											HUMINT COLLECTION OPNS IN EASTERN AND SOUTHERN GHAZI PROVINCE																
EOD	ON-CALL IED/UXO RENDER SAFE AND DISPOSAL OF IEDS AND UXO																											
CA TM	COORDINATE AND ASSIST LOCAL GOVERNMENT TO INCREASE CIVIL CAPACITY, RESTORE ESSENTIAL SERVICES, AND SUSTAIN ECONOMIC DEVELOPMENT																											
Q-48 RADAR	TARGET ACQUISITION OF THREAT IDF WITHIN 4-77 CAB AO																											
2-30 CAB	A CO	STABILITY OPNS IN VICINITY OF MEDINA JABAL (NAI 3102, 3108)																										
	B CO	STABILITY OPNS IN VICINITY OF KAEDAT AL-KHAYL AL-DAREB																										
	RECON	RECON OF IED HOTSPOTS ON ASR IA DRANG (NAI 3108)																										
DTG	LOCAL	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300			

Legend			
AO	area of operations	IDF	Israel Defense Forces
ASR	available supply rate	IED	improvised explosive device
ATK	attack	ISO	in support of
BCT	brigade combat team	IVO	in vicinity of
CA	combat assessment	JSTARS	Joint Surveillance Target Attack Radar System
CAB	combined arms battalion	LN	local national
C-IED	counter-improvised explosive device	MSR	main supply route
CO	company	MTI	moving target indicator
DTG	date-time group	NAI	named area of interest
DS	direct support	OPNs	operations
EA	electronic attack	RECON	reconnaissance
EC	electronic combat	RTE	route
EOD	explosive ordnance disposal	SIGINT	signals intelligence
HCT	human intelligence (HUMINT) collection team	TM	team
HUMINT	human intelligence	UXO	unexploded ordnance
ID	infantry division	WT	weight

Table IV-6. Sample Intelligence, Surveillance, and Reconnaissance Synchronization Matrix

For additional information on ISR plans, information collection and associated matrixes, see ATTP 2-01, Planning Requirements and Assessing Collection, and FM 3-60, The Targeting Process.

5. Attack Guidance

- a. Knowing target vulnerabilities and analyzing the probable effect an attack will have on enemy operations allows a staff to propose the most efficient available attack option. Key guidance is whether the commander wishes to disrupt, delay, limit damage, or destroy the enemy. During war gaming, decision points linked to events, areas of interest, or points on the battlefield are developed. These decision points cue the command decisions and staff actions where tactical decisions are needed.
- b. Based on commander's guidance, the targeting working group recommends how each target should be engaged in terms of the effects of fire and attack options to use. Effects of fire can be to harass, suppress, neutralize, or destroy the target. The subjective nature of what is meant by these terms means the commander must ensure the targeting working group understands his use of them. Application of fire support automation system default values further complicates this understanding.
- c. Following recommendations from the targeting working group, the commander approves the attack guidance. This guidance should detail the following:
 - (1) A prioritized list of HPTs.
 - (2) When, how, and desired effects of attack.
 - (3) Any SPINS.
 - (4) HPTs that require BDA.
- d. This information is developed during the war game. Attack guidance applies to both planned targets and TOO. Accordingly, attack guidance may address specific or general target descriptions. Attack guidance is provided to weapon system managers via the AGM.
- e. Attack Guidance Matrix. The AGM is a synchronization and integration tool and is normally included as part of the fire support annex. However, it is not a tasking document. Only one AGM is produced for execution at any point in the operation. However, each phase of the operation may have its own matrix. To synchronize lethal and nonlethal fires, all attack systems, including MISO, IO, CO, and EA, are placed on the AGM. The AGM consists of the following elements (see Table IV-5, Example of Attack Guidance Matrix):
 - (1) High-Payoff Target – A prioritized list of HPTs identified during war gaming.
 - (2) When – Indicates when to attack each target set.
 - (3) How – Links the weapon system to the HPT.

(4) Effect – The desired effects on the target or target system.

(5) Remarks – Remarks, restrictions, limitations, and/or SPINS, such as BDA requirements and additional coordination requirements.

Example of Attack Guidance Matrix

High-payoff target	When	How	Effect	Remarks
Mortars	I	Field Artillery	Destroy	Use search and attack teams in restricted areas
Insurgent teams	I	Field Artillery	Neutralize	Destroy mission command
Cell phone	A	Electronic Attack	Disrupt	Disrupt service starting H-2
FM radio	A	Electronic Attack	Disrupt	No jamming until H-3 to preserve intelligence
Hostile civilian crowds	A	MISOP/MP	Dispersed	25 or more with leadership constitute crowd

Legend

A	as required	I	immediate
FM	frequency modulation	MISOP	military information support operations
H	hour (H-hour is the time for a scheduled event to begin.)	MP	military police

Table IV-7. Example of Attack Guidance Matrix

For additional information on attack guidance, see FM 3-60, The Targeting Process, Chapter 2, The Targeting Methodology.

6. Targeting Synchronization Matrix

- a. The TSM synchronizes targeting by assigning responsibilities to detect, deliver, and assess attacks on specific HPTs. The HPT is listed in priority by category under the DECIDE column. Units and agencies are listed under the DETECT, DELIVER, and ASSESS columns across from the specific HPT for which they are responsible. As responsibilities are fixed, the asset envisioned to be used is also indicated. This provides the targeting working group the checks to ensure all assets are used, and assets or agencies are not overtaxed. This form could also be prepared for a specific event or for each phase of the battle. (See Table IV-6, Targeting Synchronization Matrix.)
- b. Both nonlethal and lethal assets may be included in the same matrix.

TARGETING SYNCHRONIZATION MATRIX											
UNIT: 3 BRIGADE				EFFECTIVE: 170600Z - 180559Z			PHASE I & II		AS OF: 171500ZAUG01		
DECIDE				DETECT			DELIVER			ASSESS	
PRI	TARGET DESCRIPTION	LOCATION	NAI	ASSET	TIME PD	WHEN I,A,P	ASSET	TIME PD	EFFECTS (D,N,S)	ASSET	TIME PD
1	SA-18	DR456511	12	BRC	0600 1300	A	105 BRC	0600 1300	S	BRC	0600 1300
2	81 MOTORIZED RIFLE REGIMENT	DR440520	11	Q36 LLVI ATAK AVIATION	0600 2200	A	105 TLQ17 ATAK AVIATION	0600 2200	S	BRC	0600 2200
3	MAYOR POLICE CHIEF	CRAIG VILLAGE	14	TEAM VILLE CIVIL AFFAIRS TEAM	1500 1700	P	TEAM VILLE	1500 1700	INFLUENCE TO SUPPORT	TEAM VILLE	1500 1700
EVENTS COVERED: BRC LINK-UP OFF-SET BATTERY INSERTION 1-187 ASSAULT											
Legend											
A	as required			LLVI	low level voice intercept	P	plan				
BRC	brigade, regiment, corps		N	neutralize		PRI	priority				
D	destroy		NAI	named area of interest		S	suppress				
I	immediate										

Table IV-8. Targeting Synchronization Matrix

For additional information on TSM, see FM 3-60, The Targeting Process.

7. Delivery Standards Matrix

- a. The delivery standards matrix provides criteria for the attack of HPTs in each phase of the operation. It also facilitates objective decision-making for attacking targets at the lowest level possible. When HPTs are identified, they are automatically engaged if they meet the criteria established by the matrix. (See Table IV-9, Delivery Standards Matrix)
- b. The matrix provides instructions for each HPT for all phases of the operation related to the following:
 - (1) TLE.
 - (2) Size of the target.
 - (3) Target activity.
 - (4) Time of acquisition.

DELIVERY STANDARDS MATRIX													
Category	HPTs	Target Location Error			Size of Unit			Stationary/Move			Time (of last verification)		
		Arty DS/R GS/GSR	CAS/AI	Atk Helo	Arty DS/R GS/GSR	CAS/AI	Atk Helo	Arty DS/R GS/GSR	CAS/AI	Atk Helo	Arty DS/R GS/GSR	CAS/AI	Atk Helo
RISTA	Ops	100 – 200 m	200 m	500 m	Sec	Sec	Sec	Stat	Stat	Stat	72 hrs	72 hrs	48 hrs
	Patrols	100 – 200 m	200 m	1 km	Sec	Sec	Sec	Stat	Stat	Stat/Move	2 hrs	1 hr	1 hr
	ARK-1	100 – 200 m	200 m	1 km	Sec	Sec	Sec	Stat	Stat	Stat/Move	12 hrs	6 hrs	6 hrs
ADA	SA-6/8/13	100 – 200 m	200 m		Sec	Sec		Stat	Stat		2 hrs	1 hr	
	S60	100 – 200 m	200 m		Sec	Sec		Stat	Stat		2 hrs	1 hr	
	ZSU-23-4 ZSU-23-2	100 – 200 m	200 m		Sec	Sec		Stat	Stat		2 hrs	1 hr	
Fire Support (Deep)	Astors, FROG	100 – 200 m	200 m	500 m	Btry	Bn	Bn	Stat	Stat	Stat	1 hr	2 hrs	2 hrs
	BM-21	100 – 200 m	200 m	1 km	Btry	Bn	Bn	Stat	Stat	Stat/Move	1 hr	2 hrs	2 hrs
	2S5, M46	100 – 200 m	200 m	1 km	Btry	Bn	Bn	Stat	Stat	Stat/Move	1 hr	2 hrs	2 hrs
Maneuver	T-62	100 – 200 m	500 m	1 km	Plt	Co	Bn	Stat	Stat/Move	Stat/Move	15 min	30 min	90 min
	BROM, BMP	100 – 200 m	500 m	1 km	Plt	Bn	Bn	Stat	Stat/Move	Stat/Move	15 min	30 min	90 min
Legend													
ADA	air defense artillery						helo	helicopter					
arty	artillery						HPT	high-payoff target					
atk	attack						hrs	hours					
AI	air interdiction						km	kilometer					
BM	ballistic missile						m	meters					
bn	battalion						min	minutes					
btry	battery						ops	operations					
CAS	close air support						plt	platoon					
co	company						RISTA	reconnaissance, intelligence, surveillance, and target acquisition					
DS/R	direct support/reinforcing						sec	section					
FROG	free rocket over ground						stat	stationary					
GS/GSR	general support/general support reinforcing												

Table IV-9. Delivery Standards Matrix

For additional information on the delivery standards matrix see FM 3-60, *The Targeting Process, Appendix D, Example Formats and Target Reports.*

8. Time-Sensitive Targeting Decision Matrix

- a. The JFC's objectives, intent, and guidance should be clear and concise, while being detailed enough to allow formulation of a TST decision matrix for graphical display to facilitate rapid decision making. A TST decision matrix allows subordinate commanders to quickly reference the JFC's intent for each TST type/function and take immediate, appropriate action (see Table IV-8, Notional Time-Sensitive Target Decision Matrix). A decision matrix is a tool, not a substitute, to assist personnel in fully understanding the underlying TST guidance, ROE, CID, and TST operating procedures that form the matrix. The TST decision matrix framework should include the following:

- (1) TST priority.

- (2) Target type/function.
- (3) Desired effect.
- (4) Assigned approval authority.
- (5) Acceptable risk level.

NOTIONAL TIME-SENSITIVE TARGET DECISION MATRIX						
JFC Priority	TST Target Typ	Desired Effect	Approval Authority	Additional Restrictions (Note 1)	Acceptable Risk Level	Other Requirements or Notes
1	Critical weapon system A	Prevent launch	On-scene Commander (Note 2)		HIGH (Note 3)	Strike immediately with any asset
2	Personnel or groups meeting X criteria	Isolate, capture, or kill	Commander, Joint Task Force (CJTF) or above	Higher level notification required prior to striking	HIGH	Notify JFC immediately & maintain sensor track
3	Critical weapon system B	Prevent movement or use	CJTF		MEDIUM	Hazard analysis required
4	Critical weapon system C	Neutralize for campaign duration	Component (Note 4)		LOW	
(1) Law of armed conflict, rules of engagement, and collateral damage guidance applies to all targets. (2) Refer to component level guidance for further details. (3) JFC will accept increased risk of fratricide and collateral damage. (4) Component commander may delegate to lower level commands as needed.						
Legend JFC joint force commander TST time-sensitive target						

Table IV-10. Notional Time-Sensitive Target Decision Matrix

b. The JFC objectives and guidance set a basic procedural framework for components to expedite operations against TSTs. Components do not need to consult the JFC for every target determined to be a TST. Once this guidance is stated, the components establish planned and reactive procedures for finding, fixing, tracking, targeting, and engaging the prioritized TSTs. An assessment must be conducted to confirm TST engagement results. Component responsibilities may include the following:

- (1) Identify and assign primary sensors and weapon systems to support TST attacks and CA.
- (2) Establish planned and deconflicted FSCMs against specific TSTs.

- (3) Define TST engagement authority based on the component commander's OA, assigned functional mission, or a combination thereof.
- (4) Identify specific communication data links between component C2 elements of the joint force to conduct rapid TST attacks. This normally includes authorizing direct liaison and coordinating authority.
- (5) Conduct an assessment to confirm engagement results.

For additional information on the TST decision matrix, see MTTP for Dynamic Targeting, ATP 3-60.1[FM 3-60.1], MCRP 3-16d, NTTP 3-60.1, and AFTTP 3-2.3.

9. Target Report

When targeting information is passed from one agency to another, all essential information must be included to allow proper analysis and attack. Although there are no formal formats for this information, the sample format below provides enough information to properly formulate the best attack response. (See Table IV-9, Target Report.)

Target Report	
LINE NUMBER	
1.	Report Agency: COLT
2.	Type of Sensor: Human
3.	Report DTG: 190044ZNov08
4.	Acquisition DTG: 190040ZNov08
5.	Distribution: Unknown
6.	Posture ¹ : Moving SAMPLE
7.	Activity ² : Traveling east towards village
8.	Size ³ : 5 white pick trucks
9.	Location ⁴ : 1000010000
10.	Location Error ⁵ : 10 meters

NOTES:
¹Dug-in, in the open, in built-up areas, and so on.
²Moving (direction) or stationary.
³Unit size, diameter, and so on.
⁴Grid coordinates
⁵+/- meters

Table IV-11. Target Report

For additional information on target reports see FM 3-60, The Targeting Process, Appendix D, Example Formats and Target Reports.

SECTION B. AIR COMPONENT INPUTS (JOINT AIR TASKING CYCLE)

1. General

- a. The joint air tasking cycle is used for the efficient and effective employment of available joint air capabilities/forces. It provides a process for the planning, coordination, allocation, and tasking of joint air missions/sorties within JFC guidance. (See Figure IV-3, Joint Air Tasking Cycle.) The cycle accommodates changing tactical situations or JFC guidance, as well as requests for support from other component commanders. A timely joint ATO is critical, as other joint force components conduct their planning and operations based on a prompt, executable joint ATO, and they are dependent on its information. Much of the day-to-day joint air tasking cycle is conducted through an interrelated series of information exchanges and active involvement in plan development, target development, and air execution (through designated component LNOs or messages), which provide a means of requesting and scheduling joint air missions.

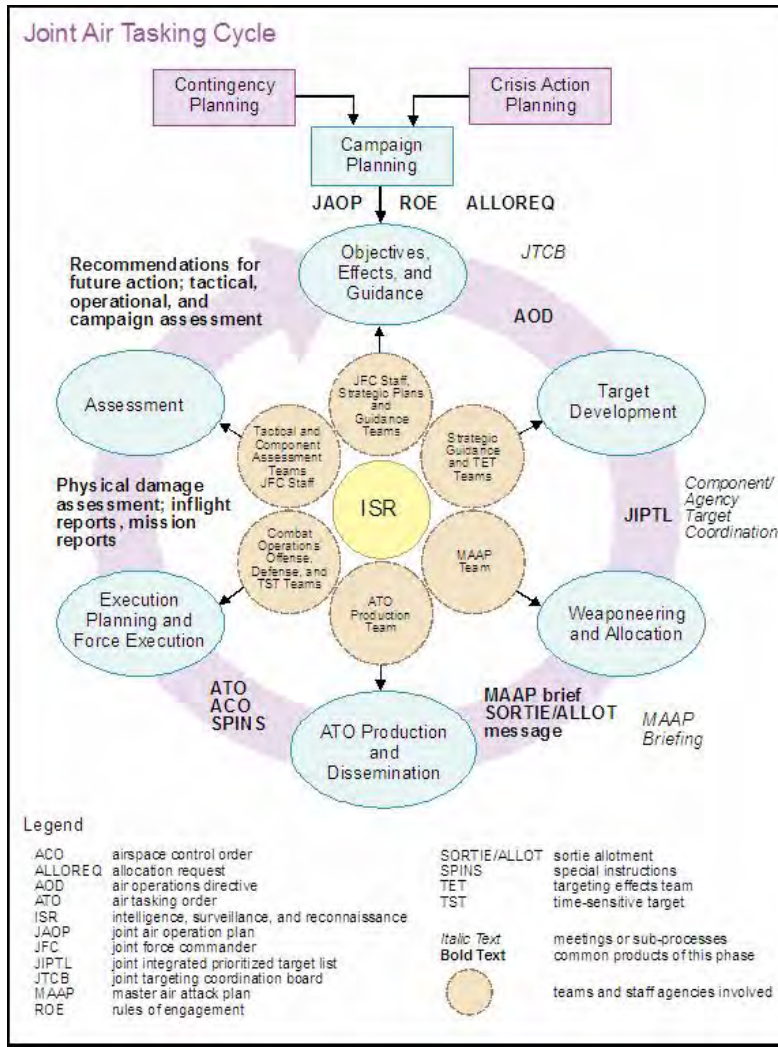


Figure IV-12. Joint Air Tasking Cycle

b. The cycle begins with the JFC's objectives, incorporates guidance during JFC and component coordination, and culminates with CA of previous actions. The ATO articulates the tasking for joint air and space operations for a specific time period, normally 24 hours. Detailed planning normally begins 72 hours in advance of the execution period to enable the integration of all component requirements. The net result of this tasking process is a series of ATOs and related products in various stages of progress at any time. A typical joint air tasking cycle snapshot in time reveals the following:

- (1) At least one ATO undergoing assessment at various levels.
- (2) An ATO currently being executed.
- (3) An ATO currently in production.
- (4) An ATO in planning (target development and weaponeering).
- (5) An ATO in strategy development (guidance and objectives).

c. The full ATO cycle from JFC guidance to the start of ATO execution is dependent on the command procedures. A 72-hour ATO cycle, starting from guidance and ending after a 24-hour execution period, is fairly standard. The precise time frames for the joint air tasking cycle must be specified in the OPLAN or the JFACC's JAOP. Long-range combat air assets positioned outside the theater but operating in the JOA, may be airborne before ATO publication/execution. These assets require the most current (draft) ATO information and updates as required. Intertheater air mobility missions may not necessarily operate within an established ATO cycle. The JAOC's CPD should consider how these and intratheater air mobility missions are integrated into the ATO.

d. The ATO matches specific targets compiled by the JFACC with the capabilities/forces made available to the JFACC for the given ATO day. Other component air missions that appear on the ATO are not under the control of the JFACC, but their presence on the ATO provides visibility to assist overall coordination and deconfliction.

For additional information on the joint air tasking cycle, see JP 3-30, Command and Control of Joint Air Operations.

2. Air Tasking Order

a. **Purpose.** The ATO is used to task and disseminate to components, subordinate units, and C2 agencies projected sorties, capabilities or forces to targets and specific missions. It normally provides specific instructions to include call signs, targets, controlling agencies, etc., as well as general instructions. The ATO may subsume the ACO and SPINS, or these may be published as separate orders. The

ATO production team relies primarily on TBMCS tools to produce and publish the joint ATO.

- b. **Production.** ATO production consists of developing, publishing, and disseminating the daily ATO, which tasks air capabilities in accordance with the MAAP. Two primary tasks within production are technical production and distribution of the ATO, ACO, and associated SPINS. ATO production translates the MAAP into executable air missions that are assigned to subordinate and supporting commanders. The ultimate goal is timely development and transmission of an accurate ATO so those executing the missions have the time they need for detailed planning.

KEY TERMS

Airspace control order — An order implementing the airspace control plan that provides the details of the approved requests for airspace control measures. It is published either as part of the air tasking order or as a separate document. Also called ACO. JP 3-52.

Airspace control plan — The document approved by the joint force commander that provides specific planning guidance and procedures for the airspace control system for the joint force area of responsibility and/or joint operations area. Also called ACP. JP 3-52.

Air tasking order — A method used to task and disseminate to components, subordinate units, and command and control agencies projected sorties, capabilities and/or forces to targets and specific missions. Normally provides specific instructions to include call signs, targets, controlling agencies, etc., as well as general instructions. Also called ATO. JP 3-30.

Master air attack plan — A plan that contains key information that forms the foundation of the joint air tasking order. Sometimes referred to as the air employment plan or joint air tasking order shell. Information that may be found in the plan includes joint force commander guidance, joint force air component commander guidance, support plans, component requests, target update requests, availability of capabilities and forces, target information from target lists, aircraft allocation, etc. Also called MAAP. JP 3-60.

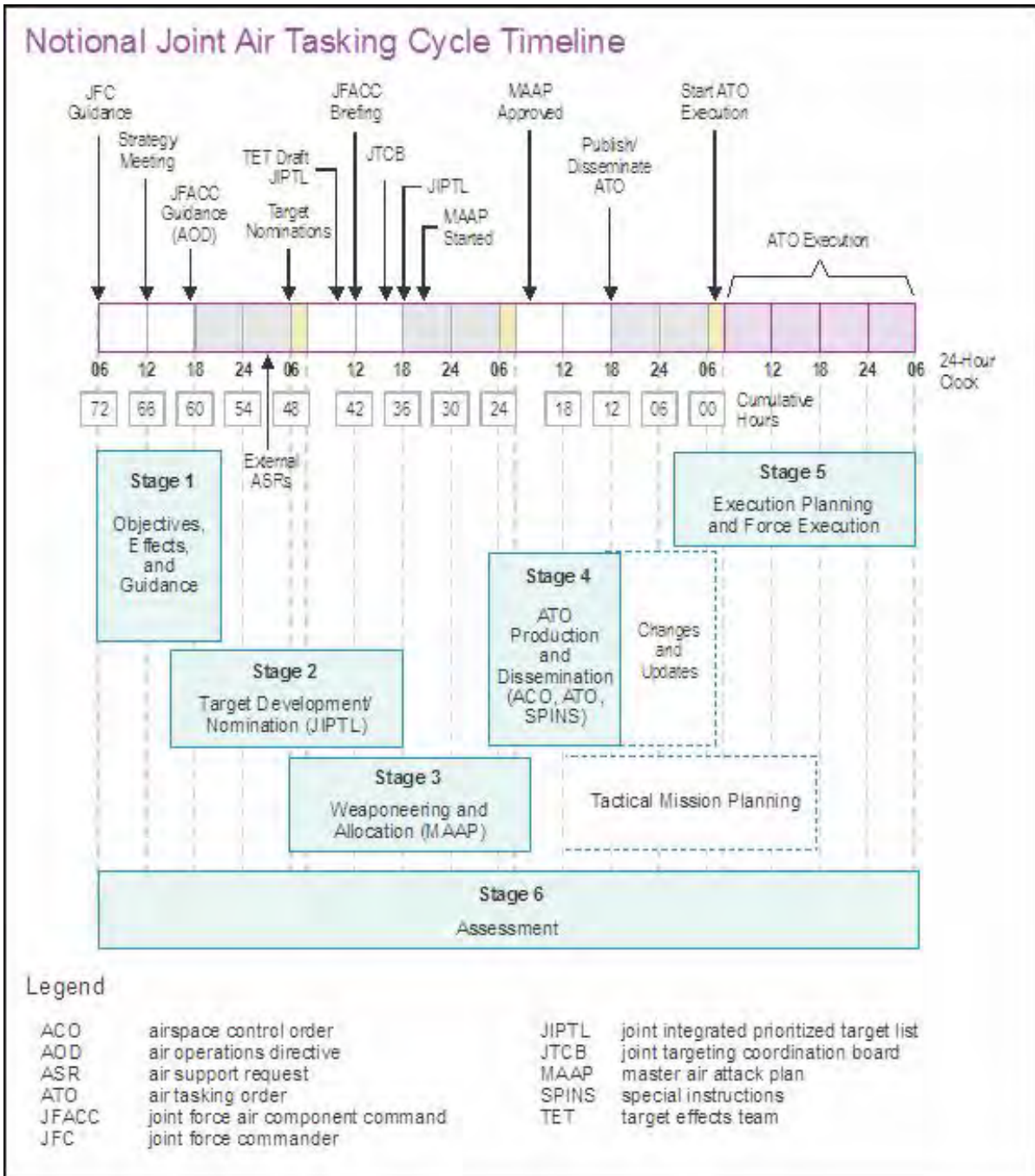


Figure IV-13. Notional Joint Air Tasking Cycle Timeline

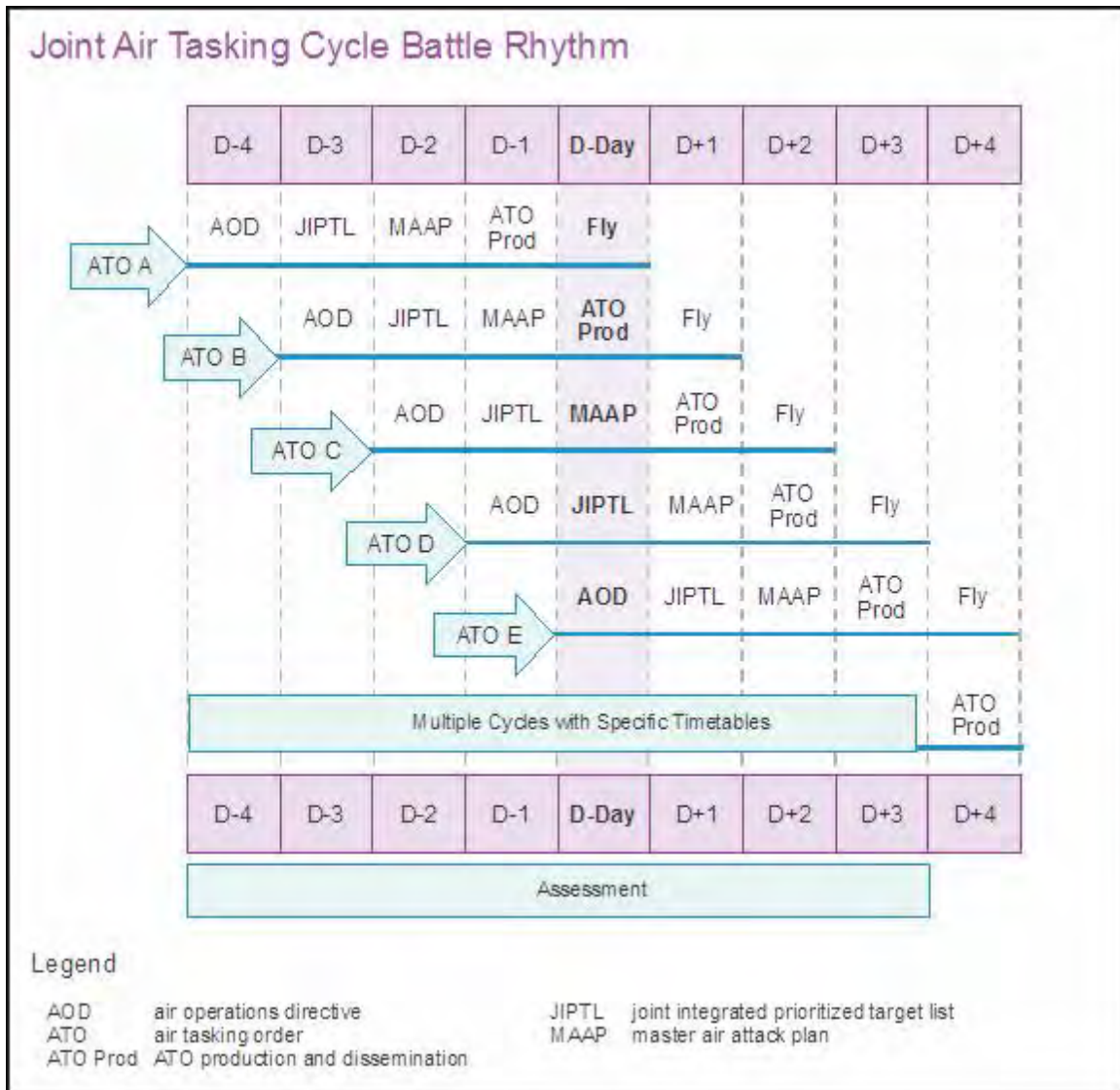


Figure IV-14. Joint Air Tasking Cycle Battle Rhythm

- c. **Air Operations Directive.** The AOD is an air component document similar to a FRAGORD. The daily AOD gives planners the priority of effort, operational constraints, and any other specific guidance governing the planning/execution of air and space operations during a particular ATO period. Airspace personnel should review the AOD to gain an overall view of what airspace requirements the ATO development created and to understand daily priorities for airspace deconfliction. In addition, the AOD may have specific guidance references for the airspace (i.e., plan for high value airborne asset retrograde procedures due to threat). The AOD translates the JFACC'S JAOP into guidance for the planning and execution of a specific ATO. The JFACC uses the AOD to express the intent for a specific day and communicates the JFC's apportionment decision. Apportionment guidance should reflect prioritized operational objectives and relevant tactical tasks with approximate weights of effort for each objective. Specific weights of effort should be avoided to allow maximum flexibility in planning the application of airpower.

KEY TERM

Apportionment (air) — The determination and assignment of the total expected effort by percentage and/or by priority that should be devoted to the various air operations for a given period of time. JP 3-0.

- (1) The AOD (along with the space and cyberspace operations directives, where appropriate) is the primary vehicle for communicating desired effects to target developers and others involved in the tasking process. The Air Operations Center Strategy Division (AOC SD) drafts the AOD for JFACC approval. In a normal battle rhythm, this is done on a daily basis. By outlining desired effects in the AOD, target developers within the JAOC's Intelligence, Surveillance, and Reconnaissance Division (ISRD) gain the flexibility to identify and nominate the most effective means to create the desired effects. Conversely, target-based AOD guidance can reduce target selection flexibility and resulting in the inefficient use of resources. Robust, logical desired effects with appropriate MOEs and ISR collection requirements (CRs) are a necessary part of the AOD.
- (2) The AOD should also be used to express the JFC's and JFACC's guidance regarding TST target categories (target sets), what the priority is among them, and what conditions would cause preplanned missions to be retasked. Categories of TSTs, HVTs, and other objects of dynamic targeting should be presented in the context of the desired effects, and those desired effects prioritized against the desired effects for preplanned targets. Other divisions, in addition to the Combat Operation Division (COD), have important roles to play in dynamic targeting. The SD, for instance, must capture macro-level targeting guidance to include component priorities in the daily AOD. Many items in the AOD, like commander's intent, anticipated weapons available, ROE, acceptable risk levels, and elements of the ISR collection plan, may be vital. This allows the COD to rapidly assess the value of preplanned targets against TST or emerging targets to determine whether or not to re-task assets. This guidance also reduces the possibility of all newly detected targets being struck. Just because a target can be engaged within the ATO execution period does not mean that effort should be diverted from preplanned targets to engage it.
- (3) While daily guidance is critical to subsequent ATOs, the SD's strategy plans team also works on long-range planning, including the analysis of branches and sequels. Conclusions drawn from this analysis should be disseminated throughout the JAOC to assist in focusing future target development and intelligence collection efforts.
- (4) Finally, the AOD should include the JFACC's guidance on which targets or target sets require immediate assessment feedback. ISR collection assets are usually limited in number and the CRs for target development, JIPOE, I&W,

and other taskings may have a higher priority than CA. A focus on a select few high-priority targets or sets for assessment aids JAO efficiency.

- e. **Special Instructions.** SPINS are a separate instruction or section of the ATO that provides information that is not otherwise available in the ATO, but is necessary for its implementation. It includes such information as JFCs' guidance (often including the AOD itself), the C2 battle management plan, ROE, PR procedures, the communications plan, and general instructions for inter- and intra-theater airlift. It may also include the ACO.
- f. **Airspace Control Plan.** The ACP establishes procedures for the ACS in the JOA. The JFC approves the ACP. To provide effective operational procedures the ACP and AD plan must be integrated with the JFC's operation plans and orders. Both plans should complement available C2 systems and capabilities. The ACP must consider procedures and interfaces with the international or regional air traffic systems necessary to effectively support air operations. Because the airspace control area normally coincides with AD boundaries, coordination between combat zone airspace control and area AD operations is essential. The ACP is a directive for all joint force elements using the airspace to include manned and unmanned aircraft and indirect fires. Implementation of the ACP begins with the distribution of the ACO, and is executed when components and users comply with the ACO as described in JP 3-30, Command and Control for Joint Air Operations. The ACP establishes the ACS, the control nodes, and airspace procedures.
- g. **Airspace Control Order.** The ACO is an order that implements specific control procedures for established time periods based on the general guidance contained in the ACP that provides the details of the approved requests for ACM. It defines and establishes airspace for military operations as coordinated by the ACA. It notifies all agencies of the effective airspace activation time, composite structure of the airspace to be used; and the altitudes, distances, and the controlling agency for all ACMs. The ACO may include airspace coordination measures (ACMs) and FSCMs such as air routes, base defense zones, coordinating measures/lines, drop zones, pickup points, restricted areas, etc., and any other pertinent airspace information deemed necessary by the airspace control authority (ACA) to limit fratricide and maximize combat effectiveness.
 - (1) The ACO will be published either as a part of the ATO or as a separate document. The ACO message is a jointly approved message developed by the airspace management control team in the JAOC and published by the ACA. A change to the ACO should be distributed whenever a new area is established or an existing area deleted.
 - (2) The ACO is executed during ATO execution and can be updated with additions, changes, or deletions as needed. All air missions are subject to the ACO. It provides direction to deconflict, coordinate, and integrate the use of airspace within the OA. This does not imply the level of command authority over air assets. The methods to accomplish deconfliction, coordination, and

integration range from positive control of all air assets in an ACA – to procedural control of all such assets, with any effective combination of positive and procedural control between the two extremes. The JFACC, through the ACP, will determine the appropriate method based on the JFC's CONOPS.

- h. **Airspace Control Means Request.** The airspace control means request (ACMREQ) message is a jointly-approved message used to request a specific airspace control measure or to identify relevant information that should be included in the ACO. The ACMREQ will allow the originator to request that a defined block of airspace be designated as having special significance for air operations. Requested control measures are deconflicted from other users by airspace management control team personnel and published in the ACO. When procedural ACMs are established, they reserve airspace for specific airspace users, restrict the actions of airspace users, control the actions of airspace users, or require airspace users to accomplish specific actions.
- i. **Cycle Inputs.** A number of inputs are required prior to initiating the ATO cycle. Once these inputs are available, the ATO production workflow begins. Specific actions at predetermined times ensure ATO production remains on schedule within the established timing cycle. Figure IV-4, Notional Joint Air Tasking Cycle Timeline, identifies the steps required to produce an ATO while Figure IV-5, Multiple Air Tasking Order Production Rhythm (Notional), depicts a notional multi-ATO rhythm. ATO production team required inputs include the following:
 - (1) JIPTL from the targeting cell (in TBMCS this is also known as the TNL).
 - (2) ACMs from the airspace management cell.
 - (3) Friendly order of battle data (time permitting, initially established during contingency planning, otherwise during CAP).
 - (4) MAAP developed daily ABP from mission planning worksheets or MAAP Toolkit.
 - (5) SPINS inputs.
 - (6) Airlift missions ready for import by airlift import manager.

For additional information on the C2 of JAO throughout the range of military operations, refer to JP 3-30, Command and Control for Joint Air Operations.

APPENDIX A

INTELLIGENCE ORGANIZATIONS THAT SUPPORT TARGETING

1. Intelligence Support Architecture

- a. At the JFC level, production focuses on the fusion of intelligence from all sources. CCMD JIOCs possess organizational processes to integrate and synchronize military, national, operational, and tactical intelligence capabilities to increase intelligence fidelity and timeliness of dissemination to warfighters, and to decrease duplication of effort by intelligence centers.
- b. The CCMD JIOC is the primary intelligence organization providing intelligence to joint forces at the operational and tactical levels. The JISE is the JFC J-2's focal point for multidisciplined, all-source collection, production, analysis, and dissemination. The JISE utilizes reach-back capabilities to the CCMD JIOC and the Defense Joint Intelligence Operations Center.
- c. Utilizing federated partnerships, a JFC receives its principal intelligence support from the CCMD's JIOC, which receives information from all echelons and performs all-source analysis and production.
- d. The Intelligence Community (IC). The IC consists of 17 member organizations DIA, National Security Agency (NSA), National Geospatial-Intelligence Agency (NGA), National Reconnaissance Office, Army Intelligence, Navy Intelligence, Air Force Intelligence, Marine Corps Intelligence, Central Intelligence Agency (CIA), Department of State (DOS), Department of Energy (DOE), Federal Bureau of Investigation, Department of the Treasury, Coast Guard Intelligence, Department of Homeland Security (DHS), the Drug Enforcement Administration (DEA), and the Office of Director of National Intelligence (DNI). Both DOD and non-DOD members of the IC routinely provide support to JFCs while continuing to support national decision makers.
- e. The following paragraphs contain information on the organizations that may provide expertise for federated intelligence support to targeting and allow access to more actionable information than would otherwise be available to JFC.

2. Joint Staff, J-2, Deputy Director for Targeting

- a. The JS J-2 is a unique organization in it is a both a major component of the DIA, which is a combat support agency (CSA), and a fully integrated element of the JS. The J-2 provides continuous intelligence support to the CJCS, JS, National Military Command Center, and CCMDs in the areas of targeting, global warning intelligence, and current intelligence.
- b. The JS J-2, Deputy Director for Targeting (J-261) functions as the lead agent for providing and coordinating national-level intelligence support to joint targeting. Specific J-261 responsibilities include:

- (1) Providing CJCS and JS J-3 with targeting, assessment, and technical support during contingency and CAP.
- (2) Providing the CCMDs, if requested and validated, with IC target development through all phases of the targeting cycle.
- (3) Assisting the CCMDs in establishing, coordinating, or supporting federated intelligence operations, to include target development and assessment.
- (4) Assisting CCMDs with coordination of IC target vetting.
- (5) Providing functional expertise on targeting and targeting-related issues undergoing JS, SecDef, and Presidential review. This includes, but is not limited to, command target lists, planning orders, warning orders, and STAR products.

For additional information, see JP 2-0, Joint Intelligence.

3. Defense Intelligence Agency

The DIA is an intelligence CSA under the SecDef and is also a member of the national IC. The Director, DIA, reports to the SecDef through the CJCS. The DIA's mission is to satisfy the military and military-related IRs of the SecDef and the Deputy SecDef, the CJCS, and the DNI, and provide the MI contribution to national foreign intelligence and counterintelligence. Analysts across the agency directly support targeting efforts by performing all-source target development, material production, TSA, and assessment.

4. National Joint Operations and Intelligence Center

The National Joint Operations and Intelligence Center (NJOIC) is an integrated JS J-2/J-3/J-5 element that monitors the global situation on a continual basis and provides the CJCS and SecDef a DOD planning and crisis response capability. The intelligence component of the NJOIC maintains an alert center that consists of the Deputy Director for Intelligence; regional desks corresponding to each geographic CCMD; and representatives from each Service intelligence staff element, the intelligence CSAs, and the CIA. The alert center is a continuously manned, all-source, multidiscipline intelligence center providing defense intelligence SA, I&W, and crisis management intelligence support.

5. National Security Agency/Central Security Service

The NSA/ Central Security Service (CSS) is a unified organization structured to provide for the SIGINT mission of the US and to ensure the protection of national security systems for all departments and agencies of the USG. The NSA/CSS provides critical intelligence support to all phases of joint targeting. This support includes analysis of communications networks or other aspects of the information infrastructure, as well as operational SIGINT. The NSA is also an intelligence CSA under the SecDef and is dual-tasked as a member of the national IC under the DNI. The NSA provides direct

cryptologic and cyberspace support to the CCMD JIOCs through the CSS (comprised of the Service cryptologic components) and cyberspace support element, respectively. The NSA/CSS is also responsible for providing the CCMD JS J-2 and NJOIC with the intelligence gain or loss assessment, which is an evaluation of the quantity and quality of intelligence data lost if desired effects are created on a target. The NSA/CSS will keep the NJOIC, CCMD JIOCs and other interested commands and agencies informed of agency activities that take place in each respective CDR's AOR or subordinate JFC's OA.

6. National Geospatial-Intelligence Agency

By law, the NGA is a CSA, as well as a national intelligence organization, and is directly subordinate to the SecDef and the Under Secretary of Defense for Intelligence. The NGA is the primary source for GEOINT analysis, products, data, and services at the national level. In addition to the GEOINT support identified in JP 2-01, *Joint and National Intelligence Support to Military Operations*, the NGA's mission supports national and homeland security, defense policy and force structure, advanced weapons and systems development, and natural disaster relief. The NGA is the primary provider of positioning and navigation services to the DOD and the IC. Since the NGA disseminates data and standard products and makes them available in repositories, GEOINT-trained personnel throughout much of the IC, including military personnel in the field, can access the data to develop their own GEOINT analysis and nonstandard products. The NGA serves as the DOD lead for all acquisition or exchange of commercial and foreign government-owned imagery-related remote sensing data for DOD components.

For additional information on NGA target support products and services, see JP 2-03, Geospatial Intelligence Support to Joint Operations, and JP 3-60, Joint Targeting.

7. Defense Threat Reduction Agency

DTRA provides special tools and expertise on WMD and helps safeguard the US and its allies by providing capabilities to eliminate, reduce, and/or counter these threats and/or mitigate their effects. DTRA's work covers a broad spectrum of activities, but is directly involved in the targeting process by making collateral damage and casualty estimations when employing weapons against facilities that may contain WMD. DTRA also provides target characterization and high-fidelity weapons effects modeling to support physical and functional defeat of hardened and deeply buried targets. DTRA also verifies existing foreign controls of stockpiles of nuclear-related equipment and materials.

8. Joint Information Operations Warfare Command

The Joint Information Operations Warfare Command (JIOWC) is a CJCS-controlled activity reporting to the J-3, via the JS, Deputy Director for Global Operations. The JIOWC supports the JS by ensuring operational integration of IRCs in support of IO, improving the DOD's ability to meet CCMD IRC requirements, as well as developing and refining IRCs for use in support of IO across the DOD. The JIOWC's specific organizational responsibilities include:

- a. Supports the integration of OPSEC, MISO, MILDEC, EW, and destruction throughout the planning and execution phases of an operation.
- b. Interfaces with the JS, Services, DOD, and non-DOD agencies to coordinate and integrate IO efforts for the JFC.
- c. Provides full spectrum IO to include human influence targeting support that can be tailored for integration into TSAs.
- d. Provides IO SMEs and advice to the JS and the CCMDs.
- e. Develops and maintains a joint IO assessment framework.
- f. Assists the Joint Information Operations Proponent in advocating for and integrating CCMD IO requirements.
- g. Upon the direction of the Joint Information Operations Proponent, provides support in coordination and integration of DOD IRCs for JFCs, Service component commanders, and DOD agencies.
- h. Assists with strategic IO planning and theater engagement.

9. Joint Warfare Analysis Center

The JWAC provides the JS, CCMDs, JFCs, and other DOD and non-DOD agencies with precision targeting and deterrent options for selected networks and nodes. The JWAC conducts engineering and modeling analysis, fused with scientific and intelligence data, to produce optimized target sets that support the JFC's objectives. As such, the JWAC is a key provider of information supporting target development and assessment. It may also be a key provider of unique weaponizing cases and CDE analysis.

10. Joint Technical Coordinating Group for Munitions Effectiveness

The JTCG/ME is a vital joint service activity that develops operational effectiveness estimates for all non-nuclear munitions and munitions effective miss distance tables that contain collateral damage distances for all air-to-surface and surface-to-surface conventional munitions. The JTCG/ME continuously updates JMEMs used by the Services for training and tactics development; operational targeting; weapons selection; aircraft loadouts; and planning for ammunition procurement, survivability, and development of improved munitions. The JTCG/ME directs the analytical effort of working groups necessary to determine degrading effects of various terrain environments on non-nuclear ME and improving the database for target vulnerability, delivery accuracy, and weapons characteristics.

11. National Air and Space Intelligence Center

The National Air and Space Intelligence Center (NASIC) is an Air Force organization that assesses foreign air and space threats. The NASIC can provide deployed forces with unique aerospace intelligence capabilities for DOD operational commands, research and development centers, weapon acquisition agencies, and national planners and policymakers. In collaboration with other IC elements, the NASIC's Counter Space Operations Cell provides foreign counterspace threat intelligence supporting military operations and serves as the primary NASIC focal point for operational defensive counterspace support. As such, the NASIC is seen as the "all-source intelligence integrator" for intelligence relating to suspected purposeful interference and EA affecting DOD and USG space systems.

12. Non-Department of Defense Supporting Intelligence Organizations

- a. Non-DOD organizations provide significant intelligence and operational support to joint targeting. The principal non-DOD organizations supporting joint targeting are the CIA and DOS.
- b. Central Intelligence Agency. Through its target support group (TSG) within its Office of Military Affairs (OMA), the CIA works closely with the DOD on many issues relating to every phase of the targeting cycle. The TSG makes a variety of CIA resources available to military target planners. The CIA can provide target systems analysis of communications system and intelligence, WMD, and counterterrorism. Additionally, in peacetime, applicable requests for information are routed to the CIA to be addressed by the agency's OMA. The TSG provides information and expertise in support of military target development and processes formal requests for target nominations (review and approval by the CIA's leadership) to add CIA-selected targets to a DOD plan. TSG manages all military STO and Special Access Program compartments, and deconflicts military targeting with CIA operational assets. In a crisis or war, CIA personnel or teams can be attached to CCMDs, JFCs, or joint force components, as required.
- c. Department of State, Bureau of Intelligence and Research. The central point of contact within the DOS for intelligence, analysis, and research is the Bureau of Intelligence and Research (INR). The INR produces intelligence studies and analyses, which have provided valuable information in support to targeting. As the lead foreign affairs agency and the enabler of US diplomacy, the State Department has a unique perspective on the nations of the world. All-source reporting, via Foreign Service channels at American embassies or consular posts, has also proven useful, particularly during the objectives and guidance, target development, and CA phases of the targeting cycle. Intelligence concerning political and military leaders, cultural trends and thoughts, and economics can provide intelligence that ties military strategy to the entire spectrum of national power. Such intelligence can enhance understanding of adversary motivations, helping to influence or bend them to our will.

APPENDIX B

JOINT AND SERVICE COMMAND AND CONTROL SYSTEMS

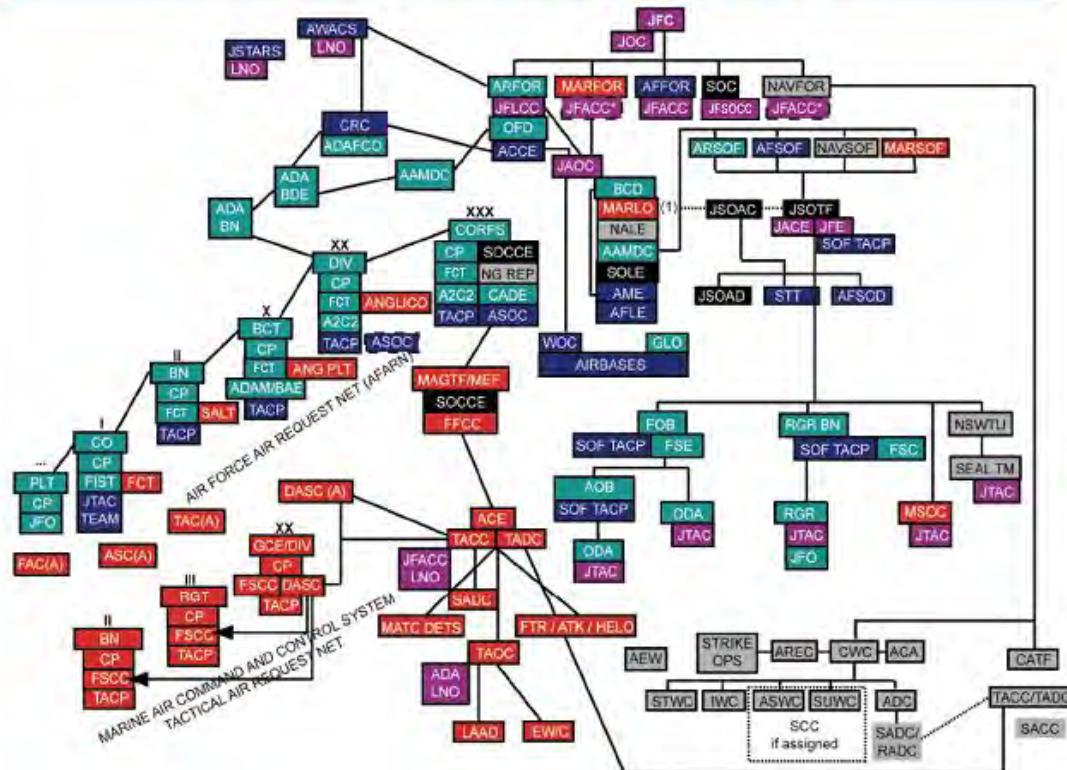
1. Theater Air-Ground System

- a. The TAGS is a system of systems, a synergy of the various component air-ground systems, orchestrating the planning and execution of air-ground operations (see Figure B-1, Theater Air Ground System). When all elements of the Air Force's TACS/ AOC, Army air-ground system (AAGS), Navy's CWC/naval tactical air control system (NTACS), Marine air command and control system (MACCS) with FSCC hierarchy, and special operations air-ground system integrate, the entire system is labeled the TAGS. Technology has improved the JFACC's ability to command and control joint air power. The speed of modern warfare, as well as the precision of today's weapons, dictates close coordination in the OA among the JFC's components. The JFACC must ensure all elements of the TAGS are in place and the various liaison positions are filled prior to, or as soon as possible after, the start of an operation or campaign.
- b. Actions at the joint force level establish the requirements for the TAGS including the GCC's guidance, perspective, and strategy for the AOR. They also establish the JFC's JOA strategy, command organization and relationships, the campaign plan, assignment of objectives, and apportionment of forces. It is important that personnel assigned to (or working with) the TAGS understand the decision processes and problems associated with the operational and tactical levels of command. Armed with this knowledge, commanders and staffs will better understand the TAGS functions and how to work within the system to receive or give support.
- c. Simultaneous joint operations with different end states can be conducted within a GCC's AOR. The effectiveness of the TAGS facilitates the JFC's ability to integrate, synchronize, and direct joint operations.
- d. From a TAGS perspective, targeting directly affects the preparation of the ATO. For the TAGS to work effectively, the joint targeting process and the joint ATO cycle must be synchronized. Personnel working ATO development must understand the targeting process to fully realize its impact on the TAGS.
- e. The TAGS is critical to Army operations because it provides the commander with a system that integrates the different Services' air-ground systems. TAGS functions cross the full range of military operations and provide ground commanders with an enhanced capability to fight the close, deep, and rear battles. The TAGS facilitates success in COPS while allowing ground commanders to shape the OE to influence future operations. Army commanders expect the TAGS to provide the framework to synchronize supporting air operations with the ground effort. The ability of the commander's FSC, G-3 Air, and ALO to work closely together in all aspects of planning, synchronizing, and executing operations is critical to the ground battle's success.

- f. The JFC will organize the joint force to maximize the TAGS capabilities in support of air-ground planning, targeting, tasking, execution, and CA. The JFC also influences the structure and the direction of the TAGS in several ways, to include designating a JFACC, ACA, and AADC; assigning missions; and apportioning forces. The basic duties and responsibilities of the components in performing JFACC, ACA, and AADC capacities remain the same regardless of whether the commander of the MARFOR, Navy forces (NAVFOR), or AFFOR performs the function. However, as explained, the MARFOR and NAVFOR JAOC capacity is limited and this has a direct bearing on the size of liaison elements.

- g. Component C2 elements are combined to form the TAGS. Joint force components must work together in planning and executing JAO that accomplish JFC-assigned objectives, comply with JFC guidance, and satisfy various component commanders' requirements. The challenge to personnel working within the TAGS is to operate a system responsive to all components and supported echelons to accomplish the JFC's campaign objectives.

THEATER AIR GROUND SYSTEM



*if assigned

A2C2	Army air base command and control	CW/C	composite warfare commander	Marine TACC	Marine tactical air command center
AAMDC	Army Air and Missile Defense Command	DA SC	direct air support center	MARLO	Marine liaison officer
ACA	airspace control authority	DA SC(A)	direct air support center (airborne)	MARSOF	Marine special operations forces
ACCE	air command and control element	DIV	division	MATCD	Marine air traffic control detachment
ACE	aviation combat element (MAGTF)	DR	deployable radar	MEF	Marine expeditionary force
ADA	air defense artillery	EVIC	electronic warfare coordinator	MSOC	Marine special operations company
ADA BDE	air defense artillery brigade	FAC (A)	forward air controller (airborne)	NALE	naval and amphibious liaison element
ADAFCO	air defense artillery fire control officer	FCT	fire power control team	NAVFOR	navy forces
ADAMBAE	air defense and airspace management/brigade aviation element	FFCC	force fires coordination center (USMC)	NAVSOFF	naval special operations forces
ADC	air defense commander	FIST	fire support team	NG	naval gunfire
AMD	air missile defense	FOB	forward operations base	NGLO	naval gunfire liaison officer
AEP	air expeditionary wing	FSC	fire support coordinator	NSVITU	naval special warfare task unit
AFARN	Air Force air request net	FSCC	fire support coordination center	ODA	Operational Detachment A (A Team)
AFFOR	Air Force forces	FSE	fire support element	OP 3	operations fires directors (Army)
AFLE	Air Force liaison element	FTR	fighter	PLT	platoon
AFSOD	Air Force special operations detachment	GCE	ground combat element (MAGTF)	RADC	regional air defense commander
AFSOF	Air Force special operations forces	GLO	ground liaison officer	RGR	Army Rangers
AMD	air and missile defense	I/UC	information warfare commander	RGT	regiment
ANG	air/naval gunfire	JACE	joint air coordination element	SACC	supporting arms coordination center
ANGLICO	Air/Naval Gunfire Liaison Company	JAOC	joint air operations center	SADC	sector air defense commander
AOB	advanced operations base	JARN	joint air request net	SALT	supporting arms liaison team
AREC	air resource element coordinator	JFACC	joint force air component commander	SCC	see combat commander
ARFOR	Army forces	JFACC*	joint force air component commander	SEAL TM	sea-air-land team
ARSOF	Army special operations forces	JFC	joint force commander	SFLE	special forces liaison element
ASC(A)	air support coordinator (airborne)	JFE	joint fires element	SOCCE	special operations command and control element
ASOC	air support operations center	JFLCC	joint force land component commander	SOF	special operations forces
ASV/C	antisubmarine warfare commander	JFMCC	joint force maritime component commander	SOF TACP	special operations forces tactical air control party
ATK	airborne warfare commander	JFO	joint force observer	SOLE	special operations liaison element
AVACS	airborne Warning and Control System	JFSOC	joint force special operations command	STT	special tactics team
BCD	battlefield coordination detachment	JOC	joint operations center	STW/C	strike warfare commander
BCT	brigade combat team	JSOAC	Joint Special Operations Air Component	SUV/C	surface warfare commander
BN	battalion	JSOAD	Joint Special Operations Air Detachment	TAC(A)	tactical air coordinator (airborne)
CADE	corps air defense element	JTOTF	Joint Special Operations Task Force	TACC	tanker airmitt control center
CATF	commander, amphibious task force company	JSTAR	Joint Surveillance Target Attack Radar System	TACP	tactical air control party
CO	command post	JTAC	Joint Tactical Air Controller	TADP	tactical air direction center
CRC	control and reporting center	JTAC ELE	Joint Tactical Air Controller Element	TADC	tactical air operations center
CGR	communications relay group	LAAD	low-altitude air defense (USMC)	TACOC	tactical air operations center
		LNO	liaison officer	TAR Net	tactical air request network
		MAGTF	Marine Air Command and Control System	WOC	wing operations center
		MARFOR	Marine Corps forces		

Figure B-1. Theater Air Ground System

2. Army Air-Ground System

- a. The Army's control system for synchronizing, coordinating, and integrating air operations with the commander's scheme of maneuver is the AAGS. The AAGS initiates, receives, processes, and executes requests for air support and disseminates information and intelligence produced by aerial assets. Although some elements within the AAGS, such as the TACP, belong to different Services or other nations, they function as a single entity in planning, coordinating, deconflicting, and integrating air support operations with ground operations. The Army elements of the AAGS consist of: operations, fire support, AD, C2, and coordination/liaison elements.
- b. The AAGS is used for synchronizing, coordinating, and integrating airspace users, air and missile defense, fires, and other warfighting functions with the Army ground commander's scheme of maneuver. Although some elements supporting the AAGS, such as the TACP/ASOC/air naval gunfire liaison company, belong to different Services or other nations, they function as a single entity in planning, coordinating, deconflicting, and integrating air support operations with Army ground operations. Coordination between the TACS and the AAGS includes the BCD in the AOC and the ACCE at the Army component commander's HQ.

3. Air Force Theater Air Control System

- a. The COMAFFOR exercises command authority as defined by the JFC. COMAFFOR may be assigned responsibilities as a JFACC, ACA, or AADC. The COMAFFOR plans, coordinates, and executes AFFOR air operations and other assigned responsibilities through the component TACS, which allows the required centralized planning and control and decentralized execution previously discussed. The AFFOR staff normally functions within the Air Force component TACS. If another component has JFACC responsibility, the COMAFFOR retains Service component responsibilities, which also would be accomplished through the TACS. The TACS is the backbone of the AFFOR's contribution to the TAGS and consists of units specifically trained and equipped to support the C2 process. The TACS is designed to perform centralized planning and control and to facilitate decentralized execution. It consists of airborne and ground elements to conduct tailored C2 of air and space operations throughout the range of military operations, including AD, airspace control, and coordination of space mission support not resident within theater. The elements that form the TACS are the Air Force AOC, other separate agencies, liaisons, and C2.
- b. Air Force contributions to the TAGS are threefold. First, AFFOR participate in gaining control of the air environment and conduct other missions and support activities throughout the theater for the JFC as a whole. Second, AFFOR plan, coordinate, and assist in control of air missions to achieve JFC-assigned air operations objectives. Third, AFFOR produce a communications system that enables the control of assets. By exchanging liaison elements with other

components, the COMAFFOR can contribute to a comprehensive and unified air operation. Effective liaison is the key to planning and coordinating TAGS activities.

4. Navy Tactical Air Control System

- a. Naval forces provide strike aircraft and Tomahawk Land Attack Missiles (TLAM) from surface and subsurface platforms to attack targets. These resources are provided to the TAGS, as directed by the JFC. Naval carriers and land-based aircraft are equipped and manned with trained personnel to perform all types of air-to-ground missions, including CAS and AI. Ships and aircraft that are part of the naval force are an integral part of Air Defense (AD) and airspace control of the JOA.
- b. The principle warfare commanders involved in airspace control are the area air defense commander (AADC), who is normally located on an AEGIS cruiser/destroyer, and the Strike Warfare Commander (STWC). The STWC is responsible to the CWC for planning, directing, monitoring, and assessing maritime power projection ashore and may be responsible for striking surface targets at sea at extended ranges from the strike group. The STWC normally exercises TACON of assigned strike warfare capable assets. Typically, the STWC does not plan or direct TLAM missions. The STWC integrates or coordinates carrier air wing resources with TLAM missions via the launch area coordinator and Tomahawk strike coordinator. The STWC coordinates naval surface fire support (NSFS) missions via the NSFS coordinator. The STWC and his staff have the greatest interface with other TAGS agencies and organizations during ATO execution.
- c. The Navy also utilizes airborne C2 nodes. Those nodes include the E-2C/D Hawkeye, which can provide similar services as Airborne Warning and Control System, Joint Surveillance Target Attack Radar System (JSTARS), or USMC direct air support center (airborne). Tactical support centers are located at principal P-3C and P-8A aircraft deployment sites. The tactical support center provides for a permanent, reliable command and control integration support system from airbases dedicated for maritime patrol aircraft (MPA) operations during peacetime contingencies or full mobilization. The tactical support center provides the maritime component commander (MCC) with the facilities and capabilities necessary to plan, direct, and control MPA operations in the assigned AOR.
- d. The primary air control system/agency afloat during amphibious operations, within an amphibious objective area (AOA), is the Navy tactical air control center (TACC). The Navy TACC possesses the functionality of future plans and COPS, and can develop and disseminate an ATO and ACO. During amphibious operations, the Navy TACC coordinates the types of ACMs and controls all air operations within the OA until a land-based air control agency is established ashore. Once a land-based air control agency receives control of all LF air

operations, the Navy TACC may become a tactical air direction center (TADC) supporting the land-based air control agency. Subordinate TADCs, as designated, monitor air control circuits in readiness to assume all or part of the duties of the air control agency, if necessary, or are established to control air operations during advance force operations when a fully operational TACC cannot be justified. The NTACS and the MACCS are parallel organizations, which accomplish the same functions at different times during amphibious operations.

- e. The Marine TADC is established early on in the amphibious operation. During this time, while overall control of aviation assets remains afloat, the Marine TADC is subordinate to the Navy TACC. When airspace management functions are passed from afloat to ashore, the Marine TADC assumes the title and responsibilities of the Marine TACC. The Navy TACC then may become a TADC, in support of the Marine TACC.
- f. Both the Navy and the Marine Corps air control systems are capable of independent operations; however, in the conduct of an amphibious operation, elements of both systems are used to different degrees from the beginning of the operation until the control is phased ashore. Under the amphibious task force (ATF) commander, the TACC, typically on board the amphibious assault ship (general purpose) (LHA) or amphibious assault ship (multipurpose) (LHD), will normally be established as the agency responsible for controlling all air operations within the allocated airspace regardless of mission or origin, to include supporting arms. As the operation progresses the commander, landing force (CLF), having the capability to control air operations, may establish C2 systems ashore and incrementally accept responsibility for various C2 functions from the ATF commander. When full capability is achieved, the CLF may assume full air control responsibility from the ATF commander (i.e., Navy TACC). In some cases it might be neither necessary nor desirable to transfer authority ashore. As the amphibious operation proceeds, C2 of aviation operations is transitioned ashore as MACCS agencies are established on the ground.
- g. Ashore, the maritime operations center (MOC) provides the commander (numbered fleet commander, NCC, or JFMCC) with a functionally organized staff and C2 systems, to include collaborative air planning tools such as the TBMCS. Operational level air planning occurs in the MOC. The MOC conducts planning for naval strike, AI, TLAM, NSFS, missile defense, maritime patrol and reconnaissance aircraft operations, and PR missions.

5. Marine Corps Air Command and Control System

- a. The MACCS provides the ACE MAGTF commander with the means to command, coordinate, and control air operations. It provides a robust air C2 capability and is capable of supporting AD and airspace management functions within the framework of joint and multinational operations. The MACCS is tasked to meet the MAGTF's air C2 needs. It varies in size from small air support elements and Marine air traffic control detachment mobile teams typically

- deployed with a Marine expeditionary unit to a fully functional MACCS used in MEF-level operations.
- b. The principal C2 agencies of the MACCS include the following:
 - (1) TACC (includes future operations and plans, COPS)/TADC.
 - (2) Tactical air operations center (TAOC).
 - (3) Marine Corps direct air support center (DASC).
 - (4) Maritime air traffic control detachment.
 - (5) Low-altitude AD battalion.
 - (6) Terminal control agencies (for direct air support).
 - c. The TACC is the senior MACCS agency and the one MACCS agency that exercises command. It serves as the ACE commander's operational command post. The TACC provides the facility from which the ACE commander and the battle staff plan, supervise, coordinate, and execute all current and future MAGTF air operations. The TACC has the capability to plan, produce, and execute an ATO or ACO.
 - d. During amphibious operations, the Marine TACC functions as a TADC, subordinate to the Navy before the transfer of control ashore. When the MAGTF assumes control of all air operations within an AOA, the TADC transitions to the Marine TACC.
 - e. The TACC is equipped with TBMCS equipment and possesses the communications systems necessary to host JAOC functions, and usually does so in an enabling or transitional role. The intention in such instances is to pass these functions to a more robust air C2 agency as the tempo of air operations increases. As is the case with all JAOCs, Service liaisons and SMEs that reflect the makeup of the joint force are necessary to staff a TACC-hosted JAOC.
 - f. The TAOC provides safe passage, radar control, and surveillance for CAS aircraft en route to and from target areas. Until the Marine TADC or Marine TACC is established ashore, the TAOC normally reports to the Navy TACC. The TAOC, or elements thereof typically deploy with the land elements of a Marine expeditionary brigade (MEB) or a MEF. The TAOC's capabilities incrementally increase as the size of the land force component increases (i.e., MEB or MEF size land force).
 - g. The DASC is the principle agency within the MACCS responsible for control and direction of air operations directly supporting ground forces. Based upon the tactical situation, the DASC is normally located with either the senior ground

command element (GCE), FSCC, or the MAGTF FFCC. The DASC assigns direct air support aircraft to terminal control agencies, provides aircraft ingress and egress route instructions, and disseminates advisory information. When control is afloat, the Navy TACC supervises the DASC's operations. When control is ashore, the Marine TADC or Marine TACC supervises the DASC's operations. The DASC uses procedural control methods to control airspace users. During amphibious operations, it normally is the first major air control agency ashore, landing and co-locating with the GCE's senior FSCC.

- h. The TACP, tactical air coordinator-airborne, forward air controller-airborne, and assault support coordinator-airborne all provide procedural airspace control. The Maritime air traffic control detachment provides positive airspace control and air traffic control services.

6. Special Operations Airspace Control

SO airspace integration and deconfliction issues are worked in the JAOC by members of the special operations liaison element (SOLE). There also are SO airspace managers in the joint special operations air component, JSOTF, and joint SO air detachment that coordinate airspace issues through the SOLE.

APPENDIX C

JOINT FIRES NETWORKED SYSTEMS

1. Advanced Field Artillery Tactical Data System

- a. Introduction. The Advanced Field Artillery Tactical Data System (AFATDS) is a fully automated command, control, and communications system that prioritizes targets and pairs them with optimal fire support weapon systems. It gives commanders timely, accurate, and coordinated fire support to prioritize and engage targets. The AFATDS can execute as a completely automated system, but allows for human intervention whenever necessary or at optional points. The system does not force current doctrine, but supports it. Configurable commanders' guidance is factored into each mission. Tailorable rule sets are available for target processing, weapon pairing, information distribution, and communications redundancy. The AFATDS supports planning, execution, movement control, artillery mission support, field artillery (FA) fire direction operations, and target analysis and engagement.
- b. Unit relationships are user-configurable to adapt to changing needs and force structure. The system provides agility, allowing for the establishment of the sensor-to-shooter link while enforcing mission coordination requirements. The AFATDS provides critical SA. Both friendly and enemy unit graphics are displayed, along with target information from multiple sources. Due to multi-level communications across the network, unit status and weapon platforms are monitored and updated continually on the map. Information may be directly accessed from the map symbols. Friendly and enemy units, targets, and OAs can all be seen. Each AFATDS workstation may filter the information to be displayed, allowing the commander to monitor the dynamic current situation, missions processing through the system, and target updates from a unique perspective.
- c. Planning. The planning function within the AFATDS allows for detailed planning and COA analysis by projecting friendly and enemy positions, guidance specific to the plan, and a task organization for the plan. In order to assist with the planning function, an enemy template tool is provided. A system tool supports multi-phase maneuver COAs and can compare and recommend the best COA considering commander's priorities. Plans can be easily disseminated. The planning activity does not affect the current situation until the operator implements the plan. Plans are implemented into current by phase – this immediately updates the unit task organization guidance, geometry, and target database to reflect changes.
- d. Fire support planning provides integration of FA, mortars, NSFS, aviation (helicopters), and air support into the force commander's scheme of maneuver. The AFATDS helps create a fire support annex to the commander's OPLAN and a FA support plan.

- e. Target Analysis and Engagement. Target analysis and engagement is a robust aspect of the AFATDS. TLM functions allow for copy and merge, target duplication checks, sorting, searching, and target data reception and transmission. Fire plans and schedules of fires may be generated from lists, groups, or series targets. There is an extensive set of guidance that can be applied (e.g., TSS, HPTs, decay time, target prioritization). The fire support system task list alone can contain a 100-rule set of prioritized target to weapon system pairings and a prioritized list of commander's preferences. Pre-planned missions can be linked to sensor reports for dynamic targeting. The system can deal with many weapons and pair those weapons to targets, minimizing the sensor to shooter timeline. The system can filter sensor reports so every report does not have to be engaged, and the system also selects the best weapon and munition based on target parameters (e.g., environment, countermeasures, TLE, age), the munitions required (e.g., effects capability, hazard area), and weapon status (e.g., response time, current mission load, ammunition inventory). The AFATDS can determine quantities of munitions to achieve a desired target damage effect.
- f. The AFATDS mission processing of sensor inputs considers mission value, not first in/first out. The system will filter targets and process missions based on a configurable mission value and precedence. The system analyzes cannon, mortar, rocket, ATACMS, fixed- and rotary-wing air, naval cannon, standard missile, and Tomahawk as possibilities for weapons. It is fully automatic, keeps interested nodes apprised of targeting information, and coordinates ground and airspace violations (spatial coordination is four dimensional, including time analysis). The system considers commanders' guidance, latest unit status, mission history, and effects algorithms, which determine munition quantity for both guided and unguided munitions. During mission processing, the operator may view and tailor the system recommendation. The intervention display shows all key data and analysis results.
- g. Communications. The AFATDS is not limited to FA communications, but can communicate and exchange data with Army, Air Force, Marine Corps, Navy, and NATO systems. The AFATDS is interoperable with all fires subsystems including gun display unit, artillery fire control systems, future combat systems, Firefinder Radar, Airborne Target Handover System, and forward observer system. It interoperates with the Army Battle Command Systems suite. The system also interoperates with joint level automated systems such as Tactical Airspace Integration System, TBMCS, JSTARS (Ground Control Station), and Global Command and Control System (GCCS). The AFATDS also operates with Allied FA-C2 systems such as the United Kingdom's Battlefield Artillery Target Engagement System, and the German ADLER. The AFATDS communications devices include the programmable Tactical Communication Interface Module (TCIM) or the Serial Personal Computer Memory Card Industry Association Tactical Communications Interface Modem. The TCIM enables communication over wire, combat net radio, mobile subscriber equipment, and satellite. The system also uses a network-interfaced card to communicate over local area network for SECRET Internet Protocol Router Network [SIPRNET]/Nonsecure

Internet Protocol Router Network [NIPRNET] and Enhanced Position Location and Reporting System operations.

2. Joint Automated Deep Operations Coordination System

- a. Introduction. The Joint Automated Deep Operations Coordination System (JADOCS) is a joint warfighting application that provides joint and coalition coordination and approval of dynamic targeting missions. It can also be used to build target lists for deliberate targeting. It is a widely accepted, easy-to-use C2/targeting tool and is deployed worldwide. It provides for horizontal and vertical warfighting integration and coordination across joint and functional seams. JADOCS incorporates multiple existing system interfaces (AFATDS, GCCS, Air Defense System Integrator, JTWIC) and multiple database interfaces (MIDB, ATO, JTL, NSL, RTL). The component and joint target managers provide for timely dynamic targeting information sharing, coordination, and C2 within the maritime force and between components for fires during the prosecution of dynamic targets (see figure C-1.)
- b. JADOCS has a number of managers which can be tailored for exercise, OPLAN, or real world requirements. Some managers are used for different types of dynamic targets, target development, dynamic ISR, personnel recovery (PR), and humanitarian assistance/disaster relief. Each component will typically have a component target manager to supplement the joint TST manager.

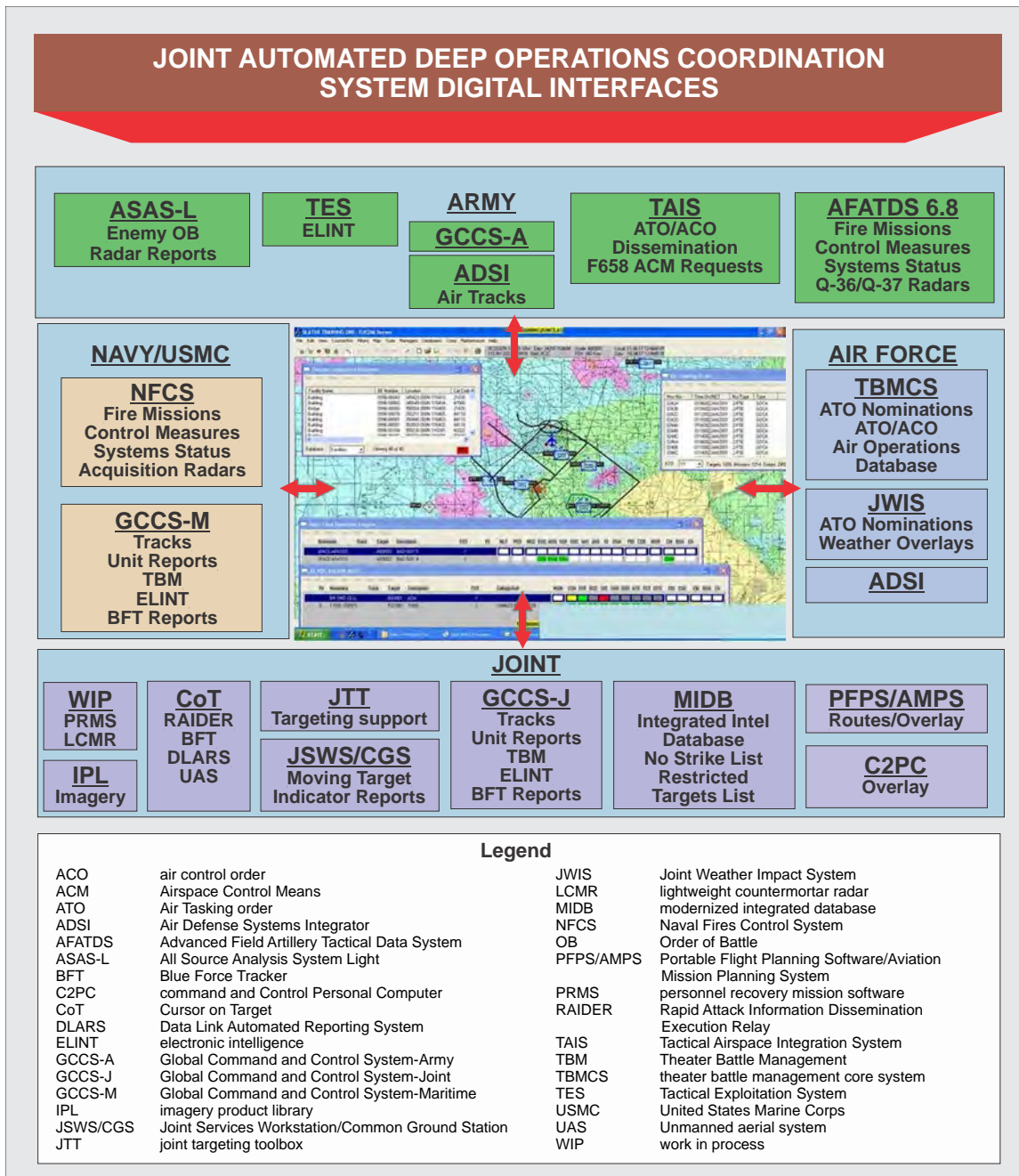


Figure C-1. Joint Automated Deep Operations Coordination System Digital Interfaces

c. JADOCs includes more than 67 software tools and managers for C2 and fires coordination including:

- (1) Joint time-sensitive targeting and component dynamic targeting coordination, management, and C2.
- (2) Access to the JTL through the JTT.
- (3) Battlespace awareness.

- (4) Real-time awareness of dynamic targets in development.
- (5) Conflict identification of restricted targets, planned targets, friendly forces, and preplanned fire areas.
- (6) Situational awareness of ground forces.
- (7) Joint coordinating measures (i.e., ACMs and FSCMs).
- (8) ISR coordination and management.
- (9) CAS management.
- (10) Certified collateral damage estimation.
- (11) Personnel Recovery (PR) management.
- (12) Targeting assessment management.

3. Modernized Integrated Database

a. Purpose. The Modernized Integrated Database (MIDB) Data Services Environment is the DOD's authoritative, all-source repository of worldwide general military and targeting intelligence. The MIDB information is maintained in support of the CCMDs, Services, CSAs, USG departments and agencies, and IGOs. The MIDB's architecture consists of a group of component databases that continuously replicate worldwide between hundreds of nodes on a variety of networks and between different security levels. This architecture provides the infrastructure for data exchange between intelligence and operational consumers from the national to tactical levels. The MIDB provides a baseline source of intelligence on installations, facilities, military forces, population concentrations, C2 structures, and equipment, in addition to target details. Because of the MIDB's replication architecture and business rules designed to protect data integrity, the MIDB is the national database for all target lists, NSLs, and textual data in ETFs.

- (1) The **MIDB is the primary repository for data production and dissemination of MI** involving worldwide orders of battle, facilities, C2 networks, targeting, BDAs, and other related information required for strategic assessments and national policy decision-making. This data is maintained and updated by the DIA. CCMDs and Services are delegated responsibility to maintain their portion of the database.
- (2) The MIDB is a DOD migration system. The DOD is in the process of establishing a simplified baseline of the best common information systems across the business functions of the department. These migration systems represent a stage of process improvement designed to achieve a common set

of automated processes and practices in the DOD. The MIDB expanded upon the basic order of battle, equipment, and facility holdings of the integrated database, to include several legacy systems:

- (a) Electronic order of battle services.
 - (b) Expeditionary warfare.
 - (c) Military facilities file.
 - (d) TM management.
 - (e) US Central Command/US Special Operations Command integrated data system.
 - (f) Force trends database.
 - (g) Force tracking information system.
 - (h) Space database.
- b. Users. The MIDB serves as the primary repository of intelligence data for the entire DOD community, Australia, Canada, and the United Kingdom.
- c. Products. Typical MIDB products and outputs include:
- (1) Facility location list by country and category with remarks.
 - (2) Facilities with associated units on equipment, facility equipment, and facility remarks.
 - (3) Facility listing BE/category sort, facilities with associated units, equipment, and remarks.
 - (4) Facility location list by country and category.
 - (5) Equipment on-hand quantities by facility and unit name.
 - (6) Equipment list by force and primary function.
 - (7) Active ground order of battle related facilities by category.
 - (8) Facility location list with vulnerabilities and remarks.
 - (9) Defensive missile order of battle.
 - (10) TMs planning document.

(11) TNL.

(12) Combined target list.

- d. Network Interfaces and Communications. The MIDB provides intelligence information from the DIA MIDB to the Global Command and Control System Integrated Intelligence and Imagery (GCCS-I3) application. The MIDB is a structured relational database. Data elements are highly structured in American Standard Code for Information Interchange format. Data is replicated between Network Interfaces and Communications MIDB and intelligence shared data server databases, sharing the same schema. Data sources are DIA tactical message (order of battle report, imagery interpretation report, intelligence report) via automated message handling/joint message handling system. The MIDB repository is available through Intelink (to the Department of Defense Intelligence Information System community) and through GCCS-I3 to tactical units.

4. Joint Targeting Toolbox

- a. Purpose. The JTT is the DOD's targeting system of record. It is made up of a suite of software applications that field through the GCCS. The JTT and GCCS are hosted on Service, command, and government agency system environments engineered to support operations and targeting requirements at the strategic, theater, and tactical level. It contains non-duplicative and interoperable applications that support the execution of the entire targeting cycle starting with commander's objectives, guidance and intent to the generation of target lists in support of ATO production, execution, and CA (BDA). The JTT rapidly receives, correlates, manipulates, displays, and disseminates target intelligence data originating from multiple sources. This target intelligence data is integral to the battle planning, mission execution, and assessment processes. The compatibility of the JTT's applications within the force/theater-level environments makes the targeting community seamless, collaborative, knowledgeable, focused, decisive, correct, and responsive.
- b. Users. The JTT is the joint targeting program of record and fielded DOD-wide. It is the primary targeting application for the GCCS that allows "complete targeting interoperability" within the joint community. The JTT brings all Services, commands, and government agencies targeting requirements together in one tool, increasing interoperability and collaboration capability.
- c. Network Interfaces and Communications. The JTT operates in a GCCS environment at the sensitive compartmented information, collateral, and Multi-national Collateral (Tier 1) security levels. The tools that comprise the JTT rely heavily on data stored in the suite of databases that make up the MIDB. Therefore, the JTT requires access to the MIDB to operate. The JTT requires the WebLogic web application server to operate and is accessed using a web browser (e.g., Firefox [FF]). The correct version of WebLogic and FF required is specified

in the load plan for the Global Command and Control System-Joint or Joint Deployable Intelligence Support System version of which the JTT is a part.

5. Theater Battle Management Core System

- a. Purpose. The Theater Battle Management Core System (TBMCS) is used by the JFACC and other component commanders to collaboratively plan, direct, and control JAO in support of JFC objectives. This automated system facilitates the development, deconfliction, dissemination, and execution of the air operations plan, air tasking order, airspace control order, and AD tactical operations data message, and supports collaborative target management. The system provides full support to force-level and unit-level joint forces throughout all phases of military operations and is interoperable with other GIG systems to include the GCCS family of systems, and Global Command Support System-Joint/Command and Control Integrated Planning System. The TBMCS is used by the US Air Force, Navy, and Marine Corps.
 - (1) The operational mission of TBMCS is to provide computer-supported management of theater airborne assets in peacetime, exercise, and wartime environments. TBMCS provides automated C2 and decision-support tools to improve the planning, preparation, and execution of joint air combat capabilities. The tools also provide C2 support for operations other than war, e.g., humanitarian relief and assistance, United Nations peacekeeping, etc. (see Figure C-2, Theater Battle Management Core System)

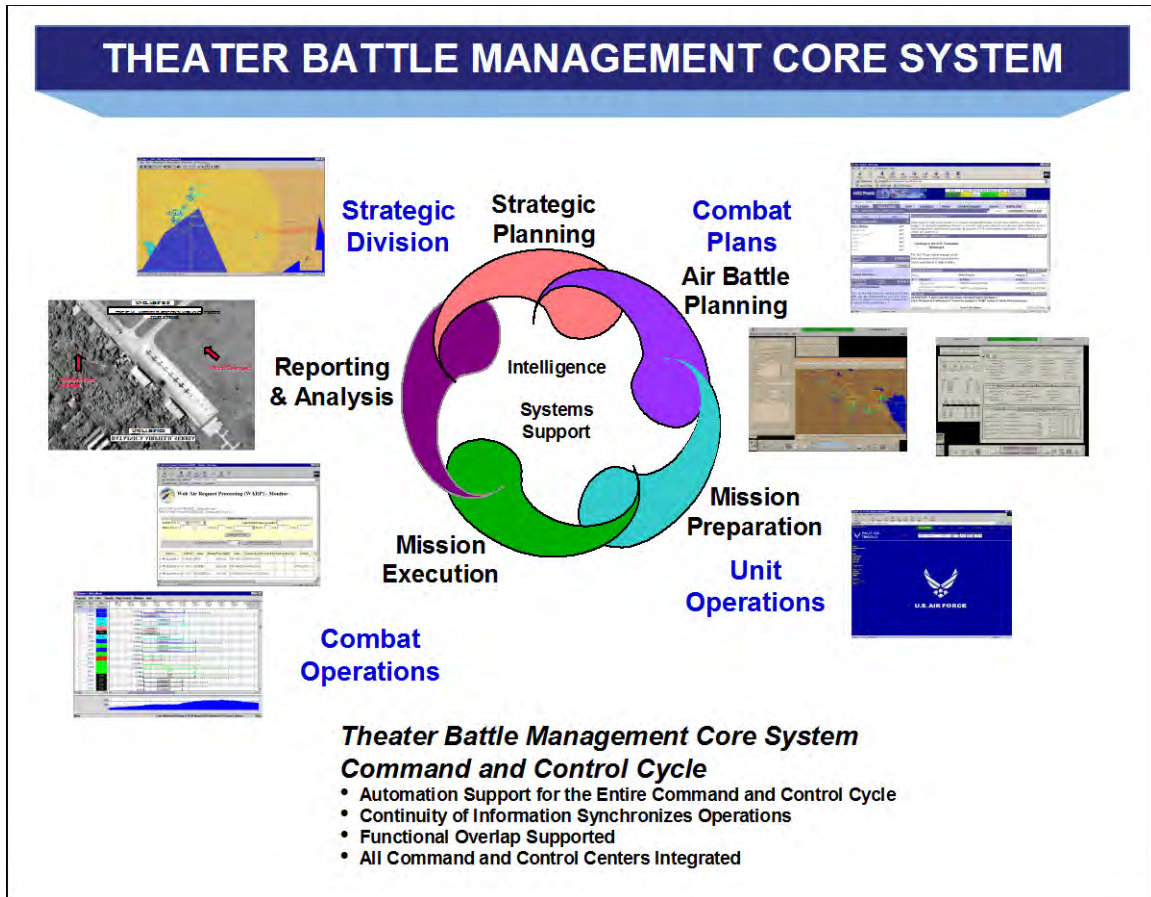


Figure C-2. Theater Battle Management Core System

- (2) TBMCS provides tasking for all air assets in the AOR, produces the ATO, and provides the JFACC with the means to plan, direct, and control all theater air operations in support of command objectives. It also allows the JFACC to coordinate with ground and maritime elements engaged in the same operation. Functionalities of TBMCS are used to produce, generate, disseminate, and monitor the execution of the ATO, ADP, MAAP, TNLs, JIPTL, and ACO. In a joint force, the JFMCC and forces assigned use TBMCS to make input to the ATO and ACO as well as to parse and support execution of the published ATO.
- b. Users. TBMCS is a US Air Force program with joint application. The US Navy implements a subset of the TBMCS force-level applications aboard command ships (amphibious command ship), CVNs, and large-deck amphibious ships (LHA/LHD). Additionally, TBMCS is incorporated into the ADC program on selected CGs. TBMCS is also fielded at selected training sites and shore commands (Commander, United States Pacific Fleet HQ and US Navy, Central Command HQ). Army BCDs also interface with the TBMCS.
- c. Products. The TBMCS uses two primary databases: the air operations database (AODB) and MIDB.

(1) The AODB contains the following data:

- (a) Friendly order of battle.
- (b) Friendly units.
- (c) Friendly bases.
- (d) Components.
- (e) Standard conventional load/configurations.
- (f) Base inventory.
- (g) Mission type and aircraft type mappings.
- (h) Airspace.

(2) The MIDB contains the following data:

- (a) Target data.
- (b) EOB.

d. Network Interfaces and Communications. Figure C-3, Theater Battle Management Core Systems Interfaces, depicts the TBMCS interfaces.

e. Modernization of the Theater Battle Management Core System. The TBMCS is currently being updated to the Air Tasking Order Management System (ATOMS). ATOMS will include an updated C2 air operations suite that will allow warfighters to perform mission planning and re-planning quickly and efficiently and will completely replace three existing applications within TBMCS: the Theater Air Planner, the Execution Management Re-Planner, and the Master Attack Planning Toolkit. The TBMCS modernization effort is part of a larger program to modernize the entire AOC, which has been designated a weapon system. The program objectives include improving the speed of command by automating information exchange and accelerating the integration of warfighter capabilities. Expected fielding date for ATOMS is March 2015.

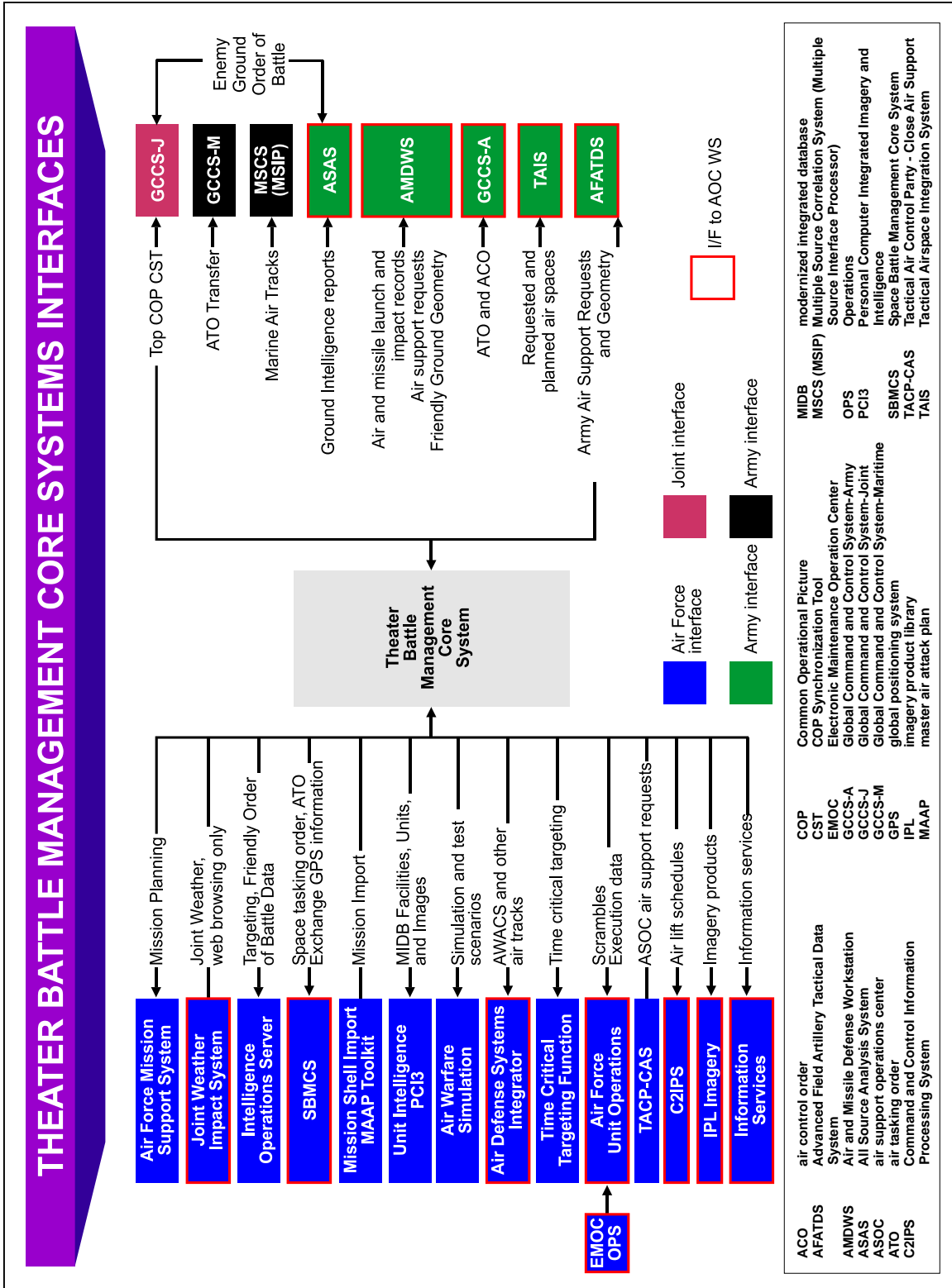


Figure C-3. Theater Battle Management Core Systems Interfaces

6. Distributed Common Ground/Surface System

- a. The Distributed Common Ground/Surface System (DCGS) is an architectural model for modular, scaleable, and interoperable multi-intelligence, full-spectrum support to a JTF and below force structure. The JTF DCGS/Tasking, Processing, Exploitation and Dissemination (TPED) Enterprise provides structure, capability descriptions, standards, and guidance for Service employment of ISR processing and exploitation systems operating in a secure, net-centric environment. Through synchronization and control of organic sensors, the DCGS intelligence analysts process, exploit, and disseminate data generated by airborne and national collection sensors of imagery, full motion video, signals, and MASINT. The DCGS provides real-time sensor data fusion, corroboration, and visualization through the COP for planners and decision makers. The DCGS can provide reachback support to any military operation and is a valuable contributor supporting CAS missions.
- b. The DCGS/TPED Enterprise enables the complete integration of ISR capabilities and easily supports current and emerging operational requirements. It supports JTF-level planning, targeting, execution, and CA, and improves flexibility in all phases of the value-added information exploitation process to achieve information and decision superiority. While leveraging the synergistic capabilities of the Service DCGSs, the Enterprise will also include joint, coalition, and national TPED elements providing broad-based or operationally-specific support within the federated exploitation concept.

APPENDIX D

DATUM AND COORDINATE SYSTEMS

1. Global Area Reference System

- a. The Global Area Reference System (GARS) is an area reference system based on lines of longitude and latitude, to provide an integrated common frame of reference for joint force SA, and to facilitate air-to-ground operations coordination and deconfliction, integration, and synchronization. **It is important to note that GARS is primarily designed as a management tool and not to be used for navigation or targeting.** GARS is not a FSCM or ACM. It provides the 2-D construction from which control and coordination measures can be constructed. Such control measures include FSCMs, ACMs, JSOAs, no-fly areas, and maritime control measures to name several. The area reference system can be a tool for rapid deconfliction within the OE. **The usefulness of GARS is it enables establishment of appropriate control and coordination measures.**
- b. In multinational and joint operations, JFCs should direct the use of GARS unless it's determined the use of another area reference system (e.g., locally developed area reference systems such as the Korean common grid reference system) is mission critical. **The use of GARS will eliminate confusion regarding which system is being used in reporting areas.**
- c. GARS uses a standard over-up cell address convention which brings you to a 30'x30' cell. That number-character naming convention is already in use. Each quadrant (15'x15') sub-division is depicted in its entirety on a single 1:50,000 chart. There are easy to see keypad (5'x5') sub-divisions that already exist on a 1:50,000 chart. Using 5'x5' as the smallest level of granularity makes it easy to use the 5'x5' keypad as a building block for larger area definitions (see Figure D-1).
- d. GARS can be used to rapidly identify:
 - (1) Locations of friendly surface forces.
 - (2) Ground force maneuver boundaries.
 - (3) Areas of intended attack (to include kill boxes).
 - (4) ACM or FSCM boundaries.
 - (5) NAI; ISR areas of interest.
 - (6) Terrain or airspace orientation.
 - (7) Aircraft orbits and GEOREF locations.

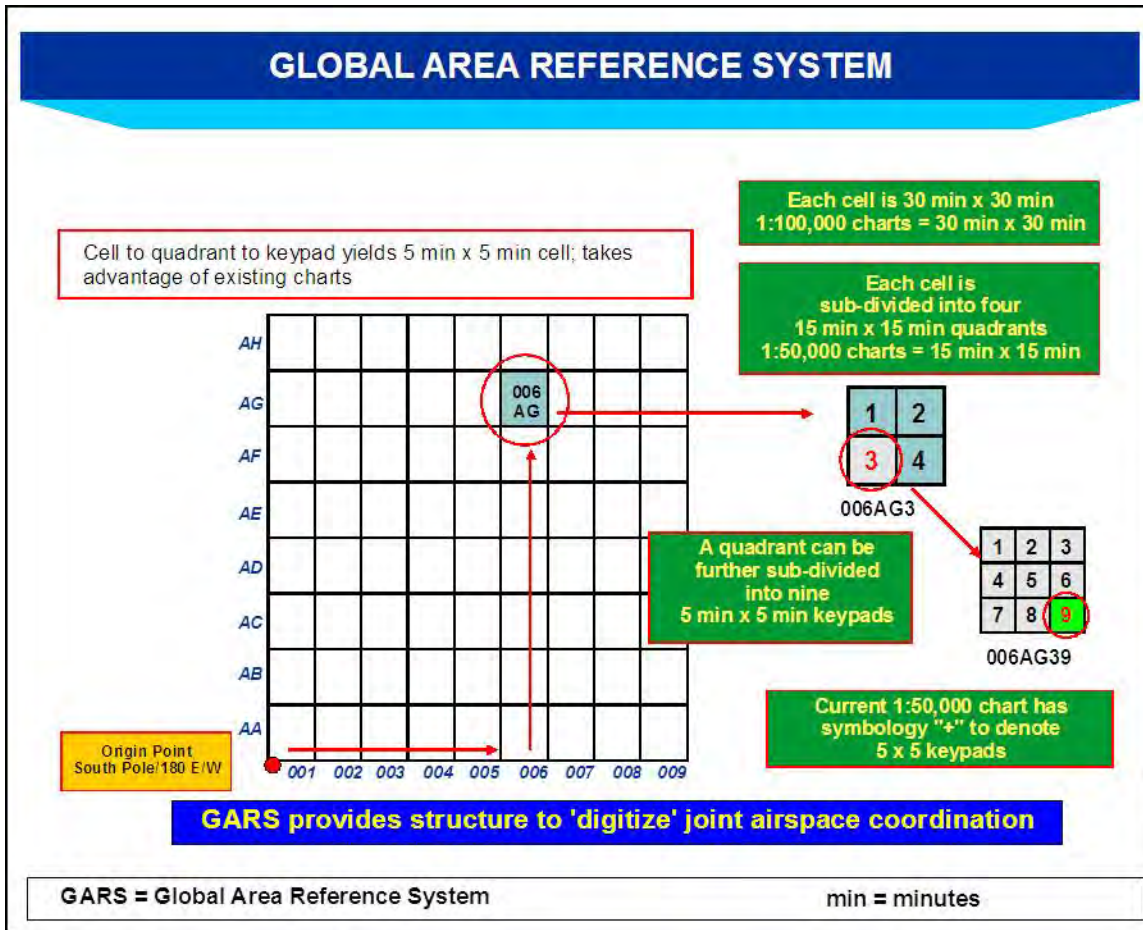


Figure D-1. Global Area Reference System

- e. GARS is not a replacement for any existing reference system such as the World GEOREF or the military grid reference system, nor is it used to specify precise target location or for platform/weapon targeting. Rather, it aids in the establishment of joint fire support coordination or airspace measures. GARS can be a useful tool for rapid deconfliction of operations in non-contiguous OAs (such as SOF operating behind enemy lines), in featureless terrain, and may even be employed as a primary method to describe a contiguous OA.
- f. GARS is flexible enough to be used for a variety of purposes such as to identify littoral maritime warfare areas for anti-submarine warfare and anti-surface warfare forces.

For additional information on area reference procedures, refer to JP 2-03, Geospatial Intelligence Support to Joint Operations, and ALSA MTTP for Theater Air Ground Systems.

2. Target Point Mensuration

- a. Mensuration is the act of precisely measuring something. It is commonly used in targeting to refer to the exact measurement of a target's geographical coordinates. Point mensuration has always been an important part of targeting,

since the points measured represent the JDPIs for the munitions employed. As the accuracy of weapons delivery has improved, the importance of mensuration has grown in proportion and is a vital part of targeting. Due to the potential consequences of inaccurately mensurating coordinates, the CJCS has mandated those involved in point mensuration be certified to do it according to CJCS instructions. When accomplished before ATO execution, it permits employment of an entire class of weapons (such as GPS-aided weapons and cruise missiles that guide to pre-set coordinates). This allows JAOC personnel to significantly shorten the dynamic targeting “kill chain”. GPS-aided weapons are not so much “smart” as they are “obedient”. They guide to the mensurated point they are programmed to attack, so accurate mensuration is vital to their employment. However, mensuration is not required for the accurate employment of all weapons.

KEY TERM

Mensuration – The process of measurement of a feature or location on the earth to determine an absolute latitude, longitude, and elevation. JP 3-60.

- b. Because mensuration is a form of measurement, errors are inevitable and the extent of the estimated error must be captured as part of the coordinate. The standard method endorsed by the NGA is to express coordinate accuracy as a circular error and vertical accuracy as a “linear error” (LE) to a 90 percent degree of certainty (circular error/LE 90%). When the NGA validates a mensuration software algorithm, it is actually the fidelity of the circular error/LE accuracy estimates over a range of mensuration situations that is judged. These estimates are used during weaponeering to derive type and quantity of weapons, and targeting coordinate data must be considered incomplete without them. The MIDB and the ATO both have coordinate accuracy fields for this reason.
- c. The effort to mensurate coordinates, especially for a target set with a large number of JDPIs, can be extremely intensive. Technological advances have helped shorten the effort somewhat, but for the time being it will remain manpower-intensive and time-intensive. If this planning is not conducted beforehand, it may adversely affect the JAOC’s battle rhythm or even unit mission planning. Conversely, targeteers may become rushed, leading to mensuration errors that prevent effective employment or have unwanted effects like collateral damage. Targeteers will not know what munitions will be used to prosecute a target, thus the more precise they are in mensurating coordinates, the more options they will give targeteers. Again, this effect is magnified during dynamic targeting.

For additional guidance on individual and organizational target coordinate mensuration and certification for unilateral and joint operations, refer to CJCSI 3505.0B1, Target Coordination Mensuration Certification.

3. Basic Encyclopedia Number

- a. All targeteers should understand the theater basic encyclopedia (BE) number plan. While many targets already have BE numbers assigned, many identified during combat do not have them. **Without an established plan for assigning BE numbers, components may take it upon themselves to assign them, creating the potential for confusion and lack of SA on what targets are being struck.** Confusion can adversely affect battle rhythm or, worse, result in targeting errors.
- b. Standard joint desired point of impact (JDPI) numbering is also important, and the joint targeting committee is finalizing the adoption of the joint designated point of impact concept using a six-character format with a central numbering registry involving the joint commands and allied nations. A theater designated point of impact registry will ensure standardization of designated point of impacts and eliminate duplication and possible errors. The convention should address both static and mobile targets.
- c. It is usually not feasible to assign standard BE numbers to mobile targets. However, for proper database management, such mobile targets still require some sort of identification. While the numbers may not be actual BE numbers, the theater must still have some way of identifying the target. Again, planners should understand the theater naming convention to minimize targeting errors and the time needed for effective air planning.

APPENDIX E REFERENCES

The development of the Joint Targeting School (JTS) Student Guide is based upon the following primary references:

1. Department of Defense Issuances

- a. Defense Intelligence Agency Publication DI-2820-4-03, *Battle Damage Assessment (BDA) Quick Guide*.
- b. Defense Intelligence Agency Publication DI-2800-2-YR, *Critical Elements of Selected Generic Installations (Critical Elements Handbook)*. (SECRET)
- c. Military Standard (MIL-STD)-6040, *United States Message Text Formatting*.

2. Chairman of the Joint Chiefs of Staff Directives

- a. CJCSI 3121.01 Series *Standing Rules of Engagement/Standing Rules for the Use of Force for US Forces*. (SECRET)
- b. CJCSI 3122.06 Series, *Sensitive Target Approval and Review (STAR) Process* (SECRET).
- c. CJCSI 3160.01 Series, *No-Strike and the Collateral Damage Estimation Methodology*. (For Official Use Only)
- d. CJCSI 3210.01 Series, *Joint Information Operations Policy (U)*. (SECRET)
- e. CJCSI 3370.01, *Target Development Standards*. (For Official Use Only)
- f. CJCSI 3505.01 Series, *Target Coordinate Mensuration Certification and Program Accreditation*.
- g. CJCSI 3900.01 Series, *Position (Point and Area) Reference Procedures*.
- h. CJCSI 6241.04 Series, *Policy and Procedures for Management and Use of United States Message Text Formatting*.
- i. CJCSM 3130.03, *Adaptive Planning and Execution (APEX) Planning Formats and Guidance*.
- j. CJCSM 3162.01 Series
, *Joint Methodology for Battle Damage Assessment*.

3. Joint Publications

- a. JP 1, *Doctrine for the Armed Forces of the United States*.
- b. JP 2-0, *Joint Intelligence*.
- c. JP 2-01, *Joint and National Intelligence Support to Military Operations*.
- d. JP 2-01.3, *Joint Intelligence Preparation of the Operational Environment*.
- e. JP 2-03, *Geospatial Intelligence in Joint Operations*.
- f. JP 3-0, *Joint Operations*.
- g. JP 3-01, *Countering Air and Missile Threats*.
- h. JP 3-03, *Joint Interdiction*.
- i. JP 3-05, *Special Operations*.
- j. JP 3-05.1, *Joint Special Operations Task Force Operations*.
- k. JP 3-09, *Joint Fire Support*.
- l. JP 3-09.3, *Close Air Support*.
- m. JP 3-12, *Cyberspace Operations*. (SECRET)
- n. JP 3-13, *Information Operations*.
- o. JP 3-13.1, *Electronic Warfare*.
- p. JP 3-13.2, *Military Information Support Operations*.
- q. JP 3-13.3, *Operations Security*.
- r. JP 3-14, *Space Operations*.
- s. JP 3-30, *Command and Control for Joint Air Operations*.
- t. JP 3-31, *Command and Control for Joint Land Operations*.
- u. JP 3-32, *Command and Control of Joint Maritime Operations*.
- v. JP 3-33, *Joint Task Force Headquarters*.
- w. JP 3-52, *Joint Airspace Control*.
- x. JP 3-59, *Meteorological and Oceanographic Operations*.

- y. JP 3-60, *Joint Targeting*.
- z. JP 5-0, *Joint Operation Planning*.
- aa. JP 6-0, *Joint Communications System*.
- bb. JP 6-01, *Joint Electromagnetic Spectrum Management Operations*.

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- a. ATP 3-06.1 [FM 3-06.1], MCRP 3-35.3A, NTTP 3-01.04, AFTTP(I) 3-2.29, *Multi-Service Tactics, Techniques, and Procedures for Aviation Urban Operations*.
- b. ATP 3-09.32 [FM 3-09.32], MCRP 3-16.6A, NTTP 3-09.2, AFTTP(I) 3-2.6, *Multi-Service Tactics, Techniques, and Procedures for the Joint Application of Firepower*.
- c. ATP 3-55.6 (FM 3-55.6), MCRP 2-24A, NTTP 3-55.13, AFTTP(I) 3-2.2, *Multi-Service Tactics, Techniques, and Procedures for Airborne Target Coordination and Attack Radar Systems*.
- d. ATP 3-60.1 [FM 3-60.1], MCRP 3-16D, NTTP 3-60.1, AFTTP 3-2.3, *Multi-Service Tactics, Techniques, and Procedures for Dynamic Targeting*.
- e. ATTP 3-13.10 (FM 3-13.10), MCRP 3-40.5A, NTTP 3-51.2, AFTTP 3-2.7, *Multi-Service Tactics, Techniques, and Procedures for Reprogramming of Electronic Warfare (EW) Systems*.
- f. FM 3-01.15, MCRP 3-25E, NTTP 3-01.8, AFTTP 3-2.31, *Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System*.
- g. FM 3-01.4, MCRP 3-22.2A, NTTP 3-01.42, AFTTP(I) 3-2.28, *Multi-Service Tactics, Techniques, and Procedures for the Suppression of Enemy Air Defenses in a Joint Environment*. (SECRET).
- h. FM 3-09.34, MCRP 3-25H, NTTP 3-09.2.1, AFTTP 3-2.59, *Multi-Service Tactics, Techniques, and Procedures for Kill Box Employment*.
- i. FM 3-52.1, AFTTP 3-2.78, *Multi-Service Tactics, Techniques, and Procedures for Airspace Control*.
- j. FM 3-52.2, NTTP 3-56.2, AFTTP(I) 3-2.17, *Multi-Service Tactics, Techniques, and Procedures for the Theater Air Ground System*.

5. Army

- a. Army Doctrine Publication (ADP) 3-09, *Fires*.
- b. ADP 5-0, *The Operations Process*.
- c. ATTP 2-01, *Planning Requirements and Assessment Collection*.
- d. ATTP 3-09.13, *The Battlefield Coordination Detachment*.
- e. FM 3-31, *Joint Land Force Component Commander Handbook, (JFLCC)*.
- f. FM 3-60 (FM 6-20-10), *The Targeting Process*.
- g. Training Circular (TC) 3-09.31, *Fire Support Training for the Brigade Combat Team Commander*.

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- a. AFD Annex 3-0, *Operations and Planning*.
- b. AFD Annex 3-01, *Counterair Operations*.
- c. AFD Annex 3-30, *Command and Control*.
- d. AFD Annex 3-52, *Airspace Control*.
- e. AFD Annex 3-60, *Targeting*.

7. Navy

- a. NTTP 3-02.1.3, *Amphibious/Expeditionary Operations Air Control*.
- b. NTTP 3-03.4 (Rev. A), *Naval Strike and Air Warfare*. (SECRET)
- c. NTTP 3-03.4.1, *Global Positioning System (GPS) and Precision-Guided Munitions (PGM) Targeting*. (SECRET)
- d. NTTP 3-32.1, *Maritime Operations Center*.
- e. NWP 3-09, *Navy Fire Support*.
- f. NWP 3-56, *Composite Warfare Doctrine*.
- g. NWP 5-01, *Navy Planning*.

8. Marine Corps

- a. MCDP 1-0, Marine Corps Operations.
- b. MCWP 3-40.7, Joint Force Land Component Commander Handbook (JFLCC).
- c. MCWP 3-40.8, Marine Corps Componency.
- d. MCWP 3-43.3, Marine Air-Ground Task Force Fires.

9. Non-Secure Internet Protocol Router Network

- a. MIDB products: <https://www.fas.org/irp/program/disseminate/midb.htm>
- b. MIDB interfaces: <http://jitic.fhu.disa.mil/gccsiop/interfaces/midb.pdf>
- c. Seffers, George I. *U.S. Air Force Races to Modernize Critical Battle Control System*. *SIGNAL Online Magazine*. Armed Forces Communications and Electronics Association, 1 Aug. 2013.
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GLOSSARY
PART I – ABBREVIATIONS AND ACRONYMS

AADC	area air defense commander
AAGS	Army air-ground system
ABP	air battle plan
ACA	airspace control authority
ACCE	air component coordination element
ACE	aviation combat element (USMC)
ACM	airspace coordinating measure
ACMREQ	airspace control means request
ACO	airspace control order
ACP	airspace control plan
ACS	airspace control system
AD	air defense
ADCON	administrative control
ADP	air defense plan
AE	aeromedical evacuation
AECT	aeromedical evacuation control team
AETF	air and space expeditionary task force
AFATDS	Advanced Artillery Tactical Data System
AFD	Air Force Doctrine
AFFOR	Air Force forces
AFTTP	Air Force tactics, techniques, and procedures
AFTTP(I)	Air Force tactics, techniques, and procedures (instruction)
AGM	attack guidance matrix
AI	air interdiction
ALCT	airlift control team
ALLOREQ	allocation request
ALO	air liaison officer
AMCT	air mobility control team
AMD	air mobility division
AO	area of operations
AOA	amphibious objective area
AOC	air operations center
AOD	air operations directive
AODB	air operations database
AOR	area of responsibility
APEX	Adaptive Planning and Execution
ARCT	air refueling control team
ARFOR	Army forces
ASCC	Army Service component commander
ASOC	air support operations center
ASWC	anti-submarine warfare commander
ATACMS	Army Tactical Missile System
ATF	amphibious task force
ATI	asset target interaction

ATO	air tasking order
ATOMS	Air Tasking Order Management System
ATP	Army training publication
ATTP	Army tactics, techniques, and procedures
BCD	battlefield coordination detachment
BCT	brigade combat team
BDA	battle damage assessment
BDAREP	battle damage assessment report
BE	basic encyclopedia
BWC	battle watch captain
C2	command and control
CA	combat assessment
CAP	crisis action planning
CAS	close air support
CCDR	combatant commander
CCIR	commander's critical information requirement
CCMD	combatant command
CDA	collateral damage assessment
CDE	collateral damage estimation
CDM	collateral damage methodology
CDRJSOTF	commander, joint special operations task force
CE	command element (MAGTF)
CF	conventional forces
CF-COP	counterfire common operational picture
CFL	coordinated fire line
CIA	Central Intelligence Agency
CID	combat identification
CJCS	Chairman of the Joint Chiefs of Staff
CJCSI	Chairman of the Joint Chiefs of Staff instruction
CLF	commander, landing force
CM	collection manager
CMO	civil-military operations
CO	cyberspace operations
COA	course of action
COD	combat operations division
COG	center of gravity
COMAFFOR	commander, Air Force forces
CONOPS	concept of operations
CONUS	continental United States
COP	common operational picture
COPS	current operations
CPCL	component prioritized collection list
CPD	combat plans division
CR	collection requirement
CSA	combat support agency

CSS	Central Security Service
CTL	candidate target list
CV	critical vulnerability
CWC	composite warfare commander
D3A	decide, detect, deliver, and assess
DASC	direct air support center
DCA	defensive counterair
DCO	defensive cyberspace operations
DCGS	Distributed Common Ground/Surface System
DHS	Department of Homeland Security
DIA	Defense Intelligence Agency
DNI	Director of National Intelligence
DOD	Department of Defense
DODIN	Department of Defense information networks
DOS	Department of State
DPI	desired point of impact
DS	direct support
DT	dynamic targeting
DTRA	Defense Threat Reduction Agency
EA	electronic attack
EID	entity identification
EM	electromagnetic
EMS	electromagnetic spectrum
EOB	enemy order of battle
ETF	electronic target folder
EW	electronic warfare
EZM	engagement zone manager
F2T2EA	find, fix, track, target, engage, and assess
FA	field artillery
FF	Firefox
FFCC	force fires coordination center (USMC)
FM	field manual
FOC	future operations center
FPC	future plans cell
FRAGORD	fragmentary order
FSA	fire support area
FSC	fire support coordinator
FSCC	fire support coordination center
FSCL	fire support coordination line
FSCM	fire support coordination measure
FSE	fire support element
FSS	fire support station

G-3	Army or Marine Corps component operations staff officer (Army division or higher staff, Marine Corps brigade or higher staff)
GARS	Global Area Reference System
GCC	geographic combatant commander
GCCS	Global Command and Control System
GCCS-I3	Global Command and Control System Integrated Intelligence and Imagery
GCE	ground combat element (MAGTF)
GEOINT	geospatial intelligence
GEOREF	geographic reference
GPS	Global Positioning System
HPT	high-payoff target
HQ	headquarters
HVI	high-value individual
HVT	high-value target
I&W	indications and warning
IA	information assurance
IADS	integrated air defense system
IC	intelligence community
ICT	information and communications technology
IGO	intergovernmental organization
IMINT	imagery intelligence
INR	Bureau of Intelligence and Research (DOS)
IO	information operations
IR	intelligence requirement
IRC	information-related capability
ISE	intelligence support element
ISR	intelligence, surveillance, and reconnaissance
ISRD	intelligence, surveillance, and reconnaissance division
IT	information technology
J-2	intelligence directorate of a joint staff
J-3	operations directorate of a joint staff
J-4	logistics directorate of a joint staff
J-5	plans directorate of a joint staff
JACCE	joint air component coordination element
JADOCS	Joint Automated Deep Operations Coordination System
JAO	joint air operations
JAOC	joint air operations center
JAOP	joint air operations plan
JCC	joint cyber center
JDPI	joint desired point of impact
JECB	Joint Effects Coordination Board
JEMSO	joint electromagnetic spectrum operations

JFACC	joint force air component commander
JFC	joint force commander
JFE	joint fires element
JFHQ	joint force headquarters
JFLCC	joint force land component commander
JFMCC	joint force maritime component commander
JFSOCC	joint force special operations component commander
JIOC	joint intelligence operations center
JIOWC	Joint Information Operations Warfare Command
JIPCL	joint integrated prioritized collection list
JIPOE	joint intelligence preparation of the operational environment
JIPTL	joint integrated prioritized target list
JISE	joint intelligence support element
JMEM	Joint Munitions Effectiveness Manual
JOA	joint operations area
JOC	joint operations center
JOPP	joint operation planning process
JP	joint publication
JS	Joint Staff
JSOA	joint special operations area
JSOTF	Joint Special Operations Task Force
JSTARS	Joint Surveillance Target Attack Radar System
JTC	joint targeting cycle
JTCB	joint targeting coordination board
JTCG/ME	Joint Technical Coordinating Group for Munitions Effectiveness
JTF	joint task force
JTL	joint target list
JTT	joint targeting toolbox
JTWG	joint targeting working group
JWAC	Joint Warfare Analysis Center
LE	linear error
LF	landing force
LHA	amphibious assault ship (general purpose)
LHD	amphibious assault ship (multipurpose)
LNO	liaison officer
LOC	line of communication
LOO	line of operations
LOW	law of war
MAAP	master air attack plan
MACCS	Marine air command and control system
MAGTF	Marine air-ground task force
MARFOR	Marine Corps forces
MARLE	Marine liaison element

MASINT	measurement and signature intelligence
MCC	maritime component commander
MCDP	Marine Corps doctrinal publication
MCRP	Marine Corps reference publication
MCWP	Marine Corps warfighting publication
MEA	munitions effectiveness assessment
MEB	Marine Expeditionary Brigade
MEF	Marine Expeditionary Force
MEU	Marine Expeditionary Unit
MI	military intelligence
MIDB	modernized integrated database
MILDEC	military deception
MIOC	maritime intelligence operations center
MISO	military information support operations
MISREP	mission report
MOC	maritime operations center
MOE	measure of effectiveness
MOP	measure of performance
MPA	maritime patrol aircraft
MPG	maritime planning group
NAI	named area of interest
NALE	Naval and Amphibious Liaison Element
NASIC	National Air and Space Intelligence Center
NATO	North Atlantic Treaty Organization
NAVFOR	Navy forces
NAVWAR	navigation warfare
NCC	Navy component commander
NFA	no-fire area
NGA	National Geospatial-Intelligence Agency
NGO	nongovernmental organization
NJOIC	National Joint Operations and Intelligence Center
NLRP	nonlethal reference point
NLT	not later than
NSA	National Security Agency
NSFS	naval surface fire support
NSL	no-strike list
NTACS	naval tactical air control system
NTTP	Navy tactics, techniques, and procedures
NWP	Navy warfare publication
OA	operational area
OCA	offensive counterair
OCO	offensive cyberspace operations
OE	operational environment
OMA	Office of Military Affairs
OPCON	operational control

OPFOR	opposing force
OPLAN	operation plan
OPORD	operation order
OPSEC	operations security
OTC	officer in tactical command
PA	public affairs
P _D	probability of damage
PID	positive identification
PIR	priority intelligence requirement
PL	phase line
PMESII	political, military, economic, social, information, and infrastructure
PNT	positioning, navigation, and timing
POL	petroleum, oil, and lubricant
PR	personnel recovery
RFA	restrictive fire area
ROE	rules of engagement
RR	reattack recommendations
RTL	restricted target list
RUF	rules for the use of force
SA	situational awareness
SC	strategic communication
SCA	space coordinating authority
SD	strategy division
SEAD	suppression of enemy air defenses
SecDef	Secretary of Defense
SIDO	senior intelligence duty officer
SIGINT	signals intelligence
SJA	staff judge advocate
SME	subject matter expert
SO	special operations
SOF	special operations forces
SOLE	special operations liaison element
SORTIEALOT	sortie allotment message
SPINS	special instructions
STAR	sensitive target approval and review
STO	special technical operations
STWC	strike warfare commander
SUW	surface warfare
SUWC	surface warfare commander
TACC	tactical air control center (USN); tactical air command center (USMC)
TACON	tactical control

TACP	tactical air control party
TACS	theater air control system
TADC	tactical air direction center
TAGS	theater air-ground system
TAI	target area of interest
TAOC	Tactical air operations center
TBMCS	theater battle management core system
TCIM	Tactical Communication Interface Module
TDN	target development nomination
TET	targeting effects team
TF	task force
TLAM	Tomahawk land attack missile
TLE	target location error
TLM	target list management
TM	target material
TNL	target nomination list
TOO	targets of opportunity
TOT	time on target
TPED	Tasking, Processing, Exploitation and Dissemination
TSA	target system analysis
TSC	Tomahawk land-attack missile strike coordinator
TSG	target support group
TSM	targeting synchronization matrix
TSS	target selection standards
TST	time-sensitive target
UAS	unmanned aircraft system
US	United States
USG	United States Government
USMC	United States Marine Corps
USMTF	United States message text format
WMD	weapons of mass destruction
ZF	zone of fire

PART II – TERMS AND DEFINITIONS

Adaptive Planning and Execution System. A Department of Defense system of joint policies, processes, procedures, and reporting structures, supported by communications and information technology, that is used by the joint planning and execution community to monitor, plan, and execute mobilization, deployment, employment, sustainment, redeployment, and demobilization activities associated with joint operations. Also called **APEX** system. (JP 5-0)

air interdiction. Air operations conducted to divert, disrupt, delay, or destroy the enemy's military potential before it can be brought to bear effectively against friendly forces, or to otherwise achieve objectives that are conducted at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required. Also called **AI**. (JP 3-03)

airspace control area. Airspace that is laterally defined by the boundaries of the operational area, and may be subdivided into airspace control sectors. (JP 3-01)

airspace control authority. The commander designated to assume overall responsibility for the operation of the airspace control system in the airspace control area. Also called **ACA**. (JP 3-52)

airspace control plan. The document approved by the joint force commander that provides specific planning guidance and procedures for the airspace control system for the joint force operational area. Also called **ACP**. (JP 3-52)

airspace coordinating measure. Measure employed to facilitate the efficient use of airspace to accomplish missions and simultaneously provide safeguards for friendly forces. Also called **ACM**. (JP 3-52)

airspace coordination area. A three-dimensional block of airspace in a target area, established by the appropriate ground commander, in which friendly aircraft are reasonably safe from friendly surface fires. The airspace coordination area may be formal or informal. Also called **ACA**. (JP 3-09.3)

air tasking order. A method used to task and disseminate to components, subordinate units, and command and control agencies projected sorties, capabilities and/or forces to targets and specific missions. Normally provides specific instructions to include call signs, targets, controlling agencies, etc., as well as general instructions. Also called **ATO**. (JP 3-30)

air apportionment. The determination and assignment of the total expected effort by percentage and/or by priority that should be devoted to the various air operations for a given period of time. (JP 5-0)

assessment. 1. A continuous process that measures the overall effectiveness of employing joint force capabilities during military operations. 2. Determination of the progress toward accomplishing a task, creating an effect, or achieving an objective. 3. Analysis of the security, effectiveness, and potential of an existing or planned intelligence activity. 4. Judgment of the motives, qualifications, and characteristics of present or prospective employees or “agents.” (JP 3-0)

battle damage assessment. The estimate of damage composed of physical and functional damage assessment, as well as target system assessment, resulting from the application of lethal or nonlethal military force. Also called **BDA**. (JP 3-0)

candidate target list. A list of objects or entities submitted by component commanders, appropriate agencies, or the joint force commander’s staff for further development and inclusion on the joint target list and/or restricted target list, or moved to the no-strike list. Also called **CTL**. (JP 3-60)

center of gravity. The source of power that provides moral or physical strength, freedom of action, or will to act. Also called **COG**. (JP 5-0)

close air support. Air action by fixed- and rotary-wing aircraft against hostile targets that are in close proximity to friendly forces and that require detailed integration of each air mission with the fire and movement of those forces. Also called **CAS**. (JP 3-0)

collateral damage. Unintentional or incidental injury or damage to persons or objects that would not be lawful military targets in the circumstances ruling at the time. (JP 3-60)

combat assessment. The determination of the overall effectiveness of force employment during military operations. Combat assessment is composed of three major components: (a) battle damage assessment; (b) munitions effectiveness assessment; and (c) reattack recommendation. Also called **CA**. (JP 3-60)

concept of operations. A verbal or graphic statement that clearly and concisely expresses what the joint force commander intends to accomplish and how it will be done using available resources. Also called **CONOPS**. (JP 5-0)

coordinated fire line. A line beyond which conventional and indirect surface fire support means may fire at any time within the boundaries of the establishing headquarters without additional coordination. The purpose of the coordinated fire line is to expedite the surface-to-surface attack of targets beyond the coordinated fire line without coordination with the ground commander in whose area the targets are located. Also called **CFL**. (JP 3-09)

course of action. 1. Any sequence of activities that an individual or unit may follow. 2. A scheme developed to accomplish a mission. 3. A product of the course-of-action

development step of the joint operation planning process. Also called **COA**. (JP 5-0)

critical capability. A means that is considered a crucial enabler for a center of gravity to function as such and is essential to the accomplishment of the specified or assumed objective(s). (JP 5-0)

critical requirement. An essential condition, resource, and means for a critical capability to be fully operational. (JP 5-0)

critical vulnerability. An aspect of a critical requirement which is deficient or vulnerable to direct or indirect attack that will create decisive or significant effects. (JP 5-0)

cyberspace operations. The employment of cyberspace capabilities where the primary purpose is to achieve objectives in or through cyberspace. Also called **CO**. (JP 3-0)

defensive cyberspace operations. Passive and active cyberspace operations intended to preserve the ability to utilize friendly cyberspace capabilities and protect data, networks, net-centric capabilities, and other designated systems. Also called **DCO**. (JP 3-12)

decision support template. A combined intelligence and operations graphic based on the results of wargaming. The decision support template depicts decision points, timelines associated with the movement of forces and the flow of the operation, and other key items of information required to execute a specific friendly course of action. (JP 2-01.3)

decisive point. A geographic place, specific key event, critical factor, or function that, when acted upon, allows commanders to gain a marked advantage over an adversary or contribute materially to achieving success. (JP 5-0)

defensive counterair. All defensive measures designed to neutralize or destroy enemy forces attempting to penetrate or attack through friendly airspace. Also called **DCA**. (JP 3-01)

Department of Defense information networks. The globally connected, end-to-end set of information capabilities, and processes for collecting, processing, storing, disseminating and managing information on-demand to warfighters, policy makers, and support personnel, including owned and leased communications and computing systems and services, software (including applications), data, and security. Also called **DODIN**. (JP 3-12)

desired point of impact. A precise point, associated with a target, and assigned as the impact point for a single unitary weapon to create a desired effect. Also called **DPI**. (JP 3-60)

dynamic targeting. Targeting that prosecutes targets identified too late, or not selected for action in time to be included in deliberate targeting. (JP 3-60)

dynamic threat assessment. An intelligence assessment developed by the Defense Intelligence Agency that details the threat, capabilities, and intentions of adversaries in each of the priority plans in the Joint Strategic Capabilities Plan. Also called **DTA**. (JP 2-0)

effect. 1. The physical or behavioral state of a system that results from an action, a set of actions, or another effect. 2. The result, outcome, or consequence of an action. 3. A change to a condition, behavior, or degree of freedom. (JP 3-0)

electronic attack. Division of electronic warfare involving the use of electromagnetic energy, directed energy, or antiradiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability and is considered a form of fires. Also called **EA**. (JP 3-13.1)

end state. The set of required conditions that defines achievement of the commander's objectives. (JP 3-0)

fires. The use of weapon systems to create a specific lethal or nonlethal effect on a target. (JP 3-09)

fire support. Fires that directly support land, maritime, amphibious, and special operations forces to engage enemy forces, combat formations, and facilities in pursuit of tactical and operational objectives. (JP 3-09)

fire support coordination. The planning and executing of fire so that targets are adequately covered by a suitable weapon or group of weapons. (JP 3-09)

fire support coordination center. A single location in which are centralized communications facilities and personnel incident to the coordination of all forms of fire support. Also called **FSCC**. (JP 3-09)

fire support coordination line. A fire support coordination measure that is established and adjusted by appropriate land or amphibious force commanders within their boundaries in consultation with superior, subordinate, supporting, and affected commanders. Fire support coordination lines facilitate the expeditious attack of surface targets of opportunity beyond the coordinating measure. A fire support coordination line does not divide an area of operations by defining a boundary between close and deep operations or a zone for close air support. The fire support coordination line applies to all fires of air, land, and sea-based weapon systems using any type of ammunition. Forces attacking targets beyond a fire support coordination line must inform all affected commanders in sufficient time to allow necessary reaction to avoid fratricide. Supporting elements attacking targets beyond the fire support coordination line must ensure that the attack will not produce adverse effects on, or to the rear of, the line. Short of a fire support coordination line, all air-to-ground and surface-to-surface attack operations are

controlled by the appropriate land or amphibious force commander. The fire support coordination line should follow well-defined terrain features. Coordination of attacks beyond the fire support coordination line is especially critical to commanders of air, land, and special operations forces. In exceptional circumstances, the inability to conduct this coordination will not preclude the attack of targets beyond the fire support coordination line. However, failure to do so may increase the risk of fratricide and could waste limited resources. Also called **FSCL**. (JP 3-09)

fire support coordination measure. A measure employed by to facilitate the rapid engagement of targets and simultaneously provide safeguards for friendly forces. Also called **FSCM**. (JP 3-0)

fragmentary order. An abbreviated form of an operation order issued as needed after an operation order to change or modify that order or to execute a branch or sequel to that order. Also called **FRAGORD**. (JP 5-0)

Global Command and Control System. A deployable command and control system supporting forces for joint and multinational operations across the range of military operations with compatible, interoperable, and integrated communications systems. Also called **GCCS**. (JP 6-0)

high-payoff target. A target whose loss to the enemy will significantly contribute to the success of the friendly course of action. Also called **HPT**. (JP 3-60)

high-value target. A target the enemy commander requires for the successful completion of the mission. Also called **HVT**. (JP 3-60)

information operations. The integrated employment, during military operations, of information-related capabilities in concert with other lines of operation to influence, disrupt, corrupt, or usurp the decision-making of adversaries and potential adversaries while protecting our own. Also called **IO**. (JP 3-13)

interdiction. 1. In support of law enforcement, activities conducted to divert, disrupt, delay, intercept, board, detain, or destroy, under lawful authority vessels, vehicles, aircraft, people, cargo, and money. (JP 3-0)

joint air operations. Air operations performed with air capabilities/forces made available by components in support of the joint force commander's operation or campaign objectives, or in support of other components of the joint force. Also called **JAO**. (JP 3-30)

joint air operations center. A jointly staffed facility established for planning, directing, and executing joint air operations in support of the joint force commander's operation or campaign objectives. Also called **JAOC**. (JP 3-30)

joint air operations plan. A plan for a connected series of joint air operations to achieve the joint force commander's objectives within a given time and joint operational area. Also called **JAOP**. (JP 3-30)

joint fires. Fires delivered during the employment of forces from two or more components in coordinated action to produce desired effects in support of a common objective. (JP 3-0)

joint fires element. An optional staff element that provides recommendations to the operations directorate to accomplish fires planning and synchronization. Also called **JFE**. (JP 3-60)

joint fire support. Joint fires that assist air, land, maritime, and special operations forces to move, maneuver, and control territory, populations, airspace, and key waters. (JP 3-0)

joint force commander. A general term applied to a combatant commander, subunified commander, or joint task force commander authorized to exercise combatant command (command authority) or operational control over a joint force. Also called **JFC**. (JP 1)

joint integrated prioritized target list. A prioritized list of targets approved and maintained by the joint force commander. Also called **JIPTL**. (JP 3-60)

joint intelligence preparation of the operational environment. The analytical process used by joint intelligence organizations to produce intelligence assessments, estimates and other intelligence products in support of a joint force commander's decision making process. It is a continuous process that includes defining the operational environment; describing the effects of the operational environment; evaluating the adversary; and determining and describing adversary potential courses of action. Also called **JIPOE**. (JP 2-01.3)

joint operation planning process. An orderly, analytical process that consists of a logical set of steps to analyze a mission, select the best course of action; and produce a joint operation plan or order. Also called **JOPP**. (JP 5-0)

joint targeting coordination board. A group formed by the joint force commander to accomplish broad targeting oversight functions that may include but are not limited to coordinating targeting information, providing targeting guidance, synchronization, and priorities, and refining the joint integrated prioritized target list. Also called **JTCB**. (JP 3-60)

joint target list. A consolidated list of selected targets, upon which there are no restrictions placed, considered to have military significance in the joint force commander's operational area. Also called **JTL**. (JP 3-60)

joint task force. A joint force that is constituted and so designated by the Secretary of Defense, a combatant commander, a subunified commander, or an existing joint task force commander. Also called **JTF**. (JP 1)

line of operation. 1. A line that defines the interior or exterior orientation of the force in relation to the enemy or that connects actions on nodes and/or decisive points related in time and space to an objective(s). Also called **LOO**. (JP 5-0)

link. 1. A behavioral, physical, or functional relationship between nodes. 2. In communications, a general term used to indicate the existence of communications facilities between two points. 3. A maritime route, other than a coastal or transit route, which links any two or more routes. (JP 3-0)

master air attack plan. A plan that contains key information that forms the foundation of the joint air tasking order. Also called **MAAP**. (JP 3-60)

measure of effectiveness. A criterion used to assess changes in system behavior, capability, or operational environment that is tied to measuring the attainment of an end state, achievement of an objective, or creation of an effect. Also called **MOE**. (JP 3-0)

measure of performance. A criterion used to assess friendly actions that is tied to measuring task accomplishment. Also called **MOP**. (JP 3-0)

mensuration. The process of measurement of a feature or location on the earth to determine an absolute latitude, longitude, and elevation. For targeting applications, the errors inherent in both the source for measurement as well as the measurement processes must be understood and reported. (JP 3-60)

military information support operations. Planned operations to convey selected information and indicators to foreign audiences to influence their emotions, motives, objective reasoning, and ultimately the behavior of foreign governments, organizations, groups, and individuals in a manner favorable to the originator's objectives. Also called **MISO**. (JP 3-13.2)

mission type order. 1. An order issued to a lower unit that includes the accomplishment of the total mission assigned to the higher headquarters. 2. An order to a unit to perform a mission without specifying how it is to be accomplished. (JP 3-50)

munitions effectiveness assessment. Conducted concurrently and interactively with battle damage assessment, the assessment of the military force applied in terms of the weapon system and munitions effectiveness to determine and recommend any required changes to the methodology, tactics, weapon system, munitions, fusing, and/or weapon delivery parameters to increase force effectiveness. Munitions effectiveness assessment is primarily the responsibility of operations with required inputs and coordination from the intelligence community. Also called **MEA**. (JP 2-01)

named areas of interest. The geospatial area or systems node or link against which information that will satisfy a specific information requirement can be collected. Named areas of interest are usually selected to capture indications of adversary courses of action, but also may be related to conditions of the operational environment. Also called **NAI**. (JP 2-01.3)

naval surface fire support. Fire provided by Navy surface gun and missile systems in support of a unit or units. Also called **NSFS**. (JP 3-09.3)

node. 1. A location in a mobility system where a movement requirement is originated, processed for onward movement, or terminated. 2. In communications and computer systems, the physical location that provides terminating, switching, and gateway access services to support information exchange. 3. An element of a system that represents a person, place, or physical thing. (JP 3-0)

no-fire area. An area designated by the appropriate commander into which fires or their effects are prohibited. Also called **NFA**. (JP 3-09.3)

no-strike list. A list of objects or entities characterized as protected from the effects of military operations under international law and/or rules of engagement. Also called **NSL**. (JP 3-60)

objective. 1. The clearly defined, decisive, and attainable goal toward which every operation is directed. 2. The specific target of the action taken which is essential to the commander's plan. (JP 5-0)

offensive counterair. Offensive operations to destroy, disrupt, or neutralize enemy aircraft, missiles, launch platforms, and their supporting structures and systems both before and after launch, but as close to their source as possible. Also called **OCA**. (JP 3-01)

offensive cyberspace operations. Cyberspace operations intended to project power by the application of force in or through cyberspace. Also called **OCO**. (JP 3-12)

operational area. An overarching term encompassing more descriptive terms (such as area of responsibility and joint operations area) for geographic areas in which military operations are conducted. Also called **OA**. (JP 3-0)

operational art. The cognitive approach by commanders and staffs—supported by their skill, knowledge, experience, creativity, and judgment—to develop strategies, campaigns, and operations and organize and employ military forces by integrating ends, ways, and means. (JP 3-0)

operational design. The conception and construction of the framework that underpins a campaign or major operation plan and its subsequent execution. (JP 5-0)

operational environment. A composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander. Also called **OE**. (JP 3-0)

operation order. A directive issued by a commander to subordinate commanders for the purpose of effecting the coordinated execution of an operation. Also called **OPORD**. (JP 5-0)

operation plan. 1. Any plan for the conduct of military operations prepared in response to actual and potential contingencies. 2. A complete and detailed joint plan containing a full description of the concept of operations, all annexes applicable to the plan, and a time-phased force and deployment data. Also called **OPLAN**. (JP 5-0)

restricted target. A valid target that has specific restrictions placed on the actions authorized against it due to operational considerations. (JP 3-60)

restricted target list. A list of restricted targets nominated by elements of the joint force and approved by the joint force commander or directed by higher authorities. Also called **RTL**. (JP 3-60)

restrictive fire area. An area in which specific restrictions are imposed and into which fires that exceed those restrictions will not be delivered without coordination with the establishing headquarters. Also called **RFA**. (JP 3-09)

restrictive fire line. A line established between converging friendly surface forces that prohibits fires or their effects across that line. Also called **RFL**. (JP 3-09)

rules of engagement. Directives issued by competent military authority that delineate the circumstances and limitations under which United States forces will initiate and/or continue combat engagement with other forces encountered. Also called **ROE**. (JP 1-04)

scheduled target. Planned target upon which fires or other actions are scheduled for prosecution at a specified time. (JP 3-60)

special operations forces. Those Active and Reserve Component forces of the Military Services designated by the Secretary of Defense and specifically organized, trained, and equipped to conduct and support special operations. Also called **SOF**. (JP 3-05.1)

system. A functionally, physically, and/or behaviorally related group of regularly interacting or interdependent elements; that group of elements forming a unified whole. (JP 3-0)

target. 1. An entity or object considered for possible engagement or other action. 2. In intelligence usage, a country, area, installation, agency, or person against which

intelligence operations are directed. 3. An area designated and numbered for future firing. 4. In gunfire support usage, an impact burst that hits the target. (JP 3-60)

target acquisition. The detection, identification, and location of a target in sufficient detail to permit the effective employment of weapons. Also called **TA**. (JP 3-60)

target analysis. An examination of potential targets to determine military importance, priority of attack, and weapons required to obtain a desired level of damage or casualties. (JP 3-60)

target area of interest. The geographical area where high-value targets can be acquired and engaged by friendly forces. Not all target areas of interest will form part of the friendly course of action; only target areas of interest associated with high priority targets are of interest to the staff. These are identified during staff planning and wargaming. Target areas of interest differ from engagement areas in degree. Engagement areas plan for the use of all available weapons; target areas of interest might be engaged by a single weapon. Also called **TAI**. (JP 2-01.3)

targeting. The process of selecting and prioritizing targets and matching the appropriate response to them, considering operational requirements and capabilities. (JP 3-0)

target nomination list. A prioritized list of targets drawn from the joint target list and nominated by component commanders, appropriate agencies, or the joint force commander's staff for inclusion on the joint integrated prioritized target list. Also called **TNL**. (JP 3-60)

target system analysis. An all-source examination of potential target systems to determine relevance to stated objectives, military importance, and priority of attack. Also called **TSA**. (JP 3-60)

time-sensitive target. A joint force commander validated target or set of targets requiring immediate response because it is a highly lucrative, fleeting target of opportunity or it poses (or will soon pose) a danger to friendly forces. Also called **TST**. (JP 3-60)

validation. 1. A process associated with the collection and production of intelligence that confirms that an intelligence collection or production requirement is sufficiently important to justify the dedication of intelligence resources, does not duplicate an existing requirement, and has not been previously satisfied. 2. A part of target development that ensures all vetted targets meet the objectives and criteria outlined in the commander's guidance and ensures compliance with the law of armed conflict and rules of engagement. 3. In computer modeling and simulation, the process of determining the degree to which a model or simulation is an accurate representation of the real world from the perspective of the intended uses of the model or simulation. 4. Execution procedure whereby all the information records in a time-phased force and deployment data are confirmed error free and accurately reflect the current status, attributes, and availability of units and requirements. (JP 3-60)

vetting. A part of target development that assesses the accuracy of the supporting intelligence to targeting. (JP 3-60)

weaponneering. The process of determining the quantity of a specific type of lethal or nonlethal weapons required to create a desired effect on a given target. (JP 3-60)

zone of fire. An area into which a designated ground unit or fire support ship delivers, or is prepared to deliver, fire support. Fire may or may not be observed. Also called **ZF**. (JP 3-09)