

# DART

**DEFENSE  
ADAPTIVE  
RED TEAM**

**Workshop  
Report**

**13 OCTOBER 2003**

## **DART Review of Joint Operating Concepts and Joint Functional Concepts**

**Findings from  
Concept Review Workshop  
30 September –  
2 October 2003**



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## BACKGROUND

This report summarizes findings from a workshop that reviewed nine new joint concepts being developed by the Department of Defense. The workshop was sponsored by the Joint Staff J-8, and conducted by Hicks & Associates' Defense Adaptive Red Team (DART) on 30 September – 2 October 2003 in Arlington, Virginia.

After providing background information, this report summarizes cross-cutting recommendations emerging from the workshop that apply to most or all concepts, and then proposes priority next steps for the continued refinement of each concept. Appendices to this report provide supporting analysis and much more detailed recommendations for each of the nine concepts reviewed at the workshop.

### Joint Operating Concepts and Joint Functional Concepts

The Combatant Commands and Joint Staff are developing new concepts for future operations and critical supporting functions. These concepts are to be developed with enough detail to derive concrete capabilities, which will be validated through joint experimentation, exercises and other assessments. Ultimately these concepts are intended to drive significant changes to doctrine, organizations, training, material, leadership, personnel, and facilities. Thus, the development, refinement, and validation of these new concepts is central to the Defense Department's strategy to transform its capabilities to meet future challenges.

The Joint Requirements Oversight Council (JROC) has tasked Combatant Commanders and Joint Staff elements to develop nine new concepts. Four Joint Operating Concepts (JOCs) are to articulate how the future force will operate within specified segments of the range of military operations:

#### Joint Operating Concepts

- Major Combat Operations
- Stability Operations
- Homeland Security
- Strategic Deterrence

In addition, five Joint Functional Concepts (JFCs) are to define critical capabilities within five functional areas across the range of military operations (including all four JOCs):

### Joint Functional Concepts

- Force Application
- Protection
- Joint Command and Control
- Battlespace Awareness
- Focused Logistics

## **Initial “Quick Look” Workshop (16-18 July)**

On 16-18 July 2003, Hicks & Associates, Inc.’s Defense Adaptive Red Team (DART), under the sponsorship of the Joint Staff J-8, conducted an initial workshop in Arlington, Virginia. The workshop provided a first “quick look” review of the nine joint concepts. Some of the concepts had been under development for months; for others, work had only recently begun. A workshop report and nine appendices (one for each concept reviewed) were produced and delivered to the Joint Staff and to concept authors on 25 July 2003.<sup>1</sup>

Concept authors revised all of the JOCs and JFCs substantially following the “Quick Look” workshop.<sup>2</sup> These revised concepts, four JOCs and five JFCs, were reviewed in the concept review workshop addressed by this report.

## **Concept Review Workshop (30 September – 2 October)**

On 30 September – 2 October 2003, the DART, again under the sponsorship of the Joint Staff J-8, conducted a second workshop in Arlington, Virginia. In the workshop, DART members provided a critique and recommendations for revised versions of each of the four JOCs and five JFCs. See Annex A for the workshop agenda.

Participants in this second workshop included concept authors of the JOCs (from Joint Forces Command, Northern Command, and Strategic Command), concept authors of the JFCs (from the Joint Staff J-2, J-4, J-6, J-7, and J-8), representatives from each of the Services, and a number of contractor personnel involved in supporting concept development. DART participants in the workshop were Gen Richard Hawley (USAF, ret.), LTG Leonard D. Holder (USA, ret.), Dr. Jim Miller, Lt Gen Greg Newbold (USMC, ret.), Mr. John F. Schmitt, and Mr. Jim Yeager. Lt Gen Paul Van Riper (USMC, ret) contributed significantly to preparation for the workshop. Dr.

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<sup>1</sup> DART Workshop Report “DART ‘Quick Look’ Review of Joint Operating Concepts and Joint Functional Concepts,” and 9 associated appendices (published separately), 25 July 2003. All are available electronically in pdf format from Hicks & Associates, Inc.

<sup>2</sup> DART members provided additional comments to three of the concept teams (Force Application, Focused Logistics, and Joint Command and Control) during August and September.

Edward L. Warner and Mr. Glenn Harned, although not members of the DART, participated particularly actively in the workshop and provided written inputs.

The senior Joint Staff representative, BG Hunzeker, chaired the workshop and provided both commentary and real-time guidance to concept authors. Flag/general officers attending relevant portions of the workshop were RADM Mullins, Brig Gen Rogers, Brig Gen Scott, and Brig Gen Taylor. See Annex B for a complete list of participants.

The purpose of the concept review workshop was to support the further development and refinement of the nine concepts. During the workshop, the DART provided its assessment of how well each concept conformed to JROC guidance on JOC and JFC development, and to the related DART guide on concept development.<sup>3</sup> In addition, the DART provided further suggestions for how each concept might be strengthened. Finally, the DART suggested issues that should be considered during future concept refinement and experimentation. These issues fell into four somewhat overlapping areas: concept feasibility; adversary counters; potential failure modes; and possible unintended effects of implementing the concept.

For each of the nine concepts reviewed, the DART kicked off discussion by providing a briefing summarizing the DART critique and suggestions for improvement. (Updated, annotated versions of these briefings are provided in the Appendices to this paper.) Concept authors were given first priority in responding to the DART, and then an open discussion ensued involving all workshop participants.

This report and its appendices provide a number of recommendations for how the nine concepts might be improved, including matters of both presentation and of content. Cross-cutting issues that apply to most or all concepts are addressed in the following section. High-level comments for each individual concept are provided next. Detailed comments relating to each concept are provided in nine separate appendices to this report.<sup>4</sup>

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<sup>3</sup> DART Working Paper #02-4, “A Practical Guide for Developing and Writing Military Concepts,” John F. Schmitt, December 2002. Available in pdf format from Hicks & Associates, Inc.

<sup>4</sup> A caveat is in order: A significant part of the value of DART’s workshop came from the face-to-face discussion between concept authors, the DART, and other participants. This report and its appendices summarize many of the key points and recommendations provided in the workshop, but cannot fully capture all of the nuances of the multi-sided dialogue that occurred.

## GENERAL COMMENTS APPLYING TO ALL CONCEPTS

General comments applicable to all four joint operating concepts (JOCs) and all five joint functional concepts (JFCs) are provided below. Comments are grouped into five issues:

1. Clearly defining and integrating elements of the concept.
2. Scoping the military problem.
3. Providing a clear and compelling synopsis of the central idea.
4. Defining capabilities, attributes and metrics.
5. Improving clarity of presentation.

Addressing all of the above issues is important to the development of strong concepts. However, in order for the JOCs and JFCs to support capabilities-based planning, it is absolutely essential that they credibly define capabilities, attributes and metrics. Much of the discussion at the concept development workshop focused on this issue, and it is recommended that most of the attention of concept development teams focus here in the immediate future.

### 1. Clearly Defining and Integrating Elements of the Concept

#### Discussion

Many of the concepts reviewed were in a state of flux. Although this is not surprising or inappropriate at this stage of the concept development process, a result was there was not always a clear mapping from the statement of the military problem to the central idea of the concept, from the central idea to required capabilities, or from required capabilities to attributes. Clearly defining and integrating these elements of each concept should be a priority in the next round of concept revision.

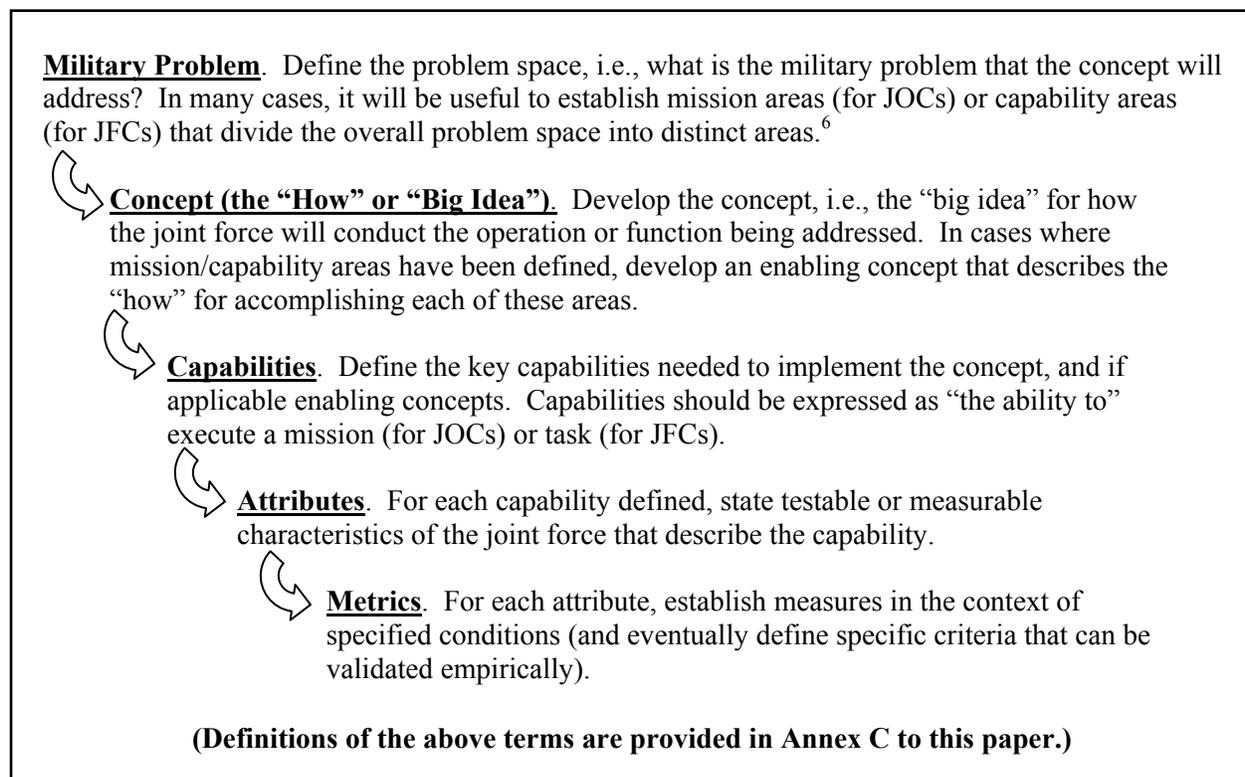
#### Recommendation

Concept documents should be revised so that there is a clear correspondence between the different elements of developing a concept document as depicted in Figure 1, below:

- The concept, or statement of “how,” should address directly the military problem. If the military problem is divided into mission/capability areas (e.g., personnel protection, air and missile defense, critical asset protection, and WMD protection for the Protection JFC), enabling concepts for each area should be outlined.
- Capabilities should be traceable to the concept, i.e., the statement of “how.” If enabling concepts are outlined for mission/capability areas, then capabilities should be traceable to the enabling concepts. The capabilities should be individually

- necessary and collectively sufficient to allow the joint force of 2015 to execute the concept (and any enabling concepts).
- Attributes which the joint force needs in order to provide each capability should be defined.
  - Two of the three elements of metrics – measures and conditions – should be defined for each attribute. Results should be presented in an appendix to the concept paper. (Definitions of “measures” and “conditions” are provided in a later section of this report.)

### Figure 1. Steps in Developing a Concept Document<sup>5</sup>



<sup>5</sup> In practice, developing a concept is not a one-way flow as depicted in the figure, but an iterative process. For example, if the statement of the concept (the “how”) is revised, one might then need to re-scope the definition of the military problem. Similarly, in the process of defining attributes for a capability, concept authors may determine that the statement of the required capability needs to be modified. Also, note that in the interest of simplicity, the identification of key assumptions (that if not true would invalidate the concept) is omitted from the figure.

<sup>6</sup> For example, the Homeland Security JOC established three mission areas (homeland defense, civil support, and emergency preparedness), and the Protection JFC established four capability areas (personnel protection, air and missile defense, critical asset protection, and WMD protection).

The following sections of this report provide, in turn, recommendations relating to the description of the military problem; the concept (“how”) statement; and capabilities, attributes and metrics. The final section provides recommendations for improving the clarity of presentation.

## **2. Scoping the Military Problem**

Although several concepts had more clearly scoped the military problem, this area remains problematic for most concepts. The description of the military problem/operating environment is an important part of every concept paper because it establishes the problem that the concept is meant to solve.

### **Sharpening Description of the Military Problem/Operating Environment**

#### Discussion

For the JOCs, the statement of the military problem should describe the envisioned operating environment and the problem it poses specifically for that operating concept. For the Major Combat Operations (MCO) concept, for example, it should describe the conditions of a major combat operation in 2015 and the challenges posed by it—including critical adversarial capabilities such as nuclear, chemical and biological weapons.

For the JFCs, this section should describe the nature of the operations the concept must support. For example, for the Joint Command and Control (C2) concept, this section would describe the characteristics of operations that impact the performance of C2.

Many of the concepts instead provided generic descriptions of the potential future, describing various types of threats, without specifying any implications for the concept.

At the workshop, participants discussed the possibility of using a single source for a generic description of the future which would provide the broad context for all concepts. This description would provide the basis for the detailed discussion of the problem as it applies to each concept. JFCOM agreed to post this source on its web site.

#### Recommendation

Concept authors should reformulate the problem description with a focus on the implications for their particular concept. Within each JOC and JFC, authors should ensure that there is a mapping between the problem statement and the proposed solution(s).

## **Bounding the Problem**

### Discussion

The first workshop dedicated much of its time to discussing the problem space that each concept was working within. Bounding the problem properly is essential to writing a good concept; without a clear description of the problem to be solved, it is difficult to describe a meaningful solution (i.e., concept). The more narrowly a concept can be bounded, the easier it will generally be to develop a cohesive concept. Many of the concepts made improvements in this area. This is especially true of the functional concepts, for which the problem space is generally more easily defined (Force Application is the exception to this rule). The problem is more challenging for the operating concepts, which naturally tend to overlap with each other to a greater extent.

During the second workshop, participants discussed the relationship of concepts to real-life operational situations. The DART recommended that concept writers not struggle to write concepts that would fully cover real-life operational situations, which invariably are complex hybrids of various sets of factors. In other words, concept writers should not attempt to write concepts that would provide the comprehensive precedent for a concept of operations (as opposed to operating concepts) for operational commanders. Rather, the DART felt that concept writers should write about challenging “pure” cases, and leave it to future operational commanders to select and combine elements from various operating concepts to form a concept of operations for particular situations.

### Recommendation

During concept revisions, authors should continue to focus on carefully and narrowly defining the problem space, and should ensure that the problem space matches with the description of the central idea of the concept (the statement of “how”).

## **Establishing Mission/Capability Areas**

### Discussion

In many cases, it will be useful to establish mission areas (for JOCs) or capability areas (for JFCs) that divide the overall problem space into distinct areas. For example, the Homeland Security JOC established three distinct mission areas: homeland defense, civil support, and emergency preparedness. The Protection JFC established four capability areas: personnel protection, air and missile defense, critical asset protection, and WMD protection.

Defining mission/capability areas is appropriate when two conditions are both met:

- a) The concept covers such a broad range of activity that it is possible to define a distinctive and coherent “how”, i.e., an enabling concept, for individual sub-parts of the problem the

concept is addressing.<sup>7</sup> This appears to be the case for all of the JOCs, and for the Force Application and Protection JFCs.

-- and --

- b) Establishing mission/capability areas allows the concept developers to define the required capabilities at an appropriate level of detail. The Protection JFC has followed this approach, and although some editing of the concept is required, the concept demonstrates that this approach can work.

A participant in the workshop, Dr. Edward L. Warner, provided specific suggestions for how some of the concepts might be divided into mission/capability areas. His associated briefing charts are included in the appendices to this report.

### Recommendation

Concept authors for the JOCs and the Force Application JFC should consider establishing mission/capability areas. When mission/capability areas are created that divide up the problem space for a concept, an enabling concept and associated capabilities (and attributes and metrics) should be defined for each area. Concept authors should ensure consistency between their enabling concepts and associated capabilities.

## **3. Providing a Clear and Compelling Synopsis of the Central Idea**

### Discussion

Most of the concepts were still weak in the synopsis of the central idea—the all-important description of “how” the concept envisions operations or functional activities will unfold in 2015. This “painting a picture” of operations or functional activities as envisioned is the essential element in providing actionable guidance for defining required capabilities and associated attributes and metrics.

Many of the concepts made improvements in this area in terms of the very broadest description, but lacked a meaningful explanation of the “how” in actionable detail. Some concepts made headway by decomposing the overall problem space in subordinate elements, but then failed to describe how to execute those elements in sufficient detail. For the functional concepts in

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<sup>7</sup> We define an enabling concept as: “a description of how a particular task or procedure is performed, within the context of a broader functional area, using a particular capability, such as a specific technology, training or education program, organization, facility, etc. An enabling concept describes the accomplishment of a particular task that makes possible the performance of a broader military function or sub-function.” (DART Working Paper #02-4, John Schmitt, “A Practical Guide for Developing and Writing Military Concepts,” December 2002.)

particular, this meant failing to capture the functional process, that is the general sequence of activities, from beginning to end.

At the level of generality required, a schematic diagram or “process model” is generally very helpful. Developing such a model could be a useful exercise for helping the concept developers refine the concepts, as well as a valuable mechanism for communicating the concept to the reader.

For many of the concepts, addressing this issue will mean refining or tightening a concept that is not adequately articulated. For others, it will mean articulating a concept that was still essentially missing. In each case, the DART provided substantive recommendations for what the central idea might contain.

### Recommendation

We recommend that each writing team continue to work to develop a compelling, broad articulation of the “how” of its concept, and if applicable, for enabling concepts relating to mission/capability areas. Specific suggestions for each concept are included in the Appendices to this report.

## **4. Defining Capabilities, Attributes and Metrics**

Perhaps the most important discussion in the second workshop related to capabilities, attributes and metrics. The concepts generally were weak in this area and showed a lack of consistency from one concept to another. This is important since defining required capabilities, attributes and metrics is one of the most important objectives of the concept development effort and key to capabilities-based planning.

Based on extensive discussion at the workshop, the DART provided a construct for capabilities, attributes and metrics, based on the current UJTL structure.<sup>8</sup> The senior Joint Staff representative, BG Hunzeker, directed all of the writing teams to explore this approach to developing capabilities and attributes.

***All of the concepts require substantial work on capabilities, attributes, and metrics – this should be the key focus of concept authors in the coming weeks.*** The following pages provide specific recommendations.

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<sup>8</sup> During the workshop, Mr. Glenn Harned provided numerous detailed suggestions for this construct.

## **Need for Clear, Concise Statements of Required Capabilities**

### Discussion

Because JOCs and JFCs were developed concurrently on a compressed schedule, each of the concept teams essentially worked separately from the others. The result was a high degree of diversity in the format and level of detail of the concept documents. This diversity is useful early in the concept development process, because it results in multiple models for how a concept document should look – concept authors can learn from each other.

However, at this point in the process, it will be useful to summarize key aspects of all concepts in order to facilitate comparison. Because the clear description of capabilities is absolutely central to supporting capabilities-based planning, we recommend that particular attention be focused on this issue.

### Recommendation

The Joint Staff should keep an up-to-date list of all capabilities for JOCs and JFCs, and should use this list to improve the quality and consistency of capabilities listed by concepts. (An example, which shows all capabilities listed in the JOCs only, is shown in Annex D.)

In addition to helping improve the clarity of capability statements, such a list would help address four questions:

- 1) ***For JOCs, does the list of capabilities provide everything the Joint Force Commander of 2015 would absolutely need in the type of operation considered?*** If not, additional capabilities should be considered.
  - For example, the Stability Operations concept does not list as required capabilities the ability to deploy the force, maneuver the force, or conduct strikes.
- 2) ***For JOCs and JFCs, is enough detail provided regarding each capability?*** A reasonable standard would have each capability defined in a single short paragraph, which starts with a statement of the general need (e.g., “the ability to detect and defeat ballistic missile attacks on the Homeland”) and then specifies attributes and associated metrics.
  - For example, the Major Combat Operations concept notes the need for “coherent maneuver and strike” but does not provide a concrete description of this capability (the essence of combat) in terms that could drive the force application concept or otherwise affect force development.
  - As a second example, the Strategic Deterrence JOC provides lengthy descriptions of each capability and associated attributes, while the Homeland Security JOC simply

provides a list of required capabilities and a generic list of attributes applicable to all capabilities. A common format would be helpful.

**3) *Comparing across JOCs and across JFCs, are there significant redundancies or conflicts in the capabilities described? In instances where there is overlap, are definitions consistent, and are the attributes associated with the capability the same?***

- For example, the Strategic Deterrence JOC lists “space control” as a key capability, while the Homeland Security JOC lists the ability to “detect and defeat hostile space systems threatening the homeland” as a key capability.

**4) *Across concepts, does the list of capabilities cover all types of missions (for JOCs) and functions/tasks (for JFCs) that the 2015 Joint Force Commander will need across the range of military operations (ROMO)?***

- For example, none of the JOCs lists key capabilities associated with counter-terrorism or counter-proliferation except in the most general terms. (The Homeland Security concept does include the required capability to “detect and prevent [including through preemptive attack] potential threats to the Homeland as they arise in the Forward Regions.”) There is therefore little consideration of two challenges that may be central to the future success of the US military: the ability to locate, track and target terrorists and supporting infrastructure; and the ability to locate, track, and disable or destroy weapons of mass destruction before they can be used.

## **Need for Additional Operating Concepts to Address Key Future Capabilities?**

### Discussion

During the workshop, the DART noted that a separate JOC need not be written for every conceivable case on the range of military operations. Rather, the DART suggested that JOCs should be written for key centers of mass along that range, leaving it to future operational commanders to extrapolate the underlying principles of existing concepts to other situations. Additional concepts should be developed in those cases in which it is considered likely that new capability requirements will be identified.

That said, the four JOCs appear to leave unaddressed some important operational areas for the future. The most glaring gap in the JOCs at present is that there is no significant consideration of the capabilities required for major combat operations, because the current Major Combat Operations concept focuses on the integration of diplomatic, informational, military and economic power rather than on combat operations.

In addition, two other important capability areas appear to get little treatment in the current set of concepts: counter-terrorism (implying a need for the ability to locate, track and target terrorists and supporting infrastructure across the globe) and counter-proliferation (implying the need for

the ability to locate, track, and disable or destroy weapons of mass destruction across the globe). It is possible that the current JOCs could be stretched to cover these areas more effectively, but a reasonable case can also be made for establishing new JOCs in these key areas.

### Recommendation

If the Major Combat Operations JOC is not re-oriented to focus on the military capabilities needed for combat, then the Department should establish a new JOC that actually focuses on major combat operations. This is an absolutely critical area for force development.

For the present, it is recommended that immediate attention remain on the current crop of four JOCs (including a new concept for major combat operations if necessary), so that the concept development process is not over-loaded, and so that any later JOCs can make use of lessons learned in the development of these four.

In the future, the Department might consider establishing new JOCs to address the Global War on Terrorism and Counterproliferation Operations. New concepts in these areas could leverage extensive ongoing work; given the sensitivity of some relevant capabilities, it may be appropriate to make these JOCs classified.

## **Capabilities for JOCs vs. for JFCs**

### Discussion

In general, most of the capabilities defined for JOCs appropriately focus on the ability to conduct missions that require the integration of more than one function (C2, battlespace awareness, logistics, protection, and force application). However, there are exceptions. For example, the Stability Operations JOC lists “real-time threat warnings broadcast system” as a required capability; this tactical-level capability would seem to fit better in the Command & Control JFC.

Similarly, in general the capabilities defined for three of the JFCs (Joint C2, Battlespace Awareness, and Logistics) describe the ability to conduct tasks within their specified functional area. (There is additional work to be done for all three concepts. The point at present is that they are generally defining capabilities at an appropriate level.)

The Protection and Force Application JFCs are in a sense hybrid cases, in that both rely on the other three JFCs. For example, the ability to provide air and missile defense (a part of the protection concept) requires joint C2, battlespace awareness, and logistics.

## Recommendation

Although there will be ambiguous cases and exceptions, in general we recommend the following:

- Capabilities for JOCs should relate to mission areas, which integrate across functional areas. (For example, the ability to suppress enemy air defenses is an appropriate capability for Major Combat Operations.)
- Capabilities for the Joint C2, Battlespace Awareness, and Logistics JFCs should relate to tasks that are contained within the given functional area. (For example, the ability to track high-value mobile threats on the ground is an appropriate capability for Battlespace Awareness.)
- The Protection and Force Application JFCs should note their dependency on joint C2, battlespace awareness, and logistics, but focus on capabilities that are unique to their specific functions. Concept developers for these two JFCs should comment on the capabilities listed in other JFCs, and should have an input into the associated attributes and metrics.

## **Attributes Should be Associated with Capabilities**

### Discussion

Few of the concepts developed meaningful attributes. Some of the concepts simply adopted the seven “Attributes of the Joint Force” listed in the *Joint Operations Concepts* paper. The results were generally not helpful, the resulting discussion usually being too generic. Such attributes do not provide “testable or measurable characteristics that describe some aspect of a capability,” as required in CJCSI 3170.01C.

Many of the concepts associated attributes with the concept as a whole, rather than with specific capabilities. Although some attributes may be applicable to a number of capabilities, for the purpose of driving capabilities-based planning it is essential to specify which attributes are most important for each capability. This level of detail provides a framework for establishing metrics associated with each attribute.

During the workshop, the senior Joint Staff participant, BG Hunzeker, asked each concept team to develop a matrix showing the relationship between capabilities and attributes. Required capabilities were the rows, and attributes were the columns. (See Annex C, Figure 4 for an example.) This format allows reviewers, and concept authors themselves, to have a clear summary of both capabilities and attributes.

The use of such matrices can also help establish a common vocabulary for capabilities and attributes, and can facilitate comparison between concepts. This will allow concept teams to

learn from one another, and will increase the consistency of the concept documents. For example, the Strategic Deterrence JOC included several attributes (robust, reliable, and secure) which may be applicable to capabilities listed by other JOCs; in any case, this possibility should be at least considered. Examining these matrices also shows, for example, that both the Strategic Deterrence JOC and the Battlespace Awareness JFC list “robust” as a key attribute; this raises the question of whether they use the same definition of “robust.”

### Recommendation

Each concept team should produce, update as necessary, and share with the Joint Staff and other concept teams a matrix showing the relationship between capabilities and attributes. The Joint Staff should ensure consistency in the use of terms, and should facilitate cross-fertilization of ideas between concepts.

## **Develop Two of the Three Elements of Metrics (Measures and Conditions)**

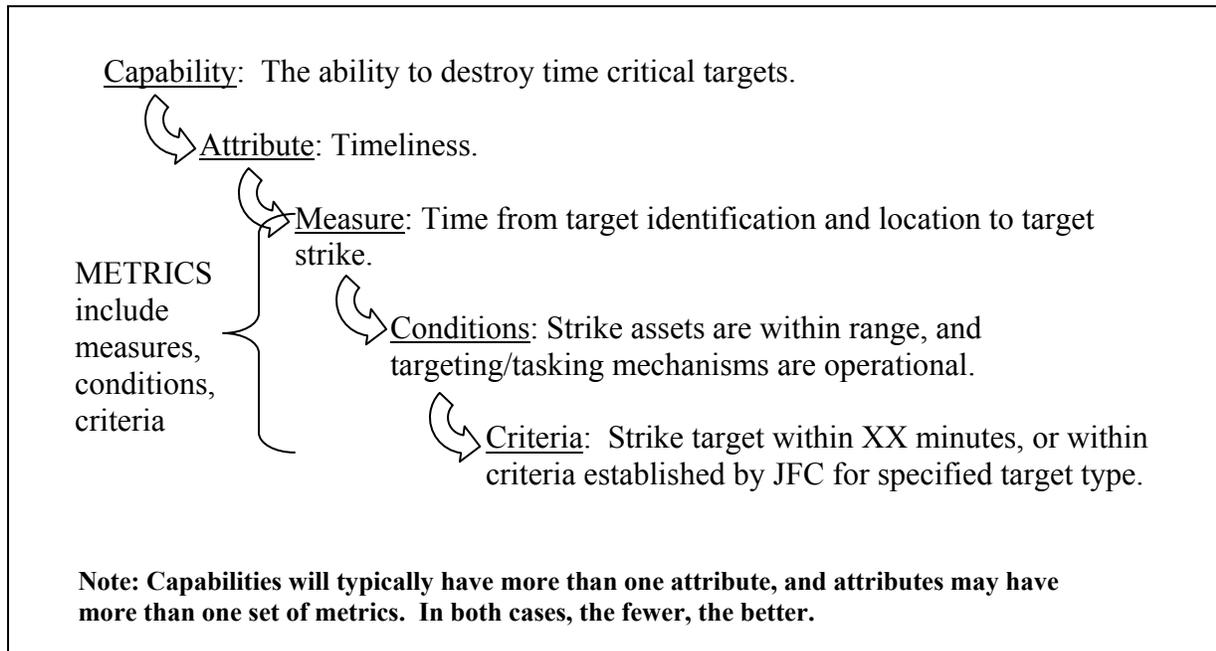
### Discussion

Participants in the workshop engaged in a lengthy, and ultimately productive, discussion regarding metrics. Mr. Glenn Harned proposed applying definitions already in common use for training, resulting in “metrics” being divided into three parts: measures, conditions, and criteria.

- **Measures** “provide the basis for describing varying levels of task performance.” [CJCSM 3500.04C]
- **Conditions** are “those variables of the operational environment that may affect task performance. Without establishing the conditions under which a task is to be performed, it is impossible to establish appropriate criteria for its minimum acceptable performance. [CJCSM 3500.04C]
- **Criteria** define “the minimum acceptable level of performance associated with a particular measure.” [CJCSM 3500.04C]

An example is provided in Figure 2 below.

**Figure 2. The Logic Flow from Capability to Attributes to Metrics**



### Recommendation

At this stage in concept development, it is recommended that concept authors develop a first-cut at two of the three elements of metrics: measures and conditions. (Results should probably be placed in an appendix to the concept document.) Establishment of specific criteria should be deferred because it is likely to require cost tradeoffs and other analyses that are beyond the scope of the current round of concept development.

Once the concept teams begin work on metrics, it will be useful to compare measures and conditions both within concepts and across concepts. It is recommended that the Joint Staff facilitate such comparisons.

## 5. Improving Clarity of Presentation

The concepts showed significant improvement from the first “quick look” workshop to the second workshop. Most of the concepts now share a common 2015 time frame and have a clear statement of the purpose of the concept paper. The clarity of language throughout the papers is generally improved, in some cases dramatically, with less reliance on acronyms, jargon and catchphrases and better use of standard English.

Although all concepts have improved, most still require significant work. For the next round of concept revision, particular attention should be given to clearly defining the “how” of the concept, and the capabilities required to implement it. Modifications to these elements of the concepts will have implications for other elements, as discussed below.

### **Executive Summaries to Force Clarity & Facilitate Concept Comparison**

#### Discussion

Many of the concept documents had executive summaries, but not all executive summaries provided a full or clear sense of the concept. Some of the executive summaries were not actually summaries of the concept paper, but introductory essays. Some contained information that was not later described in the main body of the concept paper.

#### Recommendation

Each concept team should develop an executive summary of its concept. The executive summary should include the following key elements:

- Statement of the military problem (1 paragraph), including a description of its sub-parts if applicable.
- Description of the concept, i.e., the “how” (1-2 paragraphs), including a very brief summary of the “how” for any sub-parts identified.
- Description (or perhaps list) of required capabilities (1-2 paragraphs and/or a table).
- Summary of key assumptions and risks relating to the concept (1 paragraph).

## **Common Preface and Description of the Operating Environment**

### Discussion

The workshop discussed those elements of the concepts that ought to be common to all JOCs and JFCs. Participants agreed that a common preface, which would set the stage for all the documents, would be valuable. This preface would explain why new concepts are being developed, the role of these concepts in transformation, and the relationship of concepts to each other and to the Joint Operations Concept (JOpsC). In the interest of getting to the substance of each concept quickly, this preface should be very brief.

Another possible common element is a brief description of the future operating environment. This would provide a common reference point. Each concept would then each go into greater detail in describing the implications of the future operating environment for its problem space. Again, this description should be brief—only long enough established necessary context.

### Recommendation

Include a common preface and a very concise common description of the future operating environment in all concepts. A Joint Staff J-7 participant at the workshop developed a draft version of a common preface, which is provided at Annex E.

## **Need to Eliminate Unnecessary Material**

### Discussion

Many of the concept papers included unnecessary material which got in the way of the message. Usually this consisted of background material found in other documents, and often taken verbatim from those documents—such as descriptions of the range of military operations (ROMO), the concept hierarchy, the capabilities-based approach, and the concept-development process. Such background material was typically placed near the front of the document, preceding any substantive material. The result for some concepts was that readers had to slog through pages of material before getting to the concept itself.

### Recommendation

Review the concepts with an eye to eliminating unnecessary background material, or at least moving that material to appendices after the main body of the concept, where the material does not interrupt the main message of the document. The goal should be to provide the minimal context necessary and get to the substance of the concept as quickly as reasonable.

Descriptions of the range of military operations, the concept hierarchy and the capabilities-based approach are prime candidates for deletion or removal to appendices.

## **Presentation: Use of Language/Argument**

### Discussion

In general the quality of writing and presentation in the concept papers was improved since the first workshop. The concepts were generally written in much clearer, simpler English. That said, there remains room for improvement. The following issues, identified in the first workshop, remain:

- Definitions. In several cases, terms were not defined on first use. In some cases, the topic of the concept paper was never defined. In the introduction of the paper, the subject of the operating concept or the functional area ought to be clearly and concisely defined. The usage of the term throughout the paper ought to be consistent with that definition. A new trend was the tendency to define functional areas in terms of “the ability to...” Functions are processes or areas of activity, better described that way than in terms of capability.
- Use of acronyms and buzzwords. Although the concepts in general were much improved in this area, there remained examples of unnecessary use of acronyms and buzzwords. There remained examples of sentences that had no apparent meaning, but were instead a string of the latest buzzwords and catchphrases. A concept written in clear, plain English is more compelling.
- Passive voice. Again, although much improved since the first workshop, many of the concepts relied more heavily on passive voice than necessary. Authors should not feel compelled to eliminate all passive voice, but active voice is preferable.

### Recommendation

Rely on plain English and existing terminology wherever possible. Avoid creating new terms for the sake of newness. Edit the concepts with an eye to clarity and consistency of language.

## SPECIFIC RECOMMENDATIONS FOR EACH CONCEPT

In addition to the general recommendations provided above, the following specific recommendations are offered for the nine joint concepts. The appendices to this report include many more detailed suggestions regarding both the process of refining these concepts, and possible substantive areas that the concepts might emphasize.

### Major Combat Operations Joint Operating Concept

- Change the focus from the strategic to the operational level, i.e., from interagency and coalition coordination to *combat operations*.
- Define the problem space carefully, including a concise, operational-level definition of MCO, i.e., a definition that focuses on combat.
- Define a “big idea”—a broad description of how a joint force might conduct major combat operations to defeat enemy forces in battle in 2015.
- Develop capabilities, attributes and metrics (measures and conditions at this stage) required to implement this concept/“big idea.” Capabilities relating to combat operations should be the focus, and should be specified in sufficient detail so that the MCO JOC can drive force development relating to combat operations.
- Describe how different functional concepts integrate within this concept.
- Use concise, clear, plain English, minimizing the unnecessary creation of new terms.
- Resolve inconsistencies with other concepts.

### Stability Operations Joint Operating Concept

- Focus on carefully defining the range of the problem space, including a concise, positive definition of stability operations. Consider a definition in which stability operations *include* the existence or threat of combat as opposed to stability operations possibly taking place simultaneously with combat, which is nonetheless covered by some other concept.
- Based on a positive definition of stability operations, develop the “big idea”—a broad description of *how* a joint force might restore or create security, order and well-being in a charged political environment in 2015.

- Consider dividing the problem space into several mission areas, e.g., establish a secure environment, deliver humanitarian aid, help establish new governance, restore essential services, and provide reconstruction assistance.<sup>9</sup>
- Define capabilities, and associated attributes and metrics (measures and conditions at this stage), consistent with the “big idea(s)” of the concept and/or established mission areas. (The current list of capabilities, according to the current draft, is “a first guess not supported by detailed analysis.”)
- Describe how the different functional concepts integrate within this concept.
- Use clear, concise, plain English.

## Homeland Security Joint Operating Concept

- Flesh out the *how* for each of the three components of homeland security. The military problem is defined very clearly as being comprised of three parts – homeland defense, civil support, and emergency preparedness – but the statement of “how” and the required capabilities focus only on homeland defense.
- Strengthen the discussion of the continuity between and transition from homeland defense to civil support and emergency preparedness, both of which are critical when homeland defense fails.
- Develop capabilities, attributes and metrics (measures and conditions at this stage) required to implement this concept.
- Specify relationships/roles of NORTHCOM and other combatant commanders in homeland defense.
- Describe how different functional areas are integrated within this concept.

## Strategic Deterrence Joint Operating Concept

- Clarify what is covered by *strategic* deterrence and what is not.
- Clarify the roles of STRATCOM and the regional combatant commanders (including NORTHCOM) in the future application of strategic deterrence.

---

<sup>9</sup> These five mission areas were proposed at the workshop by Dr. Edward L. Warner.

- Strengthen the discussion of how the three components of the concept interact dynamically with one another.
- Develop capabilities, attributes and metrics (measures and conditions at this stage) required to implement this concept.
- Describe how the military functions will integrate within this concept.
- Differentiate this concept from other approaches to strategic deterrence.

## Force Application Joint Functional Concept

- Eliminate unnecessary background material (or move it to appendices).
- Develop a concise definition of force application. In so doing, settle on a construct. Either:
  - Containing two elements, maneuver and fires (or engagement), the latter of which includes offensive information operations.
  - Containing three elements: maneuver, fires and offensive information operations.
- In describing the operating environment, focus on how that environment impacts force application in the future.
- Provide a broad description of *how* it is envisioned force application might be performed in 2015.
- Further describe *how* each of the components of force application might be performed via some process model.
- Consider following the approach taken by the Protection JFC, and establish separate mission areas. The challenge is to do so without creating a very large number of mission areas that would make concept development an intractable problem. (See Appendix 5 for one option.) If this approach is taken, follow through by developing appropriate enabling concepts.
- Develop capabilities, attributes and metrics (measures and conditions at this stage) for each of the components, or enabling concepts, for force application.
- Minimize use of buzzwords and catchphrases and instead use clear, precise, plain English.

## Protection Joint Functional Concept

- Eliminate unnecessary background material (or move it to an appendix).
- Adapt the description of the military problem to focus on those aspects that will impact the protection function and how. Focus on describing the types of hostile actions that joint forces will likely have to protect against in 2015.
- Strengthen the “big idea”—the broad description of *how* protection will be performed in the future, to include a process description (and possibly a process schematic).
- Further describe how each of the components of the protection function might be performed. Emphasize the Defend and Recover phases, which are not covered by any other concept.
- Sharpen the statements of “how” for mission areas – currently air and missile defense, critical asset protection, personnel protection, and WMD protection.
- Consider information assurance/computer network defense and maritime defense as possible new mission areas.
- Develop capabilities, attributes, and metrics (measures and conditions at this stage) based on mission capability areas (MCAs) and elements (MCEs).

## Joint Command and Control Joint Functional Concept

- Provide a description of the military problem that focuses on how the future environment will impact the command and control problem, rather than a generic description of the possible future.
- Provide a concise description of *how* command and control is performed (possibly using a simple process diagram), rather than the existing lists of abstract qualities.
- In the above, focus on a compelling idea of how command and control might be done differently in the future.
- Describe capabilities needed to implement this concept, and then develop attributes of those capabilities (and associated metrics) rather than very broad and abstract attributes currently described.

## Battlespace Awareness Joint Functional Concept

- Tighten the description of the military problem, focusing on how the future environment will impact the gaining of battlespace awareness.
- Provide a concise definition of battlespace awareness. (Related, the DART believes that information on friendly forces seems logically to fit within this functional area rather than within the C2 functional area.)
- Make clear that battlespace awareness is a subset of command and control which has as its purpose supporting the O-O of OODA.
- Develop the “big idea”—a broad description of *how* it is envisioned we might build battlespace awareness in 2015, including a process schematic which shows the “flow” of the process from beginning to end.
- Refine/develop capabilities, attributes and metrics (measures and conditions at this stage) required to implement this concept.
- Provide more emphasis on the importance and role of human sensors.

## Focused Logistics Joint Functional Concept

- Develop the “big idea”—a broad description of *how* logistics might be performed in 2015, in terms that are differentiated from existing concepts for logistics. Provide a description of the “process” of logistics, the general flow of the logistics function from beginning to end.
- Further describe *how* the logistical sub-functions would be performed under this concept, rather than developing lists of abstract adjectives.
- Strengthen the description of envisioned capabilities and attributes, using those terms consistent with other concepts.
- The paper includes several separate sections relating to guidance and logistics challenges. The issues raised in these sections should be addressed elsewhere, as appropriate in sections on the military problem, the statement of the concept, and the description of required capabilities.
- Consider including several short illustrative examples to make descriptions less abstract.

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## Annex A. Workshop Agenda

### Tuesday 30 September

7.45	BG Hunzeker Remarks
7.55	Introduction / Methodology
8.05	Protection
10.45	Break
11.00	Command and Control
12.30	Lunch
13.15	Command and Control
14.15	Break
14.30	Battlespace Awareness
17.00	Summary/Wrap Up

### Wednesday, 01 October

8.00	Homeland Security
10.30	Break
10.45	Strategic Deterrence
12.00	Lunch
12.45	Strategic Deterrence
14.00	Break
14.15	Force Application
16.45	Summary/Wrap Up

### Thursday, 02 October

8.00	Logistics
10.30	Break
10.45	Stability Operations
12.00	Lunch
12.45	Stability Operations
14.00	Break
14.15	Major Combat Operations
16.45	Summary/Wrap Up

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## Annex B: Workshop Participants

BG Hunzeker	JS J8	Steve Ambrose	STRATCOM
Brig Gen Mathis	JS J2	George Nagy	STRATCOM
RADM Mullins	JS J8	Greg Weaver	STRATCOM/SAIC
Brig Gen Scott	JS J8	Jason Dechant	OSD (Policy)
Brig Gen Taylor	JS J4	Mark Gentilman	OSD (HA) TMA
Gary Bender	JS J2	Bruce Gwillian	OSD (AT&L)
Richard Oarr	JS J2	James MacStravis	OSD (AT&L)
Rich Stauts	JS J2	Mike Novak	OSD (AT&L)
Tony Swain	JS J4	John Watt	OSD (OFT)
Donald E. Plater	JS J4 / LMI	Curtis Buzzard	HQDA
Rick Carroll	JS J6	Helmut Draxler	HQDA
Ed Mullen	JS J6	Robert Kolterman	HQDA
Stephen Camacho	JS J7	Scott Miller	Army G3
Lee Deremer	JS J7	Mark Schmidt	Army G3
Charles Holler	JS J7	William Shugroe	USA TRADOC
Keith Quinton	JS J7	Daniel Valente	HQDA
Patrick Shaw	JS J7	Skip William	HQDA
Bill Aldridge	JS J8	Rick Hurckes	USAF/XOXS
Bill Andrews	JS J8	Terry Lust	USAF/XOXR
Rick Easton	JS J8	Michael Pietrucha	USAF/XOXS
Jeff Grobmah	JS J8	Daniel Walter	USAF/XOXR
Scott Haney	JS J8	Dave Elwing	HQMC
Tom Kiss	JS J8	Timothy E. Winand	MCCDC
Mike Mara	JS J8	Ed Swartz	Anteon
Scott Schisser	JS J8	Glenn Harned	BAH
Art Sobers	JS J8	Ted Warner	BAH
Kenny Volmert	JS J8	Richard Gay	FDJ
Patricia Morrissey	JS J8 / SAIC	Roger Coffey	LMI
Tony Parker	JS J8 / CSC	Heikki Joonsar	SAIC
Jeff Schuller	JS J8 / CSC	John Rabin	DFI
Fran Gibbons	JFCOM	Louis Bryant	EBR
Kelly Mayes	JFCOM	Brian Smith	EBR
Marc Rogers	JFCOM	David Signori	EBR
Curtis Thalken	JFCOM	Dick Hawley	DART
Barry Cardwell	NORTHCOM	Don Holder	DART
Karin Murphy	NORTHCOM	Dr. Jim Miller	DART
John Martin	NORTHCOM / CAS	Greg Newbold	DART
Jimmie D. Perryman	NORTHCOM / CAS	John Schmitt	DART
James Tennant	SOCOM	Jim Yeager	DART

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## **Annex C. Capabilities, Attributes and Metrics**

### **Explanatory Note**

Many elements of this paper, written during the concept review workshop, have been incorporated into the main body of the workshop report. The paper is included as an annex because it includes details which may be useful to concept authors.

Many workshop participants contributed ideas to this paper, which was written by Dr. Jim Miller. Mr. Glenn Harned deserves particular thanks for his insightful contributions.

### **Background**

Concept authors were directed to develop capabilities, attributes and metrics associated with their concept. Approaches to implementation varied widely, and a number of concept authors requested clarifying guidance.

This note summarizes conclusions from discussions at the DART review of joint concepts conducted 30 Sep – 2 Oct 2003.

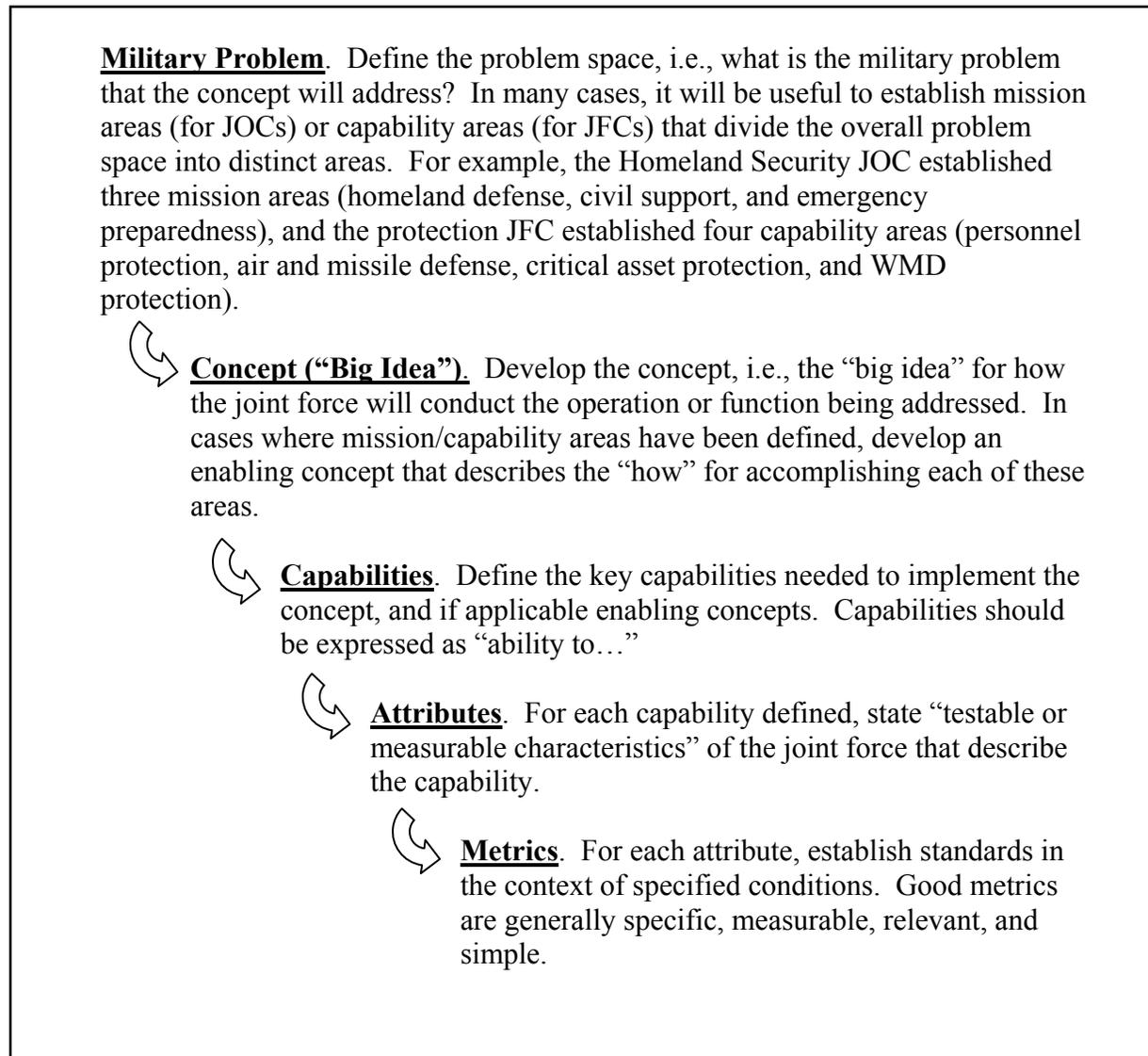
Concept authors used a range of different approaches in proposing capabilities and attributes (few addressed metrics at this stage). Some invented new terms, including mission capability areas (in the protection concept) and key functions (in several concepts). Discussion focused on establishing a standard approach to be applied in revision of all concepts.

The clarification provided in this note, and recommended path ahead, apply to both joint operating concepts (JOCs) and joint functional concepts (JFCs).

## **Where Capabilities, Attributes & Metrics Fit in Concept Development**

The logical flow in developing a concept document is as shown in Figure 1, below:

**Figure 1. Steps in Developing a Concept Document**



More detailed definitions are provided in Figure 2, below.

In practice, developing a concept is not a one-way flow as depicted above, but an iterative process. For example, in the process of defining attributes for a capability, concept authors may determine that the statement of the required capability needs to be modified.

## Figure 2. Definitions

**Attribute**: [CSCSI 3170.01C] “A testable or measurable characteristic that describes an aspect of a system or capability.” Specifically, “a characteristic of the joint force.”

**Capability**. [CSCSI 3170.01C] “The ability to execute a specified course of action.”

**Conditions**: (CJCSM 3500.04C) Those variables of the operational environment that may affect task performance. Without establishing the conditions under which a task is to be performed, it is impossible to establish appropriate criteria for its minimum acceptable performance.

**Criterion**: (CJCSM 3500.04C) A criterion defines the minimum acceptable level of performance associated with a particular measure.

**Course of Action**. [DoD Dictionary of Terms] “1. Any sequence of activities that an individual or unit may follow. 2. A possible plan open to an individual or commander that would accomplish, or is related to the accomplishment of the mission. 3. The scheme adopted to accomplish a job or mission. 4. A line of conduct in an engagement. 5. A product of the Joint Operation Planning and Execution System concept development phase. Also called COA.”

**Measure**: [CJCSM 3500.04C] “Provides the basis for describing varying levels of task performance.”

**Metric**: [JOC TOR] “A standard of measurement; a means of specifying values of a variable or position of a point. Characteristics of a good metric are:

- (a) It must be specific so that it targets areas to be measured.
- (b) It must be measurable so that objective data can be collected.”
- (c) It must be relevant so that it avoids measuring performance that is not important.
- (d) It must be simple so that it is easy to understand and provides impact.”

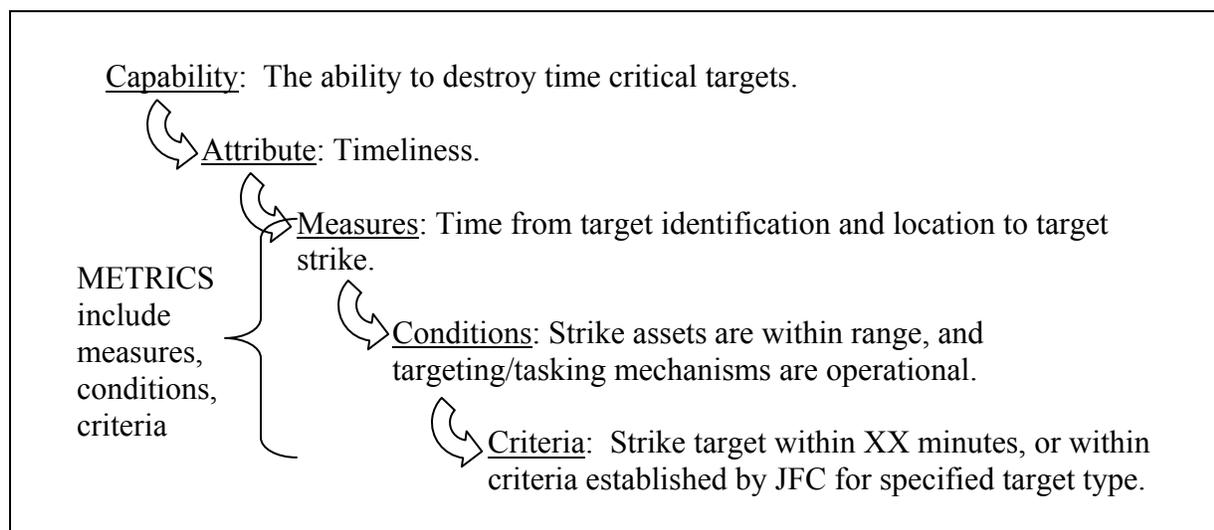
**Standard**: (CJCSM 3500.04C) A standard provides a way of expressing an acceptable level of task performance. A standard consists of one or more measures for each attribute and a criterion for each measure.

**Task**: [CJCSM 3500.04C] “A discrete event/action that enables a mission or function to be accomplished by individuals or organizations. Tasks are based on doctrine, TTPs, or an organization’s SOP, and are generated by mission analysis.”

## Example

Figure 3, below, shows a simplified example of the flow from capabilities to attributes to metrics. Note that there will usually be more than one attribute per capability, and often more than one metric (measure, set of conditions, and related criteria) for each attribute. The above figure is provided for illustration purposes only.

**Figure 3. The Logic Flow from Capability to Attributes to Metrics**



## Recommendations for Defining Capabilities, Attributes and Metrics

### Capabilities

*A capability statement should start with “the ability to” and include at least one action verb.*

Example of a capability: The ability to detect and defeat airborne threats to the Homeland.

### Attributes (of the Joint Force)

For a given capability, attributes should describe the essential characteristics the joint force needs to provide the capability.

*Attributes are usually expressed as adjectives that apply to the joint force.*

It is probably useful to start with the JOpsC’s list of seven attributes: fully integrated, expeditionary, networked, decentralized, adaptable, decision superior, and lethal. The JOpsC list should be modified as appropriate. In many cases the most important attribute will be (or relate to) “effectiveness” rather than lethality.

## Metrics

For each attribute, one to several metrics should be defined. Metrics establish standards for measurement (comprised of measures and criteria) in the context of specified conditions.

Metrics establish *standards* for the joint force's attainment of the desired attribute in the context of the capability being considered. These standards should be defined in the context of a specific set of *conditions*. It should be noted that standards are comprised of *measures* (established for each attribute in a concept, and adjusted over time), and *criteria* (which are likely to be identified and refined during experimentation, not in early drafts of the concept).

Most of the concepts did not have metrics at this point in the process.

*At this stage in concept development, concept authors should provide two of the three elements of metrics: measures and conditions (see Figure 3, above).* Specific criteria (performance parameters) which may be classified and will depend on cost and performance tradeoffs, should be established in the course of architecture development and experimentation.

*The development of metrics will be especially important for joint functional concepts. We recommend that joint operating concepts also develop metrics – these will often be at a relatively high level and qualitative rather than quantitative.*

## How Detailed Should Capabilities, Attributes and Metrics be for JOCs and JFCs?

The short answer is: Relatively higher-level for the JOCs, relatively more detailed for the JFCs. More specifically:

JOCs. Guidance from the JOC TOR provided by the Joint Staff: “JOCs must include enough measurable detail to support experimentation, permit the development of measures of effectiveness, and allow decision-makers to assess and compare alternative ideas and make programmatic decisions.”

JFCs. Guidance from the JOC TOR provided by the Joint Staff: “Functional concepts must include enough measurable detail to support experimentation and permit the development of measures of performance (metrics). Functional concepts must also provide enough detail to facilitate architecture development that will permit decision-makers to assess and compare alternative ideas, determine resources and risk associated with alternatives, and make programmatic decisions.”

## **Enabling Concepts**

We define an enabling concept as: “a description of how a particular task or procedure is performed, within the context of a broader functional area, using a particular capability, such as a specific technology, training or education program, organization, facility, etc. An enabling concept describes the accomplishment of a particular task that makes possible the performance of a broader military function or sub-function.”<sup>10</sup>

***Two functional concepts, force application and protection, are so broad that enabling concepts should be developed.***

The Joint Protection concept established a number of Mission Capability Areas (MCAs), and listed key capabilities, attributes and metrics for each. These MCAs are essentially enabling concepts.

***When enabling concepts are used, we recommend that concept authors compare the capabilities defined across these enabling concepts. They should then de-conflict capability definitions and the associated attributes and metrics.***

## **The Matrix**

***We recommend that concepts authors develop a matrix as shown below: rows as capabilities, and columns as attributes.***

When metrics have been developed, they can be placed in the cells of the matrix. If metrics have not been developed, then cells can be highlighted if the relevant attribute is applicable.

Developing these matrices will help concept authors to a) ensure that they have a single list of capabilities (several concepts had more than one list of capabilities); b) relate attributes to specific capabilities (several concepts related attributes to the concept overall); and c) establish the basis for defining metrics.

Developing these matrices also will help concept authors and others compare capabilities and attributes across concepts. This will allow concept authors to learn from each other, e.g., one concept team may decide to incorporate an attribute defined by another concept team.

---

<sup>10</sup> DART Working Paper #02-4, John Schmitt, “A Practical Guide for Developing and Writing Military Concepts,” December 2003.

Figure 4. Example of Capabilities X Attributes Matrix

# HLS Capabilities X Attributes

CAPABILITIES = The ability to:	ATTRIBUTES						
	Fully Integrated	Expedient	Networked	Decentralized	Adaptable	Decision Superior	Effective
Detect and prevent (including through preemptive attack)							
Detect and defeat ballistic missile attacks							
Detect and defeat airborne threats							
Detect and defeat hostile space systems							
Detect and defeat maritime threats							
Protect and defend DOD physical and cyber critical infrastructure							
Project power to defend							
Prepare for and mitigate the effects of multiple simultaneous CBRNE events							
Situational awareness [BA?]							
C4 system [C2?]							
Apply Force [FA?]							
Provide full protection for DOD forces, assets, installations, & critical defense infrastructure [PRO?]							
Ensure the delivery of equipment, supplies, and personnel [LOG?]							
Develop and acquire transformational technologies							



## Final Comment: Relationship to UJTLs (Universal Joint Task List)

UJTLs focus on the ability to perform a *task* to a specified *standard* under a given set of *conditions*.

How does this relate to capabilities, attributes, and metrics?

- The tasks included in UJTLs provide one source of possible capabilities for a concept.
- Both standards and conditions need to be specified as part of each proposed metric associated with attributes.

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## Annex D. Required Capabilities Listed by Joint Operating Concepts

### **Strategic Deterrence: The ability to conduct/provide...**

- Force projection operations, including the capability to decisively defeat regional aggression
- kinetic and non-kinetic Global Strike operations, including the possible employment of nuclear weapons
- Active and passive defense measures
- Strategic deterrence information operations
- Influence operations
- Space control operations

#### Enablers

- Global situational awareness
- Adaptive command and control
- Overseas presence
- Allied military cooperation and integration

### **Homeland Security: The ability to...**

- Detect and prevent (including through preemptive attack) potential threats to the Homeland as they arise in the Forward Regions
- Detect and defeat ballistic missile attacks on the Homeland
- Detect and defeat airborne threats to the Homeland
- Detect and defeat hostile space systems threatening the Homeland
- Detect and defeat maritime threats to the Homeland
- Protect and defend DOD physical and cyber critical infrastructure in the Homeland
- Project power to defend the Homeland
- Prepare for and mitigate the effects of multiple simultaneous CBRNE events

#### Enablers

- Develop and maintain situational awareness throughout the HLD/CS/EP operating environment
- Develop and maintain a robust, redundant, secure, decentralized, distributed, collaborative, and interoperable command, control, communication, and computer (C4) system and process
- Apply force selectively and precisely in order to achieve the desired effect wherever and whenever required using the full portfolio of available capabilities
- Provide full protection for DOD forces, assets, installations, and critical defense infrastructure
- Ensure the delivery of equipment, supplies, and personnel in the right quantities, to the right place, at the right time to support HLD, CS, and EP objectives
- Develop and acquire transformational technologies through a streamlined cycle for capabilities-based acquisitions

## Annex D (cont). Required Capabilities Listed by JOCs

### Stability Operations: The ability to employ...

- Coordinated planning process integrating U.S. civil-military agencies and eventually multi-national partners
- Collaborative C2 with reach back
  - C2 with plugs to accept other-agency participation
- Joint Interagency Coordination Group enabled to enforce unity of effort
  - Civil-military training programs
  - Automated De-classification Filter Software to enhance rapid information sharing with coalition members, interagency players, and non-governmental organizations
- JTF Civil Reconstruction (replaces Civil Affairs)
  - Robust information operations
- Improved ISR (HUMINT)
  - Cultural intelligence
- Less reliance on fixed foreign infrastructure through use of pre-positioning, sea basing, intermediate sustainment bases, and reach
- Self-sustained, self-protecting ground forces
- Agile and adaptable forces trained to conduct stability operations
  - Agile military contracting capability to source niche requirements in the short term
- Selected conventional forces with SOF like capabilities in language, weapons, automation, communications, training, and equipment
- Increase Force Protection capabilities in Blue/Red Force tracker (I-CROP) capabilities, Real-Time threat warnings broadcast system, CBRNE/Disease Non-Battle protection, JTAMD, and automated diagnostic medical capabilities

### Major Combat Operations: The ability to...

- Effectively distribute combat power in the battlespace
- Realize the full capabilities of the combined force through coherent maneuver and strike
- Overcome the adversary's anti-access and area denial strategies and capabilities
- Adapt and respond to the challenges of urban operations
- Implement innovative deployment and sustainment processes and capabilities to support our methods of employment
- Protect the force

## Annex E. Draft Common Preface to Concepts

Note: The purpose of this common statement is to quickly walk the reader through the strategic environment, the range of military operations (ROMO), the Joint Operations Concept (JOpsC), concept development, experimentation, and the capabilities-based methodology. This will provide readers at least a minimal common understanding of the material.

Why develop  
new concepts?

**The future joint force will operate in a complex and uncertain security environment that is global in nature and is characterized by asymmetric threats. International organizations, nation states, rogue states, and terrorist organizations all contend within this environment. The security environment – and the joint force’s role in it – have changed.**

What the  
concepts are

**The JROC-approved range of military operations (ROMO) identifies 43 activities for which the joint force prepares. The ROMO reflects the changed security environment and provides context for the development of Joint Operations Concepts (JOpsC) – a strategic guidance document that operationalizes the Chairman’s vision of achieving Full Spectrum Dominance in the joint force. JOpsC serves two roles. First JOpsC is an overarching concept paper that describes how the joint force is envisioned to operate in the next 15-20 years. Second, JOpsC is a family of joint concepts that describes the attributes and capabilities that tomorrow’s joint force requires. The JOpsC guides the development of joint operating concepts, joint functional concepts, joint experimentation, and emerging capabilities.**

What the  
concepts do

**The JOpsC family of concepts provides a crucial foundation for the capabilities-based methodology for joint force development. As you read and use this paper, it is important to understand its role in transforming the joint force and enhancing joint warfighting capabilities – two of the Chairman’s three strategic priorities.**

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# APPENDICES

**(Note that electronic versions of Appendices are in separate files from report due to their large size.)**

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# **APPENDIX 1.**

## **DART REVIEW OF THE MAJOR COMBAT OPERATIONS JOINT OPERATING CONCEPT**

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**A Red-Team Critique of the**

**Major Combat Operations (MCO)**  
**Joint Operating Concept**  
**(v0.25/12Sep03)**

Defense Adaptive Red Team  
Arlington, VA  
02 Oct 2003  
v2.1



1

This concept is still in a rough state and will require continued refinement.

The concept is written at the national strategic level, focusing on the requirement to integrate all the elements of national and international power, rather than the operational level per the guidance. It is lacking in a description of how a joint force will conduct major combat operations.

Notably, the current draft is a concept for major combat operations with practically no reference to fighting or combat.

## Purpose

- Purpose (1<sup>st</sup> paragraph):
  - First 2 sentences good
  - Next 2 sentences sensible, but unclear if concept follows them:
    - “This concept seeks to combine emerging technologies and operational concepts with timeless and enduring principles of military affairs. It departs from current doctrines where they no longer serve, but not simply to satisfy a desire for something new.” (p. 5)
      - Arguable that concept renames enduring principles in interest of “something new”



2

The purpose paragraph starts out fine, with direct statements about what the concept paper is meant to do. But then it starts to get editorial. The notion of combining emerging technologies and concepts with enduring principles is sensible, although unnecessary in a purpose statement.

The statement about departing “from current doctrines where they longer serve, but not simply to satisfy a desire for something new” could be read as somewhat self-serving. It is also arguable.

There are places where the concept could be said to assign new names to enduring principles for no valid reason. Such statements could harm the credibility of the concept with discriminating readers and are unnecessary in the first place.

## Definition

- From MCO JOC, p.5: “... large-scale conflicts against an organized adversary who possesses significant military capability and the will to employ that capability in opposition to or in a manner threatening to US National Security.” (p. 5)—a “strategic” definition
- Recommended from 1<sup>st</sup> workshop: “Operations against significant hostile forces in which the primary objective is the defeat of those forces in combat using fire and maneuver.”—an “operational” definition

 DART

3

Here the definition of MCO provided in the paper is compared with the definition recommended by DART at the “Quick Look” Workshop. The differences, although subtle, are significant and can definitely impact the scope of the concept. The definition given in the paper is very consistent with the strategic scope of the rest of the paper—although inconsistent with the guidance, which called for an operational-level concept.

The former definition is essentially a strategic definition whereas the latter is an operational one. Specifically:

- The former talks about “large-scale conflicts” where the latter talks about “operations.” “Conflict” is a much broader term than “operation,” and tends to imply war at the highest level—to include application of all the elements of national power. A conflict can include numerous military operations, as well as non-military actions.
- The former discusses “an organized enemy who possesses significant military capability” while the latter discusses “significant hostile forces.” Again the former is much broader and can apply to an entire nation or people. The latter is understood to refer to military elements.
- The former mentions actions “threatening to U.S. National Security.” The latter talks about defeating forces “in combat using fire and maneuver.” The realms of action being described are very different. Again the former is clearly aimed at the level of national objectives while the latter is aimed at operational objectives.

## Timeframe, Assumptions & Risks

- Time Frame: Fine.
- Assumptions: Those listed appear to be requirements for implementation of the concept (e.g., significant legislative changes), not pre-existing conditions that would invalidate the concept
- Risks: Those listed are operational risks (e.g., relating to adversaries successfully exploiting certain technologies) vice concept risks

DART

4

### Assumptions

As written, the assumptions seem more like requirements being generated by the concept rather than reasonably assumed starting conditions which would invalidate the concept if proved untrue. The section gives the impression of levying requirements or constraints on others outside of DoD, e.g., “The Department of State, Department of Homeland Security, Central Intelligence Agency... and other elements of the interagency community will effect policy changes as required to implement this concept.” (p. 9)

### Risks

The risks mentioned are operational risks vice risks of the concepts. That is, they are potential risks inherent in the decision to use military force in the future—and they are forward-looking—and not risks incurred as the result of using this approach to MCO as opposed to another approach.

## Problem Space

### JOCs = Operational Level

- “Focusing at the operational level, a JOC describes how the joint force will plan, prepare, deploy, employ, sustain, and redeploy given a specific operation or combination of operations.”
- This guidance appropriate given desire to drive force development.

### MCO = Strategic Level

- Central idea: “the fluid and coherent application of joint, interagency, and coalition power...”
- Assumptions:
  - “Congress will reform legislation” (unspecified)
  - DoS, DHS, CIA, other agencies will effect policy changes as required (unspecified)



DART

5

This slide compares the guidance provided to JOC authors, which clearly calls for an operational concept, and the scope of this concept paper, which clearly is focused at the national-strategic level.

This is not to say that this concept should not address higher-level concerns. It clearly must, if for no other reason than to establish the strategic-political context within which the operational concept must exist. But such higher-order discussion should not be the focus of the concept, as it is now.

While it is true that interagency/international integration should be addressed somewhere in the JOCs, MCO is perhaps the worst candidate of the four JOCs to have this focus. In fact, while no conflict is purely military, it could be argued that, of the four assigned JOCs, MCO should be the most militarily “pure.” Stability operations, homeland security and strategic deterrence all have more obvious non-military components to them. The MCO concept seems like the natural place to discuss “conventional” force-on-force operations.

## Description of the Military Problem

- Should describe the military problem that the rest of the paper will solve—*but nothing in this draft's description leads to a concept for major combat.*
- Essay on
  - How things have changed since the Cold War
  - Relative challenges of near-peer vs. non-peer
  - Why things have changed
- No real description of major combat in 2015

DART

6

The description of the military problem should be setting up the concept that is to follow. It presents the problem that the concept will solve. However, nothing in the description in this paper establishes the need or sets the conditions for a concept for major combat. Rather, the description is a fairly thoughtful essay on how the world has changed since the end of the Cold War and what forces have caused those changes. It discusses the relative challenges of near-peer and non-peer adversaries.

One thing it does not provide is any kind of picture of what major combat may look like and what the challenges may be in 2015.

## Description of the Military Problem (2)

- Fundamental problem stated: How to deal with asymmetrical threats
  - But should not MCO presume some symmetry—at least sufficient adversary forces to engage in force-on-force combat?
- “They know that our strength is *unmatchable in conventional military operations...*” (p. 11)
  - Nevertheless, significant investment by some countries in conventional military equipment and training
- “The likelihood that the US and her coalition partners will enter a conflict with a near-peer is much less likely than the US entering into *smaller scale* contingencies against *non-peer adversaries.*” (p. 12)
  - Maybe true, but the tasking is to develop an MCO concept
  - This concept might apply, e.g., to China, Iran, and North Korea

DART

7

The paper suggests that the fundamental problem to be solved is how to deal with asymmetrical threats. Is this the appropriate problem space for this concept?

Here asymmetrical is taken to refer to forces that are fundamentally different in methods and structure. The paper argues that no adversary is likely to challenge the U.S. symmetrically. Among others, it uses the passages cited above. Such conventional conflicts may not be the most likely, but they are still possible. Several countries continue to make significant investments in conventional military equipment and training. Contingency plans exist which anticipate large-scale combat operations against more-or-less symmetrical enemies.

Should not the MCO concept presume at least some relative symmetry—at least an enemy capable of employing field forces sufficient to engage the U.S. in force-on-force combat? If a more-or-less symmetrical enemy is not addressed in the MCO concept, where will it be addressed?

It may be true that such large-scale force-on-force operations may not be the most likely type of conflict in the future, but it is hardly out of the question—and this subject would be an appropriate focus of this concept paper.

## Synopsis of the Central Idea

- Still lacking a central idea on how the joint force will fight
- “The central theme of the MCO JOC is **achieving strategic and operational objectives through the fluid and coherent application of joint, interagency, and coalition power using an effects-based approach and leveraging a knowledge-enhanced force with unity of purpose and coherency in action**” (p. 7)—wouldn’t this be equally true of *any* JOC?

DART

8

The concept paper is lacking in any central concept of how a joint force will conduct major combat operations. This description of *how* should be the essential element of the concept paper.

Instead, in the passage above, the paper states the central theme as achieving objectives “through the fluid and coherent application of joint, interagency, and coalition power.” Nothing in this statement is unique to combat operations. This statement would be equally true of *any* operating concept, and might therefore be more appropriate to a high-order document, such as the *Joint Operations Concepts*. Moreover, there is no description in the document of how this theme will be implemented.

## Synopsis of the Central Idea (Cont'd)

- “Coherence among all military joint, interagency and coalition partners”
  - Repeated throughout
  - Discussed as a “must do,” but not as a “how”
  - Above the level of the joint commander
- Effects-Based Approach
  - A C2 idea rather than operational idea
  - Ideas explainable without effects-based language
  - Little description of how done



9

Phrases requiring “coherence among all military, interagency and coalition partners,” using this or similar language, are repeated throughout the paper. The thought is overused. As often as it is used, it always takes the form of a “must-do,” but there is never any accompanying “how.” And once again, it is discussed at a level above the joint force commander who is the target of this paper.

Later, the paper gives considerable discussion to the “effects-based approach,” which is also mentioned in the central theme statement. Clearly, the effects-based approach is intended to be a major component of the concept. The intent here is not to critique the merits of the effects-based approach, but to review its treatment in this document. First, as expressed, the effects-based approach is a C2 concept rather than an operating concept. That is, it describes an approach to decision making; it does not describe the employment of forces in combat. The description provides little insight into how a joint force will conduct major combat. It could apply to any operating concept. Second, the ideas introduced in this section can be expressed just as clearly without recourse to effects-based language or constructs. In other words, the section does not convincingly make its case. In fact, much of the discussion is reminiscent of the Marine Corps’ keystone institutional manual FMFM 1, *Warfighting*, first published in 1989 using standard language. Third, the section generally describes the merits of the effects-based approach, but provides practically no description of the all-important *how*.

## Synopsis of the Central Idea (Possible ideas)\*

- MCO not an isolated episode, but part of a larger campaign
- Understand the enemy as an organic system with differentiated structure and processes rather than an inanimate, unitary mass (i.e, some elements of the system are more critical to the enemy than others).
- Strike suddenly and precisely with overwhelming force from regionally or even globally dispersed locations and stand-off distances against select key elements of the enemy system while leaving other elements undamaged.
- Establish and maintain a higher operating tempo, with minimal requirements for operational pause, than the enemy can sustain IOT seize the initiative and render the enemy's actions increasingly irrelevant.
- Defeat/success mechanism: Paralyze that system IOT render it incapable of effective, coherent resistance without having to engage and destroy every element of it (thereby also minimizing collateral damage and unintended consequences).

**DART**

\*From Defense Adaptive Red Team critique v.1.6, 16 Jul 03

10

This slide was provided at the “Quick Look” Workshop in July to provide possible substantive suggestions for the central idea. It may still be of use, and so is provided again.

## Use of Joint Functional Concepts

- Does not discuss most functions
  - Discusses protection as an aspect of operations
  - Discusses “Command and Battle Management” in terms very different from C2 concept



11

The document does not explicitly discuss the application of most of the military functions within the context of major combat. It does discuss protection. It discusses “coherent maneuver and strike,” which could mean force application. And it does discuss what it calls “Command and Battle Management,” but it does so in terms very different from the C2 concept. That discussion is qualitatively different enough that it could be considered an alternative C2 concept.

## Capabilities and Attributes

- Does not discuss either capabilities or attributes in ways that could drive force development



12

The document does not discuss either capabilities or attributes. In order for the concept paper to serve its stated purpose, these are essential aspects which later drafts will have to address.

## Potential Inconsistencies with Other Concepts

- Competes with JOpsC
- Seems to subordinate all other JOCs and JFCs
- Relationship with Stability Ops unclear
- Maneuver & Strike vs. Force Application
- Inconsistencies with language/thrust of C2 concept



13

In the sense that this document is written at the strategic level, above the level of the joint operating concepts, it seems to attempt to subordinate the other operating concepts and competes with the *Joint Operations Concepts* concept. Its stated central theme could apply equally to any of the operating concepts.

Because of its focus on asymmetrical threats, the border between it and stability operations is unclear.

This document mentions maneuver and strike, but does not explain its relationship to the Force Application JOC.

As already mentioned, it discusses command and control in terms sufficiently different from the C2 functional concept to arguably qualify as an alternative C2 concept.

## Qualities of a Good Concept

- Serves stated purpose
- Stated in language that can be acted upon
- Accepts burden of proof
- Differentiated
- Explicit relationship to other concepts
- Written in clear/precise language
- Concise
- Robust
- Promotes debate



14

In its current form, this concept is written at too high a level, and in terms too broad, to be actionable. Amounting to a call for reform on the part of non-DoD agencies, while lacking a description of the “how” of major combat, this concept does not make its case.

## **Issues to Consider in Concept Refinement & Experimentation**

- **Feasibility**
- **Adversary Counters**
- **Potential Failure Modes**
- **Possible Unintended Effects**



15

The following slides are the result of a red teaming session designed to probe for potential weaknesses in or issues with respect to the concept. For this concept, the DART only addressed feasibility concerns, and potential failure modes. The DART felt that these two issues were paramount with respect to the concept. In contrast to other concepts, the DART believes that these issues, especially the feasibility concerns, need to be dealt with before the concept can move forward.

## Feasibility Concerns

- President and SECDEF would have to agree to relinquish current and historical roles
  - President and SECDEF refrain from oversight of military plans and ongoing *military* operations (only provide “broad guidance” to COCOM at outset)
  - President cedes to military commander the authority to plan and integrate use of *national* capabilities
- SECSTATE, Attorney General, other Cabinet members would have to agree to a military commander’s planning for employment of non-military capabilities
- Dependent on fundamental reform throughout government – calls for transforming other US agencies



16

The major feasibility concern is that this concept requires significant change from organizations over which the Department of Defense has no authority.

## Feasibility Concerns (2)

- Envisioned unity of effort (coalition “coherence”) difficult to achieve in a multinational force
  - Ignores fact that even allies have competing interests
  - “Shared understanding of higher-level objectives” does not equate to shared higher level objectives

### Bottom Line: Assumes away the realities of international politics and national government

- “demands true coherence among all military, interagency and coalition partners” (p. 7)
- “an integrated and cooperative approach to applying all elements of national and coalition power...”



17

Of greatest concern is that, in its calls for coherent cooperation without any suggestions for how to achieve it, this concept seems to ignore the realities of both interagency relations and international politics.

## Potential Failure Modes

- Inability to achieve required unity of effort with coalition forces and other agencies
- Failure to achieve “comprehensive connectivity”
- Insufficient combat power brought to bear (possibly due to other commitments)
- Loss in combat ~2015 due to lack of required capabilities for US to conduct unilateral major combat operations



18

The concept does not seem to degrade gracefully; that is, it rests on coherent cooperation and does not provide an option if this is not achieved.

A final failure mode of the concept is that if it, and it alone, were the basis for force development, its lack of consideration of combat operations and required capabilities could result in the US military’s inability to conduct major combat operations. Because it is unlikely that senior Defense Department officials would ever take this path, a more likely outcome is that the MCO concept will fail to provide the basis for capabilities-based planning.

## Potential Adversary Counters

- [Not addressed in review of this concept]



19

Because the MCO concept did not address combat operations in any significant way, the DART did not attempt to develop adversary counters.

## Possible Unintended Effects

- [Not addressed in review of this concept]



20

Because the MCO concept did not address combat operations in any significant way, the DART did not attempt to consider unintended effects.

# **APPENDIX 2.**

## **DART REVIEW OF THE STABILITY OPERATIONS JOINT OPERATING CONCEPT**

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**A Red-Team Critique of the**  
**Stability Operations**  
**Joint Operating Concept (JOC)**  
**(v0.2/05Sep03)**

Defense Adaptive Red Team  
Arlington, VA  
02 Oct 2003  
v1.1



1

This is perhaps the most difficult of all the concepts to bound. Much of the discussion in the first workshop centered around this issue. This draft of the concept has made some progress in that area, but the paper still suffers from a lack of a clearly delineated space. This is no fault of the concept authors, but simply a reflection of a very complicated and difficult problem space.

Compared to many of the concepts, this one is still in a fairly immature stage.

## Statement of Purpose

- First paragraph includes important objectives, e.g., guide transformation of US forces, generate thinking and discussion
- Second paragraph less useful; parts debatable
  - “A major premise ... is that the lines dividing the range of military operations are becoming less distinct and often indistinguishable in the complex and uncertain future environment in which we must operate.” (p. 3)
    - Debatable
    - How relevant?
  - “As such, the Stability Operations JOC will describe how we want to operate in the future and will find application across virtually all the military operations.” (p. 3)
    - Not so, e.g., homeland defense, nuclear war (that’s why there are other JOCs)

DART

2

In the Purpose Statement, the first paragraph is on the mark. The second paragraph, however, starts to digress. It makes the substantive point about “the lines dividing the range of military operations ... becoming less distinct.” The lines are certainly indistinct; whether they are becoming lesser distinct is debatable. More to the point, this assertion has little direct bearing on the concept at hand.

Later the paper asserts that the concept applies “across virtually all the military operations.” While some of the underlying principles may apply elsewhere in the range of military operations, this concept is not supposed to address the whole range, but is to address the specific section called stability operations. Other operating concepts will cover other areas.

This raises an important point. A distinction should be drawn between real-life operational situations, which are invariably complex, hybrid situations, and the situations envisioned in operating concepts. Concept developers should not feel obligated to write concepts that could serve as concepts of operations (as opposed to operating concepts) for actual operational situations. Rather, they should develop “theoretically pure” concepts—in effect, simplified models of reality—that can be cleanly stated. It is the operational commander’s responsibility to take elements from various operating concepts as appropriate and weave them into a concept of operations.

Likewise, concept developers should not feel that they must have operating concepts to cover every part of the range of military operations, which would pressure them to bound concepts as broadly as possible. It would be better to develop compelling concepts that are more narrowly

bounded and leave it to operational commanders to extrapolate those concepts to actual situations not covered by the concepts.

## Statement of Purpose (Suggested)

“This concept paper describes how joint forces may conduct stability operations in the 2015 time frame. The purpose of this concept is to guide the transformation of the U.S. Armed Forces by generating thinking and discussion about new or better methods for conducting stability operations in response to emerging military and political threats. This concept will provide the basis for military experiments and exercises. It will influence subsequent concept development by providing actionable recommendations and inform options for future force investments. Finally, this concept paper guides the further development of subordinate joint functional and enabling concepts, as well as Joint and Service transformation plans.”



3

Possible revised language for the Purpose Statement is provided above.

## Problem Space

- Still poorly bounded
- Umbrella Approach (vice Positive Definition Approach)
- Combat *versus* stability



4

This concept still has some problems with bounding, mostly due to the assigned starting conditions. It is difficult to develop a good solution when the problem is not well understood.

At the “Quick Look” Workshop, much discussion was devoted to the two ways of bounding the space: the Umbrella Approach and the Positive Definition Approach. The former, in this case, means simply listing the types of operations that fit under the category of stability operations. The latter means finding a unifying theme that could provide the basis for a cohesive concept. The recommendation coming out of the “Quick Look” Workshop was to try to use the Positive Definition Approach. This paper uses the Umbrella Approach, although the umbrella is defined more narrowly, perhaps because a common theme could not be found. This will make it very difficult to come up with a single, cohesive concept describing how to conduct stability operations.

At several points throughout, the paper seems to define stability operations in comparison to combat, which limits stability operations to non-combat action. The paper then makes the point that stability operations can occur in conjunction with combat operations. But by this construct, stability operations per se, the subject of this concept, have no combat element. The DART recommends against this and suggests that the preferred approach is a definition of stability operations which includes combat or the threat of combat. Another way to say this is: operations in a non-permissive or semi-permissive environment.

## Timeframe, Assumptions & Risks

- 2015 Timeframe: OK
- Assumptions
  - “The interagency process will enforce civil-military collaboration and planning”—assumes away problem
  - “U.S. military and civil agencies will adopt stability and reconstruction as a core mission area”—not an assumption but a required outcome
- Risks
  - “The United States will engage in a unilateral effort” (p. 4)—good to note, since the concept asserts complete “unity of effort” with coalition operations
  - Other “risks” seem like operational risks vice concept risks. Examples of additional concept risks:
    - Focusing on stabilization and reconstruction vs. other stab ops
    - Developing concepts for other agencies and nations

 DART

5

### Assumptions

The first assumption listed above risks assumes the problem away. A major objective of the paper seems to be setting up the point that dramatically improved civil-military cooperation will be needed, but this assumption takes it for granted. The paper seems to be making the case that a mechanism for better civil-military relations are a derived requirement.

Likewise the second bullet listed above: It seems more appropriate to say that adopting stability and reconstruction as a core mission is a requirement established by this concept, rather than an assumed starting condition.

### Risks

The first risk cited above, that the U.S. might act unilaterally, seems worth noting since this concept seems to make the argument that effective stability operations will require a multi-national effort. Is this really what the paper is arguing, however? Or is the point more that the joint force must be able to integrate coalition partners if they are present, but should be prepared to operate unilaterally if they are not? If the latter is true, then the cited passage is not truly a risk.

Most of the other risks stated seem more like operational risks—the inherent risks of taking action—rather than risks of the concept. A couple of other concept risks that might be identified include:

- The risk of focusing on stabilization and reconstruction as envisioned in this paper at the expense of other types of stability operations.
- The risk of presuming to develop concepts and doctrine for agencies outside DoD control.

## Description of the Problem

- “The Military Problem”—very generic without specific implications for StabOps
  - “The region of instability ...” (p. 5)—where?
- “Context” (p. 6)—Takes the Umbrella Approach
  - With two different lists
- “Spoiler” construct does not work
  - Implies all relevant actors act out of desire to “willfully impede” U.S. objectives
- Citation of 1997 NMS should be updated (p. 5)
- Organization of presentation: concept for dealing with problem comes before the problem

DART

6

The section titled “The Military Problem” is a generic description of the possible future without a description of the challenges those conditions pose for the conduct of stability operations. On p. 5 the text mentions “The region of instability ...” It was unclear whether this was a euphemism for the Mideast or meant some kind of conceptual region, e.g., the “Arc of Instability,” as used by some.

The section on “Context” (p. 6) takes the umbrella approach to defining the problem space, but does so using two different lists, one derived from Joint Pub 3-0 and the other from a list provided by Gen Zinni at the last workshop. The two lists are not complementary. If the umbrella approach is to be used, one list should be chosen and used consistently.

The discussion of spoilers beginning on p. 10 seems simplistic and does not work very well. It implies that spoilers act out of the desire to impede U.S. interests, when in fact U.S. goals may have little to do with the spoiler’s motives.

On p. 5, the paper cites the 1997 National Military Strategy. The Quadrennial Defense Review is more current guidance.

An organizational issue: The initial description of the central idea precedes the description of the problem. This puts the solution in front of the problem, which can be confusing. The logical sequence is: present the problem, describe the solution to it, derive the capabilities needed to implement the solution.

## Synopsis of the Central Idea

- Still lacking a cohesive big idea
- Seems to be a patchwork of viewpoints cut-and-pasted rather than flowing from a single conception
  - Unity of purpose → Shared Vision → Unity of Effort → Coordinated Planning Process
  - Agility
  - JIACG
  - Cultural Intel
  - JTF-Civil Reconstruction?
  - Coercion-Socialization-Inducements
- Strongly colored by OIF

 DART

7

This concept still lacks a cohesive central idea that describes how a joint force will conduct stability operations. Instead the text seems to be a patchwork of ideas pulled together. In various places, the text contains several ideas (consolidated below), but none of them really qualify as a broad description of *how*:

- Unity of purpose via a coordinated planning process is an assertion about planning, but does not describe how to conduct stability operations.
- Agility is a valuable attribute, but again does not describe a *how*.
- The JIACG is an existing organizational technique.
- Cultural intelligence can be an important capability, but it is not an operating concept.
- JTF-Reconstruction is another organizational technique, and one possibly worthy of experimentation, but not a *how*.
- Coercion-Socialization-Inducements is the closest to a concept. Like “spoilers,” to which it is related, it seems somewhat simplistic. To qualify as an operating concept, it would require further explanation of how coercion, socialization and inducements would be applied – and then the required capabilities would have to be specified.

The entire concept paper seems to be heavily influenced by the experiences of Operation Iraqi Freedom, and to a lesser extent by Operation Enduring Freedom. This is natural, but not necessarily good. Future stability operations will not necessarily resemble those currently ongoing.

## Synopsis of the Central Idea (Cont'd)

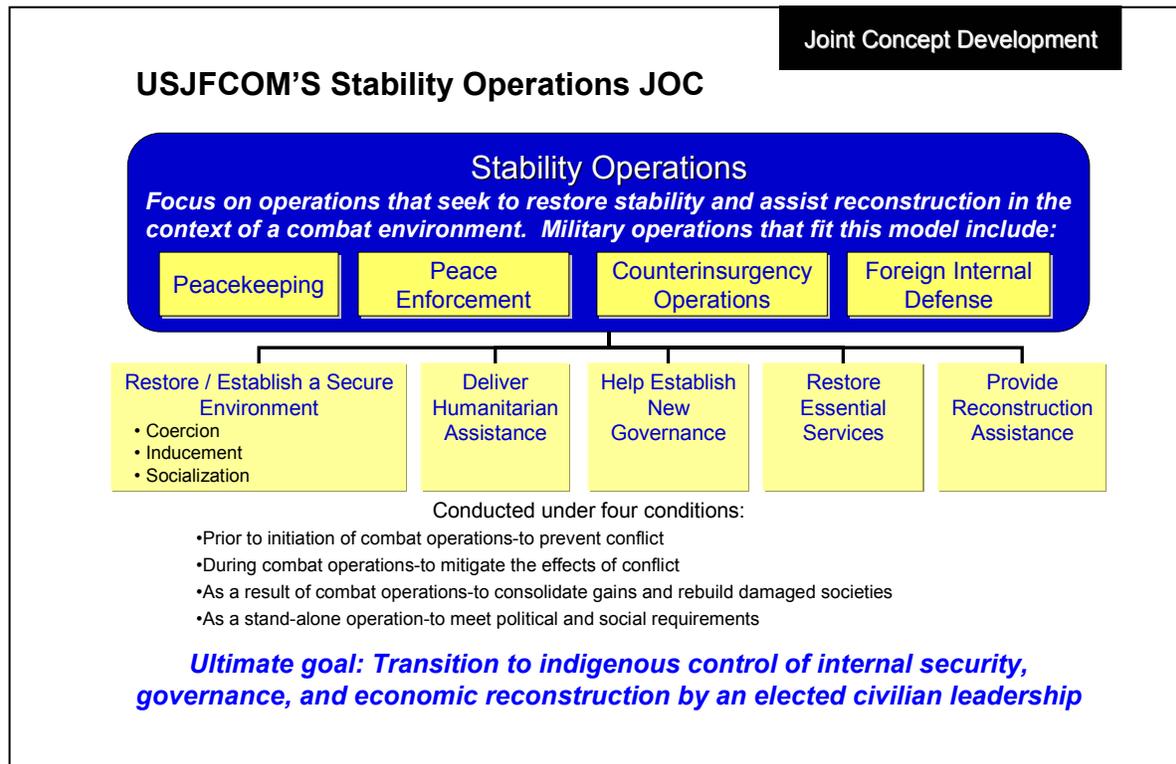
- Model
  - Too complicated
  - Not much *how*



8

On p. 15, the concept introduces a model called “Stability Operations and Conflict,” which seems to be intended to provide an understanding of stability operations. Two reactions to it:

- First, it is fairly complicated, requiring a significant amount of study and investment in relation to the pay-off.
- Second, it is a descriptive model, which seeks to capture the generic pattern of stability operations, but does not provide any guidance on how to conduct stability operations, which is the objective of the concept.



Workshop participants discussed whether it would be useful to divide stability operations into several mission areas; many agreed that this would in fact be useful.

Dr. Edward L. Warner proposed the division shown above, with key mission areas being:

- Restore/establish a secure environment
- Deliver humanitarian aid
- Help establish new governance
- Restore essential services
- Provide reconstruction assistance

Several of these mission areas could be conducted at one time, whether in the context of a peace operation, peace enforcement, counterinsurgency operations, or foreign internal defense.

The key question regarding the above framework (or any alternative) is: ***Will it help concept authors to define distinctive enabling concepts (the "how's") and associated required capabilities, attributes, and metrics.*** The DART believes that such an approach would in fact be useful.

## Use of Joint Functional Concepts

- Very generic without specific implications for StabOps (with exception of Force App)
  - Protection: “The use of U.S. combat forces for stability operations tasks which are not combat-related may require the development of DoD systems which have no combat role, only stability roles” (p. 21)—if true, would be useful to provide examples



9

The discussion of the military functions is very generic, without much description of how the functions apply specifically within this concept (with the exception of the discussion of force application, which does capture some implications).

The passage on protection cited above is interesting. First, it equates stability operations with non-combat, a point which has already been discussed. More significant for this discussion, it suggests there are some protection capabilities unique to the non-combat aspects of stability operations. If true, it would be useful to get a description of what these capabilities might be, and possibly some examples. The protection functional concept would have to address these.

## Capabilities and Attributes

- Desired Future Capabilities
  - Hard to take issue with, but don't flow from the concept
  - Clear statement of “how” would likely result in a revised list
- Joint Force Attributes
  - Mostly generic and redundant from JOpsC
  - Attributes are “testable or measurable characteristics that describe some aspect of a system or capability”\*—but these are not tied to capabilities

 DART

\* CJCSI 3170.01C, p. GL-4

10

### Capabilities

It is difficult to take issue with the capabilities described in the paper, although they are not comprehensive, are at varying levels of detail, and do not seem to derive from the concept. Once the concept is refined, the list of required capabilities should change.

### Attributes

The attributes listed are the standard attributes of the joint force introduced in the *Joint Operations Concepts* concept. They are discussed in generic terms here, without much specific implication for the conduct of stability operations. They certainly cannot be derived from the required capabilities that are identified.

## Potential Incompatibilities with Other Concepts

- Relationship with MCO unclear
- Relationship with Force App unclear



11

Because of the challenging problem space of this concept, issues of linkages with other concepts are bound to arise. The two concepts most affected are MCO and force application.

The stability operations paper makes the point that stability operations can occur before, during or after MCO (as well as independently of MCO), but at what point does a stability operation become an MCO or vice versa?

If stability operations exclude combat (as suggested various places in the paper), then where does combat that does not meet the threshold of *major* combat fit?

Force application is the primary means by which major combat operations and stability operations achieve their operational objectives. Currently this concept paper does not provide much guidance to the force application concept.

## Qualities of a Good Concept

- Serves stated purpose
- Stated in language that can be acted upon
- Accepts burden of proof
- Differentiated
- Explicit relationship to other concepts
- Written in clear/precise language
- Concise
- Robust
- Promotes debate



12

If stability operations can be clearly defined and the concept can be refined, the precision and clarity of the concept paper will improve naturally. It will also be possible to describe the concept in terms that differentiate it from others and in terms that can be acted upon in experimentation and force planning.

## **Issues to Consider in Concept Refinement & Experimentation**

- **Feasibility**
- **Adversary Counters**
- **Potential Failure Modes**
- **Possible Unintended Effects**



13

The following slides are the result of a red teaming session designed to probe for potential weaknesses in or issues with respect to the concept. The points raised are not necessarily issues that need to be addressed immediately in the concept paper, if at all. In fact, the authors may feel they have addressed these issues. The DART's intent was simply to raise issues—potential failure modes and unintended consequences and likely adversary counters—which may come up during experimentation, so that the authors can begin thinking about those issues as they continue to refine the concepts.

## Feasibility Concerns

- Ability to achieve complete unity of **purpose** between DoD and other agencies, coalition partners (perspectives and interests likely to differ)
- Ability to achieve unity of **effort** in a multinational force
- Availability of key skills in active force (e.g., MP, engineer, medical, translators) for immediate and long-term commitments
- Time delays and other problems in forming and staffing a JTF or CJTF Civil Reconstruction (SJFHQ may help)
- Ability to change the leadership between military and civilian heads in the midst of operations without introducing new operational risk
- Ability of joint force commanders to apply the concept to specific situations given lack of operational detail



14

Given the friction that is inherent in war, a major feasibility concern is the ability to achieve the level of cohesion that seems to be envisioned in this concept.

## Potential Adversary Counters (Relating to current concept)

- Diplomatic, informational efforts to undercut unity of purpose and effort
- Exploitation of coalition personnel and networks to gain intel and undertake deception
- Cyber attacks to reduce availability of shared networks, and reduce confidence in them



15

The concept does not discuss information operations, which might reasonably be assumed to play a major role in any operation with a significant hearts-and-minds component.

## Potential Adversary Counters (Relating to StabOps in general)

- Imposing casualties on US forces to undercut US domestic support
- Hostage-taking, assassination, intimidation of coalition, internal parties who support coalition, and NGOs/PVOs
- Actions that divide coalition and host nation authorities (e.g. attacks on one but not the other)
- Attacks in adjacent areas and against ISBs to extend the area of conflict and de-stabilize other parts of the AO
- “Horizontal escalation” to US and allied homelands
- Provoking US into overreaction which then convinces populace to support the adversary
- Pre-combat agitation that destabilizes the situation earlier than anticipated
- PSYOP that legitimize resistance to US and coalition presence
- Support of popular counter-movements that rally the population around cultural/religious differences to oppose outsiders

**DART** 

**(A partial list...)**

16

These are not criticisms of the concept per se, but simply likely methods an enemy might employ in a stability operation. Many are traditional methods, but some, such as “horizontal escalation” to the U.S. homeland, are relatively new.

## Potential Failure Modes (Relating to current concept)

- Inability to coordinate interagency and coalition partners to degree assumed – or to have a sensible plan based on consensus (lowest common denominator)
- Application of spoiler construct leads to oversimplification and misunderstanding of the problem on the ground
  - e.g., lack of understanding of the historical dynamics of the situation
  - e.g., failing to identify and work with key players in internal decision-making who support the coalition



17

Again, the ability to achieve the level of cohesion that seems to be envisioned in the concept could be a critical factor. The direct application of the spoiler construct to operations could lead to an oversimplified approach that fails to account for the true dynamics of the situation.

## Potential Failure Modes (Relating to StabOps in general)

- Major combat operations trump stability operations., i.e., MCO elsewhere gets priority over the stability operation
- US conducts MCO in manner that severely complicates postwar stability ops, e.g., destroys critical infrastructure
- Stability force inadequately trained to deal with local populace, e.g., language skills, cultural understanding
- Adversary takes a long-term perspective, e.g., Maoist model
- Insurgency supported by outside power (state or terrorist group) with its own uncompromising goals
- Insurgency supported by 3rd party to mask its own activities, e.g., narco-traffickers supporting the FARC
- Committed stay-behind force that has been given their mission, and won't change no matter what the situation, e.g., Japanese, North Korea guerrillas in mountains
- Problem is intractable in near-term, e.g., Israel-Palestine

**DART** 

**(Again, a partial list...)**

18

These are not potential failure modes of this concept per se, but a list of ways that stability operations in general may fail. This is provided as food for thought for the concept developers as the concept is further refined and moves into the experimentation phase of concept development.

## Possible Unintended Effects

- Success in one specific operation leads to belief that it can be replicated elsewhere, with disastrous consequences
- Presence of US forces is so inimical to local populace and sympathizers around the world that it creates a conflict in another locale
- Relationship amongst US and coalition allies becomes so strained as to affect international alliances



19

The first bullet relates to the point made earlier about viewing the future through the lens of the most recent past. Rote application of the lessons of a past situation to a new, different situation can be disastrous.

# **APPENDIX 3.**

## **DART REVIEW OF THE HOMELAND SECURITY JOINT OPERATING CONCEPT**

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**A Red-Team Critique of the**

**Homeland Security (HLS)**  
**Joint Operating Concept**  
**(05Sep03)**

Defense Adaptive Red Team  
Arlington, VA  
1 Oct 2003  
v3.0



1

This is a solid concept paper. It is well-organized and well-written. The exposition of the main ideas could use strengthening.

## Problem Space

- Well defined and delineated
- Nicely structured



2

This concept paper faced a challenge because it was presented with a difficult problem space. The assigned subject area included three subordinate areas, homeland defense, civil support and emergency preparedness, which did not lend themselves to a single operating concept. Each of those areas had some elements that fell within the overall subject heading, homeland security, but some that did not. So it was a case of a subject area that did not fully contain its constituent elements.

The paper does a good job of handling that dilemma. It finesses the subject areas nicely and puts them into a workable structure.

## Introduction

- General: Very good
- HLS Paradigm: Nicely finessed
  - Fig. 2. is helpful

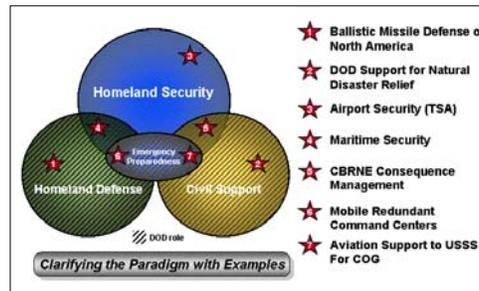


Figure 2: DOD Homeland Security Paradigm Examples



3

The Introduction is very good. As mentioned on the previous slide, the structural dilemma is nicely finessed. Fig. 2, “Homeland Security Paradigm Examples,” is helpful. The figure in the previous draft, which showed the overlapping topics but no examples, was not especially helpful. The addition of the examples, some in and some outside the subject area, gave concreteness to the abstract construct.

## Purpose

- “It describes how the future Joint Force will plan, prepare, deploy, employ and sustain the force ...”—but it doesn’t
- “This JOC, which focuses ... joint experimentation and assessment activities.” (p. 4)
  - Long and complicated sentence which could be simplified or broken down into several.
  - Why is “support the principles and guidelines provided in the JOPsC” the first purpose?

 DART

4

Despite its claim to do so, the paper does not describe “how the future Joint Force will plan, prepare, deploy, employ and sustain the force ...” It describes the homeland security mission in broad terms, but it does not describe how the force will do any of those specific things.

The DART draws attention to the following passage on p. 4:

This JOC, which focuses on the strategic and operational levels of operation, is intended to support the principles and guidelines provided in the JOPsC; identify and inform the development and foster the horizontal and vertical integration of HLS applications inherent in Joint Functional Concepts, Service Operating Concepts, and enabling concepts; support programmatic decisions; and provide a detailed conceptual perspective for joint experimentation and assessment activities.

First, this is a long and complicated sentence that could easily be broken into several simpler sentences. Second, the first condition the sentence mentions is conforming to the *Joint Operations Concepts* concept. Nothing against the *Joint Operations Concepts*, but the “administrative” goal of conforming to guidance is less important and probably ought to be listed after the substantive purposes of the paper.

## Purpose (Cont'd)

“This concept describes how the Department of Defense (DOD) intends to perform its responsibilities associated with securing the Homeland in 2015, to include homeland defense, civil support, and emergency preparedness. This document is meant to provide a detailed conceptual perspective for joint experimentation and assessment activities, inform the development and integration of subsequent joint and service concepts with respect to homeland security, and support programmatic decisions.”



5

The DART proposed the above rewrite of the Purpose statement, based on discussion summarized on the preceding page.

## Timeframe, Assumptions & Risks

- General: Good
- First 5 assumptions very good
- Last assumption not so clear (with its focus on freedom of action and power projection)



6

This section was generally good and to the point. The first five assumptions, including one relating to risks, were good. The implications of the last assumption, that there will not be a hostile global peer competitor in 2015, were not as clear. In particular, it was not clear how or why freedom of action and power projection related to the core elements of the concept described in this draft.

## Description of the Problem

- General: Excellent
- Strategic Environment: Good
- Threat to the Homeland: Excellent
  - Maybe use bullets when listing various threats
- Missions to be Accomplished: Good
  - Make clear when moving from HLD to CS, etc. (p. 8)
  - Clearly define HLD, CS & EP on first introduction
- Discussion on metrics (p. 9) out of place?



7

This paper provides an example of a problem statement well done. It uses an inverted pyramid structure, starting with broad descriptions and becoming increasingly more specific. It starts with a very concise description of the likely strategic environment in 2015 to provide context. Then it becomes slightly more specific, discussing the threat to the homeland. Here it succinctly identifies various types of threats. Since this passage really is just a listing of possible threats, the authors might consider using bullets to make each threat stand out.

Then the paper discusses the various missions that may need to be accomplished in this environment. In so doing, it ought to define homeland security and each of the three missions on first usage. The paper does not make especially clear when moving from homeland defense to civil support and from civil support to emergency preparedness. These transitions could be made more explicitly, and in a way that shows they are part of a continuum which goes from defending the homeland to dealing with the consequences of an adversary's successful attack.

The discussion on Metrics on p. 9 seems out of place in a section on the statement of the problem. The DART recommends deleting it.

## Synopsis of the Central Idea

- General: Good
- Possible lead statement: “The central idea of this concept is to detect, deter, prevent and defeat external threats and aggression as far from the homeland as possible and to mitigate the effects of successful aggression through civil support and emergency preparedness.”
- Detect, dissuade, deter, prevent, interdict, preempt, defeat, mitigate.
  - Different list used in different places; ought to be consistent
  - Not a bad idea to explain what is meant by each, with examples
- Recovery: provide support to civil authorities if defense fails.
  - Capture continuum/transition from HLD to CS (EP)—current focus on is on HLD



8

At the broadest level, the synopsis of the central idea is good, although it could use a stronger overarching theme statement, a recommendation for which is provided in the above chart. The process of securing the homeland includes a series of activities. These are discussed throughout the paper, but not always consistently; the elements of the list are slightly different in different parts of the paper. It should not be assumed that each of the elements is self-explanatory. They could stand to be described in greater detail, with concrete examples provided. Some of these activities, such as deterrence, are covered in other concepts, and this should be noted.

Recovery should be clearly identified as existing on this list. This provides the logical hook for including civil support and emergency preparedness in the same concept as homeland defense.

## Synopsis of the Central Idea

- “Proactive, externally focused and conducted in depth” is a useful phrase.
  - Used in the Executive Summary but not in the main body.
- Fig. 3. is useful.

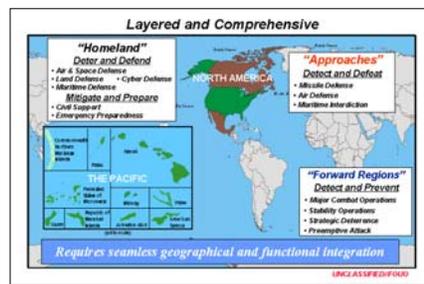


Figure 3: DOD HLS JOC Strategic Concept

9

DART

The Executive Summary uses the phrase “proactive, externally focused and conducted in depth.” This is a useful phrase that succinctly captures key aspects of the concept. That phrase does not appear in the main concept, but it should. In general, the Executive Summary should not introduce any material that is not discussed in the main concept.

The geographical construct of forward regions, “approaches” and homeland is another key element of the concept. The DART found Fig. 3, which lays this construct out, to be helpful. The DART found the idea of the “approaches,” which the paper properly calls a “conceptual region,” to also be helpful, although it is noted that it will not have universal utility. For example, it is hard to think of a cyber attack initiated overseas as passing through the “approaches” on the way to targets in the homeland. The concept makes the most sense in the case of intercontinental ballistic missile attack or a seaborne threat.

Below this broad level of description, the concept does not offer much in the explanation of “how” homeland security will be performed. A short description of the “major muscle movements” would be helpful. For example, the concept does not describe *how* the US will conduct ballistic missile defense. A paragraph-length description of this and other capabilities would be extremely useful.

## Necessary Capabilities and Attributes

- Desired Future Capabilities: Fine
- Joint Force Attributes:
  - Generic
  - Redundant
  - Not much value added



10

The list of “Desired Future Capabilities” is good. The capabilities identified derive naturally from the concept description.

The discussion of attributes is less helpful, however. The paper relies on the seven “Joint Force Attributes” listed in the *Joint Operations Concepts* concept. These are treated in mostly generic terms. The discussion here does not add much to the discussion already provided in the *Joint Operations Concepts*. These attributes certainly are not the “measurable characteristics of capabilities” described in the guidance.

The DART recommends a paragraph-length description of the process(es) through which each capability would be provided. Such a description would establish a basis for a more substantive consideration of attributes associated with each capability.

## Application & Integration of Military & Interagency Functions

- General: Okay
- Battlespace Awareness
  - Generic
  - “... interlocking field of sensors ...”—against missiles maybe, but against terrorists?
- Command and Control
  - Generic
  - Assumes MDMP
- Force Application
  - Shaky; difficult to discuss with FA still in development
- Focused Logistics
  - Generic; ought to be unique aspects with respect to homeland
- Protection
  - Protection ought to be a major part of this concept, but the interaction is not well established

DART

11

The discussion of how each of the military functions fits within this concept was generally satisfactory, if somewhat generic. The paper would be strengthened by showing how each function relates more specifically to homeland security.

In particular, the Protection joint functional concept would seem to be a primary vehicle for accomplishing homeland security. The DART expected a more in-depth discussion in this area, but it was not provided. The discussion of force application is weakest, but that may be because the force application concept itself is least mature at this stage.

## Key Relationships

- Is this meant to describe relationships with other concepts?
- Critical Infrastructure Protection:
  - Is there a concept for this?
- Force Protection:
  - How is this different from discussion of protection on p. 17?
- MCO/StabOps/StratDet: Good



12

After discussing the functional areas, the paper goes on to discuss what it calls “Key Relationships.” It is unclear what these are and how they differ from the functional areas. This section is a mixed-bag of ideas. The DART could expect this to be a discussion of the relationship with other concepts outside homeland security. MCO, stability operations and strategic deterrence certainly are—and the discussions of these are good. Critical Infrastructure, however, is a subset of homeland security. This probably needs to be one of the “major muscle movement” descriptions of the main concept. The discussion of force protection is also confusing. How is this different from the discussion of the protection function which came a few pages earlier?

In general, this section needs to be thought through more carefully and reorganized, with much of the material probably being moved elsewhere.

## Potential Incompatibilities with Other Concepts

- None identified



13

The DART identified no inconsistencies with either the content or form of other concepts.

## **Issues to Consider in Concept Refinement & Experimentation**

- **Feasibility**
- **Adversary Counters**
- **Potential Failure Modes**
- **Possible Unintended Effects**



14

The following slides are the result of a red teaming session designed to probe for potential weaknesses in or issues with respect to the concept. The points raised are not necessarily issues that need to be addressed immediately in the concept paper, if at all. In fact, the authors may feel they have addressed these issues. The DART's intent was simply to raise issues—potential failure modes and unintended consequences and likely adversary counters—which may come up during experimentation, so that the authors can begin thinking about those issues as they continue to refine the concepts.

## Feasibility Concerns

- Fiscal
  - Many adversary attack scenarios
  - High cost of some defensive measures (e.g., NMD)
  - Huge consequence management requirements for some attacks (e.g., nuclear, bio-engineered BW)
- Technical constraints, e.g., ability to
  - Detect BW
  - Overcome missile defense counters such as decoys
- Manpower to conduct HLS mission in conjunction with global commitments
  - Major attack on US may occur during major war
- DHS, DoD, other agency coordination
- International cooperation – intel, planning and ops



15

A major feasibility concern with this concept is that it relies heavily on others for its success. These others include other nations, for security measures in the forward regions, and other national agencies, for security measures in the homeland. The only area in which DOD will be the lead agency is the “approaches,” which has only limited application. Another concern is having the manpower for the DoD to conduct these additional missions.

## Adversary Counters

- Insert false intel into system (e.g., compromise foreign intel service)
- Reduce signature by using low-signal modes against key nodes (e.g., car bombs, BW)
- Conduct large-scale cyber attack [concept focuses on physical]
- Operational/technical counters to defenses, e.g.,
  - Stealth attack using low observables, e.g., cruise missiles off of commercial ships.
  - Decoys, chaff, etc. for missile defenses
  - Covert BW attacks
- Bypass defenses in forward regions and approaches by infiltrating attackers into the US over time
- Recruit sympathizers in the homeland



16

The DART felt that the most likely adversary counter will be to try to elude U.S. detection via covert infiltration of the homeland. These threats seemed much more likely and plausible than overt attack.

## Potential Failure Modes

- Lack of intel about overseas threats makes prevention in approaches impossible
  - Lack of international cooperation
  - Focus on sensors results in lack of attention to HUMINT
- Failure to fuse intelligence—we had information about the attack in the system, but failed to act
- Desensitization through repeated runups (“crying wolf”)
- GIG isn’t robust enough to allow us to react in a timely manner (GIG overtaxed and/or attacked)
- Lack of coordination between DOD and other agencies results in failure to respond in time.
- Attacks against homeland while specialty personnel (e.g., chem-bio detection) deployed overseas
- Reduced public support for defenses over time, if defenses are being (quietly) successful



17

The most likely cause of failure seems to be the inability to identify and locate threats in time to take preventive action. This is not a failure of the concept so much as an admission of the magnitude of the intelligence challenge and an admission of the natural limits of the ability to discover future threats when the perpetrator wishes to keep those threats hidden.

## Possible Unintended Effects

- Other agencies, and state/local governments attempt to get DoD to pick up more and more responsibility (and costs) for homeland security
- Aggressive defensive efforts in the approaches has adverse effects on trade and economy



18

These are actually potential negative consequences of the *success* of the homeland security mission.

# **APPENDIX 4.**

## **DART REVIEW OF THE STRATEGIC DETERRENCE JOINT OPERATING CONCEPT**

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**A Red-Team Critique of the**  
**Strategic Deterrence**  
**Joint Operating Concept**  
**(05Sep03)**

Defense Adaptive Red Team  
Arlington, VA  
01 Oct 2003  
v1.0



1

This is generally a solid concept. The language and clarity are improved since the previous draft. The overall concept is organized into three basic elements. Each of these elements could use a stronger “how” description.

## Problem Space

- Very broad problem space
  - “... prevention of aggression or coercion by adversaries that could threaten vital interests of the U.S. and/or national survival. ... prevents from choosing grievous courses of action ...”
- Central Idea still covers a lot of actions that could be included in other concepts
- “... describes how a Joint Force Commander will plan, prepare, deploy, employ, and sustain ...” (p. 15)—is this an operational or strategic concept?



2

The “Quick-Look” Workshop spent a lot of time discussing the problem space of the concept. What seems like a relatively clear-cut space is not. The concept has made some progress. Better resolution would help.

The issue is what types of hostile action are to be covered by this deterrence concept. The passage above, from the definition of strategic deterrence put forward on p. 3 of the concept paper, touches on the issue. The concept is meant to apply to acts “that could threaten vital interests of the U.S. ...” and “... prevents adversaries from choosing grievous courses of action ...” At issue is what constitutes “vital interests” and what qualifies as “grievous courses of action.”

Defining strategic deterrence in terms of weapons of mass destruction (WMD) or weapons of mass effect (WME) was discussed as a possibility at the “Quick-Look” Workshop, but not adopted in this draft.

The current definition leaves much room for interpretation. As a result, many actions covered by other concepts, such as force application or MCO, can be considered part of strategic deterrence. This is not to say that these must be excluded by definition, but only that it complicates the development of this concept. Those interdependencies will have to be captured.

On p. 15, the paper states that it “describes how a Joint Force Commander will plan, prepare, deploy, employ and sustain a joint force to achieve strategic deterrence objectives ...” Two issues arise:

- First, the paper does not do this. It discusses strategic deterrence in broad terms, but it does not describe how a joint force will do any of the specific things listed.
- Second, the joint force may not be the appropriate level for this concept. This is not so much an operational concept as a strategic one. An operational concept would describe how a joint force conducts a particular kind of operation. No one joint force commander will implement the concept described in this paper. Joint force commanders, including STRATCOM, will implement elements of this concept, but this concept describes the sum at the national level of all deterrence actions.

## Statement of Purpose

- Good

## Time Frame

- Time Frame: “Current day to 2015”
  - Can a concept starting in the present drive future capabilities?



3

The statement of Purpose is fine.

The time frame is described as “current day to 2015.” This begs a question: Can a concept meant to apply to the present (i.e., executable with today’s capabilities) be used to drive future force development and acquisition?

Furthermore, is anything lost by simply targeting the concept to 2015—and thereby being freed of the requirement for current-day applicability?

## Assumptions & Risks

- Assumptions:
  - Many belong in statement of military problem
    - “Non-state actors will continue to pursue ... WMD.”
    - “... the threshold for use of WMD ... will vary”
    - “At least one non-peer will attempt to challenge ...”
    - “Third parties ... will learn lessons from deterrence successes ...”
  - Consider adding: We can identify perpetrators of attacks
- Risks:
  - Okay: 4, 7, 8
  - Operational vice concept: 1, 6
  - Assertions: 2, 3, 5



4

### Assumptions

This section includes much good material, although much of it better fits as part of the problem description than as assumptions without which the concept is invalid.

### Risks

This section is a mixed bag. Most of the thoughts are good, but few of them qualify as risks of the concept. Risks 4, 7 and 8 qualify as risks as written. Risks 1 and 6 qualify as operational vice concept risks; that is, they are risks inherent in doing business and not risks incurred as the result of using this concept as opposed to another. Risks 2, 3 and 5 are really assertions—or even hypotheses—about the nature of deterrence. They might better be worked into the description of the central idea.

## Description of Military Problem

- Description spread out over several sections. Rec. bringing together key elements:
  1. Danger of interstate conflict
    - 1-3 additional nuclear-capable states & many with WMD, missile capabilities
  2. Attacks by non-state actors will continue
    - Non-state actors will pursue WMD; 1+ will succeed
  3. 1+ near-peer will attempt to challenge US dominance in space & info
  4. None but Russia will pose threat to US national survival
  5. Multiple, less understood adversaries...with widely varying risk propensities
  6. Asymmetries of stakes vs. power
  7. Vulnerability of US society and forces



5

This slide represents the DART interpretation of the problem description. This description is not provided in any one place in the document, but was consolidated from several places. One reason for this lack of a single description was the authors' desire to describe two possible problem spaces: present-day to 2010 and 2010-2015. This goes back to the earlier issue about time frame. One result of this approach is that it makes it somewhat more difficult to keep straight which problem the concept is meant to solve. If possible, the DART recommends consolidating the discussion into one place.

## Description of Military Problem (2)

- #4: “None but Russia will pose threat to US national survival”
  - China nuclear program?
  - Bio-engineered BW?
- #7: Vulnerability of US society and forces
  - Add: “Both state and non-state actors will have significant abilities to conduct devastating **covert** attacks on the US population, infrastructure, forces, and overseas interests”
- Consider adding:
  - “The diffusion of biotechnology will allow states and well-organized groups to develop devastating bio-engineered weapons”

DART

6

Of the potential threats listed on the previous slide, we question the fourth: that only Russia will pose a threat to U.S. national survival. By 2015, could not China’s nuclear program pose such a threat? And could a bio-engineered biological warfare threat implemented on a large scale inflict sufficient casualties to qualify as a threat to national survival?

Along the same lines, the DART felt it was worth making the point that the US is vulnerable not only to the overt threats currently known about, but also—due to the diffusion of biotechnology—to covert threats currently unknown.

## Description of Military Problem (3)

- What acts, by whom, trying to deter?  
Recommend integrating currently disparate pieces:
  - Invasion of US ally (p. 18 only)
  - 3<sup>rd</sup> parties from intervening in conflict
  - Both initial and escalatory use of WMD (appears to assume state)
  - State transfer of WMD capabilities to terrorists
  - Additional terrorist org's from joining forces with AQ in attacking US vital interests
    - Not clear the "how" of the concept applies here



7

In describing the military problem for this concept, it is useful to ask: Specifically what types of acts are meant to be deterred, and by whom? Again, parts of the answer are spread throughout the document, but not consolidated in one place. This slide represents DART's attempt to answer that question by interpreting the document. Of the five types of acts listed, there seems to be a qualitative difference between the first three and the last two. The first three clearly should fit within the concept. It is not so clear that the last two do. If they are meant to, it is not clear that the "how" of the concept applies particularly well to them.

## Description of Military Problem (4)

- Apparently not trying to deter:
  - AQ WMD (or other) attacks on US.
    - Under broad definition of SD used (increase costs, reduce benefits, mitigate consequences of restraint to adversary), might some types of AQ attacks be deterred, e.g., if denied?
    - Why wouldn't this be the case if we are able to deter additional terrorist groups from joining AQ?
  - Acquisition of WMD by states, e.g., by reducing its value, threatening its destruction, or imposing other costs (up to intervention).
    - Why not? If this is dissuasion vs. deterrence, in what other concept(s) will required capabilities be addressed?



DART

8

By process of elimination based on the previous slide, the DART identified several types of hostile actions that apparently are not meant to be deterred via application of this concept. These are not meant to be an exhaustive list, but rather a representative one of the types of acts possibly not covered. It is hard to draw a qualitative distinction between these two and the last two on the previous slide. (Indeed, in the course of discussion during the workshop, one of the concept authors suggested that the concept was in fact intended to apply to deterring al Qaeda WMD attacks on the US.)

The intent here is not to argue that these ought to be included or that the last two on the previous slide ought to be excluded, but rather to make the point that there is a lot of ambiguity in the problem space. The concept document would benefit from a more explicit definition.

## Synopsis of the Central Idea (1)

- **End:** Exercise decisive influence over the decision-making calculus of key adversary leadership... in peacetime, crisis and war
- **Ways**
  - Denying benefits
  - Imposing costs
  - Mitigating consequences of (adversary) restraint
- **Means:** Military tools synchronized with DIE
  - Specific Capabilities:
    - Force Projection, incl. ability to decisively defeat adversaries
    - Kinetic and non-kinetic Global Strike, incl. Nuclear Weapons
    - Active and Passive Defense
    - Strategic Deterrence IO
    - Influence Ops
    - Space Control
  - Enabled by:
    - Global Situational Awareness
    - C2
    - Overseas Presence
    - Allied Military Cooperation & Integration

SD includes all 3

**Comment: Need to define what is meant by "decisive"**

This concept explicitly adopted the ends-ways-means construct for expressing the central idea. As an organizing tool, it worked well. Specific issues:

- The end is defined as exercising “decisive influence” over a potential adversary’s “decision calculus.” We question the phrase “decisive influence.” Its meaning is unclear. What would *indecisive* influence be? Why not simply use “convince a potential adversary not to act,” or words to that effect? That is the essence of the idea.
- On a related point, the paper eliminated all but one of the references to the “decision calculus” being the strategic deterrence “center of gravity.” The paper makes the statement once. We feel it does not add anything to the argument, and in fact might detract from it because of the baggage and confusion associated with the Clausewitzian term.
- “Mitigating consequences of restraint” is an awkward phrase. Another, simpler one would be preferable, if possible.
- Explicitly identifying the means of the concept lays the groundwork for identifying required capabilities later. We found this to be a very useful consequence of using the ends-ways-means construct.

## Synopsis of the Central Idea (2)

- Does the concept aspire to a highly differentiated and “tailored” deterrent posture?
  - “Effective deterrence results from tailoring and orchestrating available ends and means...” (p. 18)
  - “Detailed understanding of each adversary leadership’s value structures and perceptions (beyond what is available today) is required to tailor deterrence options...” (p. 22)
- If “tailoring” is central, should clarify in synopsis of idea
- And if so, recommend distinguishing between:
  - “Tailoring” = developing 190 totally distinct postures
  - First establishing a strong overall US deterrence posture and then “tailoring” it to specific adversaries and situations



10

Based on the quotes above from pp. 18 and 22, and others, the concept seems to argue for highly customized deterrence postures, tailored to each potential adversary, rather than a single, blanket deterrence posture. This is a significant substantive issue and was the subject of extensive discussion at the workshop.

Does “tailoring” mean a completely different deterrence posture for each potential global actor, or does it mean a single base posture modified slightly in its presentation to each actor? An alternative that was suggested was two basic postures—one for nation-states and another for non-states—each of which could be “tweaked” as needed to apply to specific cases.

This is a substantive issue because vast array of different deterrence postures could create uncertainty, either in a potential adversary’s mind or in our own, about what actions are permissible and what are not. One advantage of the one-size-fits-all deterrence is that it is easily understood.

The one-size-fits-all posture more-or-less describes today’s approach. It could be that for a future concept, the authors were looking for a more sophisticated approach. The issue is whether this more sophisticated approach is actually desirable.

The concept does a good job of laying out the major components of the concept—denial, cost imposition and mitigation—but it does not describe *how* each of these will be implemented, either against nation-states or non-state actors. This level of description will eventually be necessary in driving capability development in a meaningful way.

At this point the authors gave a briefing that explained the “Teeter-Totter of Death,” a metaphor meant to show the interdependence of the three elements of the concept. It was agreed that the metaphor captured the interdependencies in a way that the concept paper had not, but that the mechanics of the metaphor were too complicated to make it useful as an explanatory device in the paper. The recommendation is to capture the idea of interdependence in another way.

## Use of Joint Functional Concepts

- Not explained per se
- However, “enabling” capabilities are:
  - Global Situational Awareness (Battlespace Awareness?)
  - C2
  - Overseas Presence
  - Allied Military Cooperation & Integration
- How about:
  - Logistics? (not listed)
  - Force Application? Protection? (elements listed, e.g., active and passive defense, but not grouped into these categories)

A broader question here: Should JOCs use JFCs as categories to define capabilities?



11

The document does not discuss explicitly how the functional areas fit together in this concept. It does however discuss several “enabling” capabilities, which include global situational awareness and C2. The authors believed that global situational awareness was similar to battlespace awareness, but not the same. Whereas the latter implied awareness of primarily military things in the battlespace, the strategic deterrence concept requires awareness of things globally, many of them non-military. It was suggested in response that any of these capabilities in this area identified by the strategic deterrence concept would have to be satisfied by the battlespace awareness functional area anyway, so they ought to be included in that functional concept.

Specifically not discussed in any way were the implications for logistics, protection (passive and active defense were identified, but not grouped under protection) or force application.

That said, the means, described in the ends-ways-means discussion as part of the central idea, identified several capabilities with obvious implications for force application (e.g., global strike and force projection).

## Necessary Capabilities & Attributes

- Comprehensive
- But hard to follow



12

The paper provides a fairly comprehensive list of capabilities and their attributes. The attributes are somewhat difficult to follow because of the way they are woven into a narrative discussion. A table/matrix might communicate the necessary information more efficiently.

## Metrics

- Good explanation of why metrics are problematic
- “Adversary Decision Calculus Assessment” and “Deterrence Impact Assessment” seem like basis for strategic calculations rather than experimentation metrics
- Concludes there is need for a Strategic Deterrence Assessment Lab”—which sounds like a required capability



13

Rather than providing metrics, this section provides a good explanation of why metrics are difficult in this area. It ends up suggesting the need for a Strategic Deterrence Assessment Lab, which sounds like an identified requirement which can probably be expressed in terms of a capability.

## Potential Incompatibilities with Other Concepts

- None identified
- Does global situational awareness (p. 22) = battlespace awareness?
- Does adaptive C2 (p. 22) = joint C2
- This concept lists global strike, nuclear capabilities, information ops, and influence ops as required capabilities, but these sub-functions are not reflected in the FA concept



14

The concept has no explicit inconsistencies or incompatibilities with other concepts. The issue of whether global situational awareness equates to battlespace awareness has been discussed. Similarly, the concept talks about “adaptive C2.” Presumably, this is consistent with C2 as described in that functional concept.

The concept lists global strike, nuclear strike, information operations and influence operations as required capabilities. Presumably these would be provided by the force application concept, although they are currently not reflected in that concept.

## Qualities of a Good Concept

- Serve stated purpose
- Stated in language that can be acted upon
- Accepts burden of proof
- Differentiated
- Explicit relationship to other concepts
- Written in clear/precise language
- Concise
- Robust
- Promote debate



15

The language of this draft has improved significantly over the previous draft. That said, there is still room for improvement. One area to concentrate on might be differentiating this concept from current deterrence concepts (which goes back to the original issue about the appropriate time frame for this concept).

## **Issues to Consider in Concept Refinement & Experimentation**

- **Feasibility**
- **Adversary Counters**
- **Potential Failure Modes**
- **Possible Unintended Effects**



16

The following slides are the result of a red teaming session designed to probe for potential weaknesses in or issues with respect to the concept. The points raised are not necessarily issues that need to be addressed immediately in the concept paper, if at all. In fact, the authors may feel they have addressed these issues. The DART's intent was simply to raise issues—potential failure modes and unintended consequences and likely adversary counters—which may come up during experimentation, so that the authors can begin thinking about those issues as they continue to refine the concepts.

## Feasibility Concerns

- Ability to adequately understand adversary decision calculus and anticipate adversary actions/reactions
  - Need for capabilities that are robust to range of possibilities?
- Requirement for 190 different deterrence policies
  - “Tailor” broad deterrent posture to meet specific contingencies?
- Integration of military (internal) and military with DIE
  - Add law enforcement, covert ops?
- Ability to get coalition support
- US uncertainty on what constitutes a threshold for response. How is it possible to communicate it?
  - There is a clear threshold for nuclear attacks... how about non-lethal biological weapons? Limited cyber attacks?



17

Our greatest feasibility concern had to do with the plausibility of “tailoring” a unique deterrence posture for every potential actor and of having enough visibility into others’ decision processes to be able to do so successfully.

## Potential Adversary Counters

- Attacks with No Return Address
  - Covert use of BW (including bioengineered)
  - Cyber attacks
  - Terrorist attacks or tactics
- Denial & Deception
  - Adversary hides and/or deliberately misleads US regarding its intent, WMD capabilities, location of key assets
  - Adversary conducts “black hat” operation to convince US to attack someone else
- Deter US deterrent with own nuclear/bio/cyber/etc. weapons
- Decapitation of US leadership



18

We saw the most challenging adversary counter being developing the capability to launch non-attributable attacks which cannot be traced back to their source. An example might be a biological attack using an unknown agent. What leverage exists over potential adversaries who believe they cannot be traced?

## Potential Failure Modes

- **Lack of Attribution:** e.g., covert BW attack
- **Decision Calculus:** Impossible to properly analyze the decision calculus of key actors in 190 different states.
- **Overly Tailored Deterrence Policies:** Requirement for so many different policies creates confusion, misinterpretation and the sending of mixed messages around the world. Adversaries hear what they want to hear, and are more likely to misread the US response.
- **Unknown Threat:** US is able to assess known threats, but new threats (actors and/or weapons systems) emerge.
- **Self-Deterrence:** Inability to hold adversary leadership accountable without unacceptable (to the US) civilian casualties.
- **Death by 1000 Cuts:** Adversary nibbles below deterrence threshold.
- **Irrational Actor:** There is a totally irrational and/or apocalyptic actor (e.g., al Qaeda with bio-engineered smallpox).
- **Mandate:** Adversary believes he has the support of the world community (or some sub-element) and he's doing the right thing to check US power (or "aggression")
- **Defense in Depth:** Adversary leadership thinks he can ride out US response, nuclear or non-nuclear.
- **US Response Confusion:** The US itself is unclear on what constitutes the threshold for response - so how could it possibly be communicated?



DART

19

The DART identified numerous potential failure modes for this concept. Once again, the authors may or may not feel the need to address these in the concept. They are listed as food for thought as the concept is further refined and eventually moves into the experimentation phase.

## Possible Unintended Effects

- Because of tailored deterrent policies, adversaries are confused or see the US as being confused with regard to its different deterrence policies
  - Ambiguity may lead to Adversaries underestimate US resolve
  - Adversary may believe he exploit US uncertainty
  - Allies not confident in US protection
- In an attempt to deter one actor one way, we accidentally influence a range of actors (who are watching our actions closely) in other, unforeseen ways



20

These above issues relate back to the issue of “tailored” versus “one-size-fits-all” postures. The tailored deterrent policies have the potential to confuse the various actors on the world stage, and in the attempt to influence one actor one way, the US might inadvertently send the wrong message or influence an actor in an unforeseen way.

**APPENDIX 5.**

**DART REVIEW OF THE**

**FORCE APPLICATION**

**JOINT FUNCTIONAL CONCEPT**

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**A Red-Team Critique of the  
Force Application  
Joint Functional Concept (JFC)  
(05Sep03)**

Defense Adaptive Red Team  
Arlington, VA  
1 Oct 2003  
v1.1



1

Because the force application concept is intended to apply across the range of military operations, and in support of a wide range of military missions in possibly widely varying circumstances, this concept is the most difficult to write of all the concepts under review. It is still in an immature stage and will require significant development and revision.

In its current form, the concept paper contains a lot of unnecessary background material that gets in the way of the message and could easily be eliminated or at least moved to an appendix.

The problem definition could be more powerfully and tightly expressed. Elements of a big idea are there, but not yet cohesively captured or fully developed. Addressing these two issues should result in significant substantive revisions also to capabilities and attributes discussion.

## Introduction

- Risks conflating force application with the decision to use military force
  - “The use of military force is the most important decision that the United States can make.” (p. 4)
- Discussion of JOpsC and role of JFCs not necessary, or better placed in appendix

## Background

- Mostly unnecessary hodgepodge
  - Concept development
  - Service doctrine
  - Unilateral operations
  - Experimentation
  - QDR



2

### Introduction

The introductory statement risks conflating the strategic decision to use military force with the operational application of force. The difference, though perhaps subtle, is important. This paper should be about *how* combat power is applied, and not the decision to use force.

This section contain unnecessary discussion about the *Joint Operations Concepts* concept and the role of the joint functional concepts. It can safely be removed.

### Background

This section is a miscellaneous collection of thoughts with no common theme. All of them qualify as deep background which is not necessary to understanding the concept. This material can be eliminated, or at least properly organized and moved to appendices.

**Scope**

- Unnecessary background

**Purpose**

- Good
- But repetitive
- Focuses on combat (good; p. 9), although rest of concept implies FA applies across ROMO

**Assumptions and Risks**

- Mostly unnecessary to the concept



3

### **Scope**

Likewise, this section is unnecessary and can be removed.

### **Purpose**

The Purpose statement is good but repetitive. There are two passages which say essentially the same thing in different language. Either, or a consolidation of the two, would be sufficient.

This section includes the following statement (p. 9):

This concept focuses on the application of military force in combat to defeat hostile forces, although to a lesser extent the principles contained herein may apply to other missions across the range of military operations.

This seems like the right approach. To try to write the concept explicitly to cover the entire range of military operations will dilute the concept beyond usefulness. It would be very difficult to write about force application in a way that applies equally to major combat operations and the delivery of humanitarian aid in a permissive environment. That said, the rest of the concept generally talks in terms of the full range of military operations.

### **Assumptions & Risks**

The assumptions tend to more resemble general presumptions about the future than contingent conditions which would invalidate the concept if not true.

## Description of the Military Environment

- First bulleted list (pp. 13-14) is on the mark, but could be further fleshed out into a richer description of the problem space
- “As levels of war compress ...” (p. 14)—relevance?
- “As the Joint Force shifts away...” (p. 14)—relevance?
- “Conditions” (p. 37) probably belongs here



4

The bullet list of six conditions are useful elements of a description of the military environment and would seem to have specific implications for force application. The basic thoughts should be further developed into a fuller description.

The paper makes the statement (p. 14)

As the levels of war compress and blur together, the theater strategic level will increasingly supplant the operational level as the focal point for joint military operations ...

While the DART does not take issue with this statement, it is arguable. More important, a statement about theater strategy supplanting the operational level seems irrelevant to a concept specifically about the operational level.

The authors argued that this statement was important because the paper was intended to address the theater strategic level vice the operational. The DART argued against that approach as being, first, contrary to guidance and, second, not the appropriate level of discussion.

Also on p. 14, the paper states:

As the Joint Force shifts away from parallel domain warfare to a singular battlespace, the division of the battlespace's land areas into distinct operational areas will become increasingly counterproductive and lead to warfare being controlled by functional vice geographic area commanders.

This point is contentious, and does not seem to be relevant to the concept. The implications of it are raised nowhere in the following discussion.

On p. 37, under the section “Critical ‘Capability Attributes,’” the paper introduces several conditions which might actually be included as useful elements of the description of the military environment.

## Attributes of the JOpsC

- Back to a generic discussion ...
- Does not provide useful insights for this concept



5

Following the description of the military problem, the paper discusses the “Attributes of the JOpsC.” This is a generic discussion taken from the *Joint Operations Concepts* concept. It does not provide much useful direction for this concept. How these attributes manifest themselves with respect to force application specifically is not discussed.

Why a discussion of attributes would follow the description of the military problem and precede the synopsis of the central idea is unclear. The logical flow would be: present the problem, describe the solution, derive the capabilities needed to implement that solution, and then establish the attributes of those capabilities. The discussion of attributes this early in the paper violates this logic.

## Synopsis of the Central Idea

- Is “synergistic” an essential part of the definition? If maneuver and fires not employed synergistically, is it not still FA?
- Are “effects” an essential part of the definition?
- Idea of complementarity captured in bullets could be further developed
- No discussion of role of offensive IO
- Fuller description of the elements of FA; possibly some examples or a schematic



6

Why is “synergistic” a necessary element of the definition of force application? It may be an element of the concept (i.e., the “how”), but the definition should not depend on how force application is achieved. If maneuver and fires are *not* used synergistically is it still force application (just not as effective as it might be)?

For the same reason, why is “effects” (which is assumed to imply effects-based operations) necessary to the definition. The definition of the thing should be independent of methods by which the thing is done.

It was argued that without “synergistic” and “effects” there is nothing new. In fact, there is nothing new about the function. This military function has always existed, just as logistics and command and control have always existed. This particular concept of force application may contain new elements (which would rightly be included in the description of “how”), but the definition should be enduring. The DART recommends that force application be defined simply as the “combination of maneuver and fire to accomplish the mission.”

The important idea of complementarity of maneuver and fires is contained in a series of bullets. These ideas should be fleshed out into a fuller description.

Offensive information operations is included within force application, but it is given little consideration in this paper. It warrants discussion.

Having described force application at the broadest level, the paper will need to discuss each of the components in some detail, to include eventually describing a process model for each, if possible.

There was some discussion about just what those components should be. Several options exist:

- Include only maneuver and fires, and to include offensive information operations as part of fires. This retains the traditional complementarity of maneuver and fires, although it stretches the meaning of fires.
- Include maneuver, fires and offensive information operations. This simplifies the definition of fires but complicates the description of complementarity.
- Include maneuver and engagement, which could be defined to include fires and offensive information operations, as well as humanitarian aid, for that matter. This would require redefining the terms *engage* and *engagement*. See below.

**engage**—(DOD, NATO) 1. In air defense, a fire control order used to direct or authorize units and/or weapon systems to fire on a designated target. See also cease engagement; hold fire. 2. (DOD only) To bring the enemy under fire.

**engagement**—(DOD) 1. In air defense, an attack with guns or air-to-air missiles by an interceptor aircraft, or the launch of an air defense missile by air defense artillery and the missile's subsequent travel to intercept. 2. A tactical conflict, usually between opposing lower echelons maneuver forces. See also battle; campaign

## Synopsis of the Central Idea (Cont'd)

- Attempt to describe FA process under “Conduct of Force Application” needs work
  - Non-doctrinal definition of synchronization (p. 24)
  - “Force employment”—understand objective, but awkward; maybe “execution”?
- Central idea discussed again, to better effect, pp. 25-27
- Ideas of “effects-based organization” and “joint effects coordinator” not explained or developed
- Did not find discussion of organizing, planning, preparing, executing, assessing (pp. 27-32) very helpful
  - Another approach to describing the FA process?



7

The paper attempts to describe the process of force application under the section “Conduct of Force Application” (pp. 24-25). In so doing it uses the structure:

- Targeting and Tasking
- Synchronization
- Force Employment
- Assessment

The description needs work. “Synchronization” is defined non-doctrinally. “Force Employment,” meant to be one step in force application, is confusingly similar to “force application.” “Execution” might be a better term.

On pp. 27-32, the paper takes another attempt at describing the force application process, this time using:

- Organizing
- Planning
- Preparing
- Executing
- Assessing

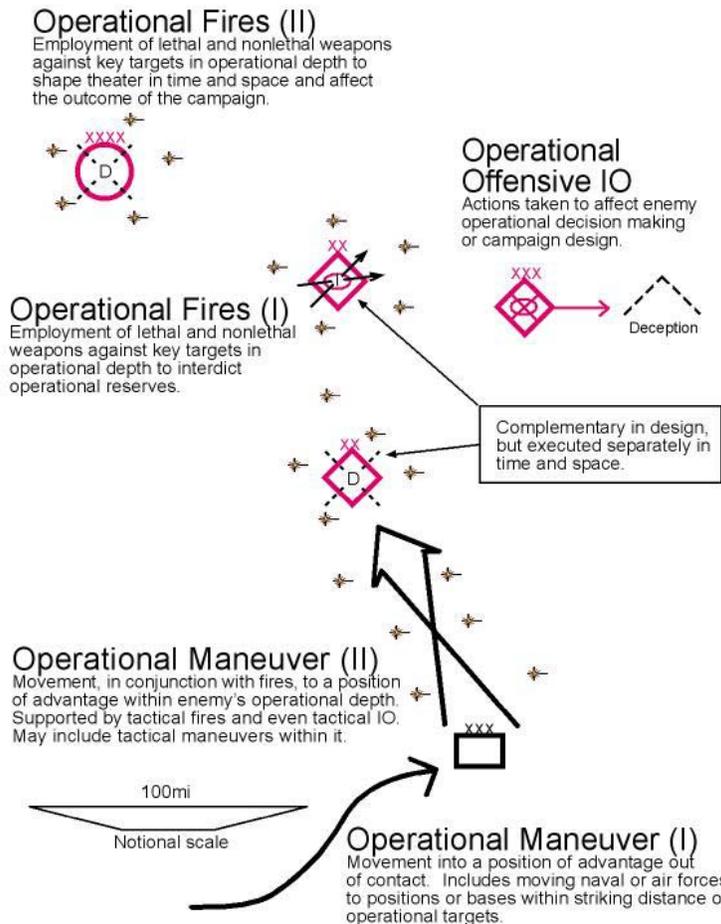
This description also needs work. Ultimately, one construct should be chosen rather than two.

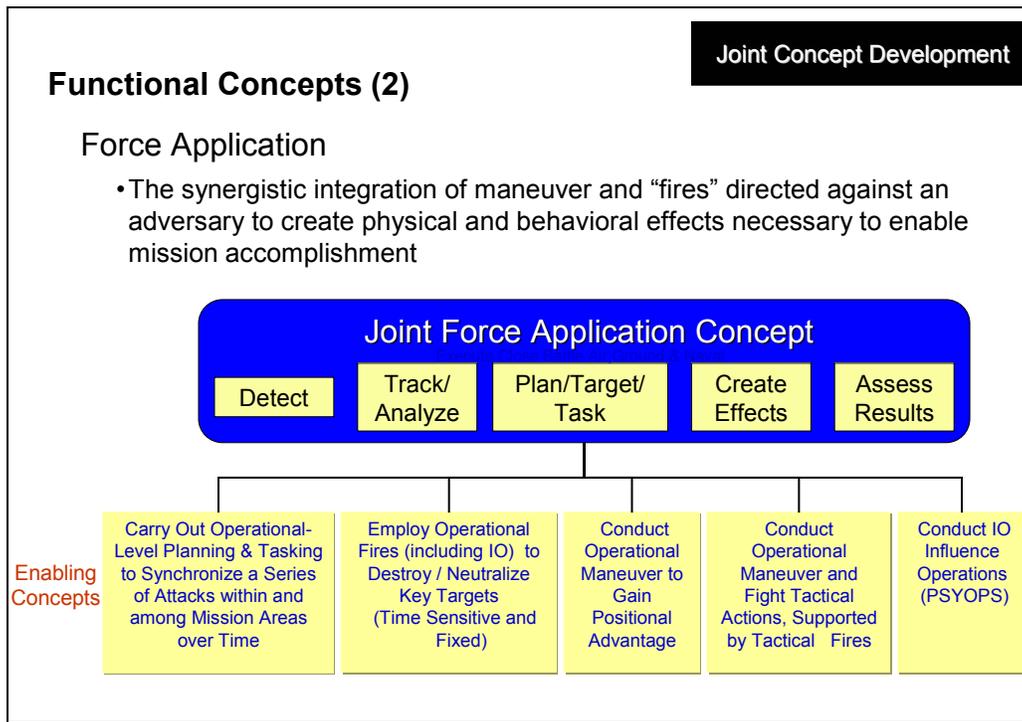
After discussing the conduct of force application in greater detail, the paper returns to a high-order description on pp. 25-27. This discussion is often superior to the initial high-order description of the concept. In any event, the passages should be consolidated into one, consistent description. The general structure of the concept exposition should be an inverted pyramid; that is, it should start in the broadest terms and then become increasingly specific and narrow as it drills down into the different components of force application and the “how” of each.

Finally, the paper introduced the terms “effects-based organization” and “joint effects coordinator,” neither of which is explained or discussed. If these are key elements of the concept they warrant further discussion.

The following diagram was provided by DART to the concept authors after the Quick-Look Workshop in July. It may still have some value in helping to explain the concept and so is provided here.

### FORCE APPLICATION SCHEMATIC





Workshop participants discussed whether the Force Application JFC should follow the approach taken by the Protection JFC, and establish separate mission areas. This approach seems appropriate. The challenge is to do so without creating a very large number of mission areas that would make concept development an intractable problem.

Dr. Edward L. Warner provided the above chart, which would divide force application into the five areas/enabling concepts shown in the lower set of five boxes. This seems to be a reasonable approach, and also matches relatively closely with the DART-suggested framework shown on the preceding page.

It is worth commenting on the upper set of five boxes on the above charts: Detect – Track/Analyze – Plan/Target/Task – Create Effects – Assess Results. All of these functions are critical to force application, but the first three and the last one all relate to Battlespace Awareness and Command & Control. *The focus of the force application JFC should be on generating effects through fires (including offensive information operations) and maneuver.*

## Capabilities and Attributes

- Capabilities
  - As expressed, not really capabilities for action but abstract qualities (e.g., “predictive,” “synchronized” “battlespace freedom of action”)
  - Better expressed as “Ability to ...”
  - FA concept will have to carry many capabilities relating to operations – may want to follow Protection concept approach of establishing key sub-areas
- Attributes: None, other than “Attributes of JOpsC”
  - Described elsewhere
  - Not needed in this concept
  - Not “testable or measurable characteristics that describe some aspect of a system or capability”\*

DART

\* CJCSI 3170.01C, p. GL-4

8

As described in the paper, the so-called “capabilities” are not really actionable capabilities but abstract qualities more akin to attributes. With some work they might be turned into capabilities. Generally, a capability ought to be phrased as “The ability to ...”

Because force application must cover a large space, it might be helpful to organize it into “capability areas” in much the same way that the Protection did. The components of force application that are finally decided on would be the natural capability areas.

There is no discussion of attributes other than the “Attributes of the JOpsC” discussed earlier. This discussion was generally too generic to be of much use. Attributes ought to be derived from capabilities, as “testable or measurable characteristics” of those capabilities.

## Potential Incompatibilities with Other Concepts

- Does not account for effects-based approach of MCO concept



9

This paper does not account for the effects-based approach of the MCO concept. This is not to say that this paper needs to adopt “effects” language, but since this is such a major part of the MCO concept, the two need to be resolved somehow.

## Applicability Across Range of Military Operations

- Does not apply equally across ROMO
  - Applies to JOCs to the extent that combat does



10

This concept does *not* apply equally across the range of military operations, but then it *should* not. This concept appropriately focuses on combat, and therefore applies across the range of military operations to the extent that combat does.

## Qualities of a Good Concept

- Serves stated purpose
- Stated in language that can be acted upon
- Accepts burden of proof
- Differentiated
- Explicit relationship to other concepts
- Written in clear/precise language
- Concise
- Robust
- Promotes debate



11

Currently the concept is still in an early developmental stage and exhibits all the signs of a rough draft. As the authors come to closure on the content of the concept paper, the language will have to be tightened and refined. At that point, the opportunity will exist to make the concept clearer and more concise, with the result that the document will provide guidance that can be acted upon.

## **Issues to Consider in Concept Refinement & Experimentation**

- **Feasibility**
- **Adversary Counters**
- **Potential Failure Modes**
- **Possible Unintended Effects**



12

The following slides are the result of a red teaming session designed to probe for potential weaknesses in or issues with respect to the concept. The points raised are not necessarily issues that need to be addressed immediately in the concept paper, if at all. In fact, the authors may feel they have addressed these issues. The DART's intent was simply to raise issues—potential failure modes and unintended consequences and likely adversary counters—which may come up during experimentation, so that the authors can begin thinking about those issues as they continue to refine the concepts.

## Feasibility Concerns

- Fiscal—the lift required to do base to objective maneuver in any meaningful way
- Requirement of intermediate staging bases
- Reliance on allies to be able to “put the pieces in place”



13

The largest feasibility issue is the capability for base-to-objective maneuver, or “operational maneuver from strategic distance.” It is an important idea, and indeed may warrant more detailed explication in the concept. However, we note that the capability may not be achievable by 2015. The amount of lift required to conduct a large scale maneuver of this type would require significant investment in lift assets.

## Potential Adversary Counters

- Attack the home bases
  - Disrupt the base to objective maneuver at the base
- Attack the logistical bases
  - Ground forces that make “base to objective maneuver” will be lighter and have less supplies, thus requiring in-theater logistics bases
  - Or just attack the lighter forces as they arrive
- Split the allies to prevent the US having intermediate staging bases
- Go underground, melt into the urban areas
- (Other counters will depend on next level of detail in concept)



14

Melting into urban areas seems like an obvious and likely a common adversary response which the concept will have to address. Attacking home bases has implication for the homeland security concept.

## Potential Failure Modes

- The US grows impatient, adversary takes a long term view
  - US takes casualties
  - US imposes civilian casualties, loses support abroad and at home
  - Other US commitments take precedence



15

The noted failure mode is not so much a weakness of the concept as it is a potential failure mode for U.S. combat operations in general. It does, however, impose the requirement to be able to apply force while minimizing casualties and collateral damage.

## Possible Unintended Effects

- Potential adversaries strike at CONUS bases in order to prevent base-to-objective maneuver
- Potential adversaries invest more heavily in anti-access, e.g., WMD, mines, MANPADs, etc.
- Reliance on allies to put the pieces in place exposes the US to political blackmail



16

Potential enemies investing in anti-access capabilities seems like a foreseeable outcome that this concept must account for. In other words, defeating anti-access must be an element of this concept.

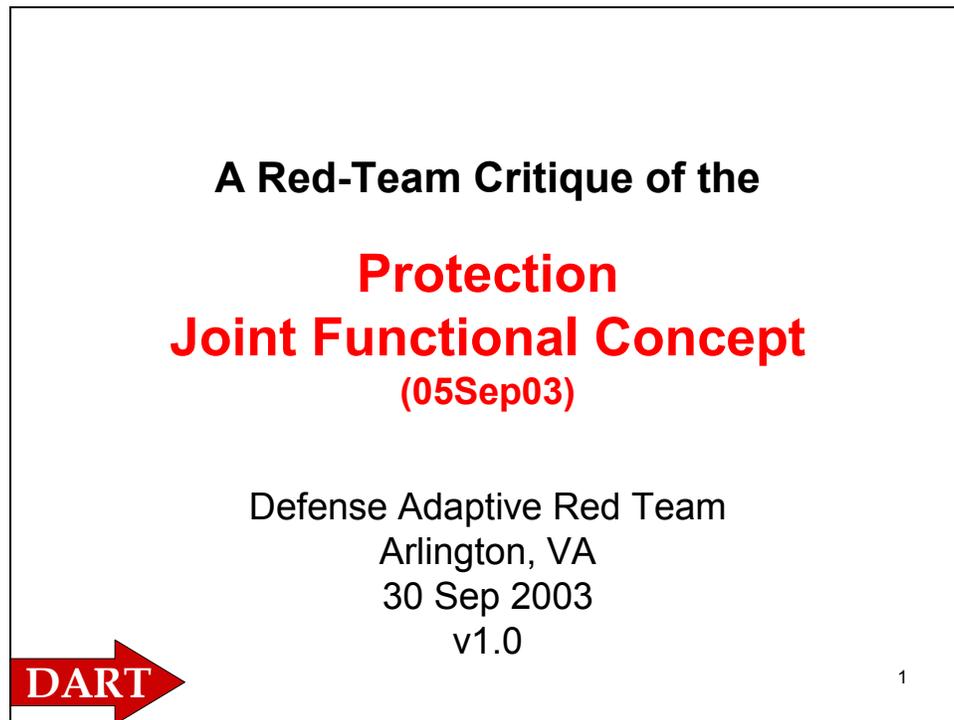
**APPENDIX 6.**

**DART REVIEW OF THE**

**PROTECTION**

**JOINT FUNCTIONAL CONCEPT**

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Note: Two versions of the Protection concept were provided for review. Although much of the substance of the two drafts was the same, these comments are based on the primary version. Comments near the end of this critique address the revised version and how it differs from the primary version.

This concept has one of the most difficult problem spaces because of overlap with numerous other concepts:

- Deterrence is one of the steps in the protection “network”
- Protection is one of the major means of providing HLS
- Force Application covers prevention, another step in the protection “network”
- Battlespace Awareness provides detection and assessment, while C2 provides warning.

While the concept paper generally handles these overlaps, a tighter explanation of the relationships among these concepts could help.

The big idea could be fleshed out in greater detail, in more concrete terms, and with greater differentiation. This would support an improved description of required capabilities.

## Purpose

- Fine
  - Fig. 1 (ROMO) unnecessary background
  - Footnote: “The term ‘Joint Force’ in its broadest sense refers to the Armed Forces of the U.S. The term joint force (lower case) refers to an element ...” (p. 6)—why not just use *U.S. Armed Forces* to refer to the former and reserve *joint force* for the latter?

## Scope

- Mostly unnecessary
  - Fig. 2 (hierarchy) unnecessary background
  - 2.d. (“provides overarching guidance”) belongs in purpose



2

### Purpose

As with about half of the nine joint concepts reviewed, this one included the standard range of military operations (ROMO) diagram. This is unnecessary. The range of military operations is described in the *Joint Operations Concepts* and need not be repeated here.

Point of clarity with respect to the footnote on p. 6: The paper distinguishes between a capitalized version and lower-case version of “joint force.” If uppercase “Joint Force” is intended to mean “Armed Forces of the United States,” we recommend use of that term instead.

### Scope

Fig. 2 and the accompanying text about the concept hierarchy are not essential for providing context, and could be moved to an appendix or deleted.

Para. 2.d: “The PJFC also provides overarching guidance to DOD Agencies/COCOMS/Services to facilitate enterprise-wide examination, experimentation, and creation of a capabilities-based analytical construct that supports programmatic decision-making.” This is listed under Scope, but better fits under Purpose.

## Timeframe, Assumptions & Risks

- Timeframe: Fine
- Assumptions: Mostly have little bearing on whether concept is valid or not
- Risks: Mostly operational risks vice risks of the concept
  - 4.c. Risk of micromanagement: Does this concept encourage micromanagement?
  - 4.d. Interoperability issue: Seems like part of the problem description rather than a risk of the concept
  - 4.e. NCW not referenced as approved concept in JOpsC or JOCs
  - 4.g. DOD acquisition struggling to keep pace: Is this concept possibly technologically too advanced? (Don't see a reliance on advanced technology)
  - Does this concept leave us exposed in the near term while preparing for 2015?



3

The time horizon of 2015 is explicitly stated.

The concept provides a fairly lengthy list of assumptions. Most of the statements are predictions about the future that seem reasonable. But most of them have little contingent effect on the concept. In other words, in most cases, if the assumptions do not turn out to be true there is little if any impact on the validity of the concept.

Most of the risks identified in the concept seem to be operational risks versus concept risks. That is, they are risks of military action in general, and not risks that would be incurred if using this concept for protection as opposed to some different concept. Specific comments with respect to risks:

4.c, the risk of micromanagement. Given the capability of modern information technology, micromanagement seems to be a significant risk, but it is not clear that this risk is any greater with this concept than with any other protection concept—at least any concept that relies heavily on information technology. If the authors mean that the risk of micromanagement *is* specific to this concept, the case should be made more clearly.

4.d, interoperability. The challenge of interoperability, which strikes the DART as very real, seems more like an element of the problem space that the concept must deal with rather than a risk of the concept. It therefore probably better fits under the description of the military problem.

4.e, Network-Centric Warfare (NCW). The DART understanding is that NCW is not an approved term. As a result, it does not have an agreed meaning to all readers. It is possible to make the point about the importance of a networked system without referencing this term. Alternatively, the concept paper should provide a definition.

4.g, DOD acquisition possibly struggling to keep pace with technology development. The precise meaning of this statement, and its implications for the concept's validity, are unclear.

## Description of the Problem

- Very comprehensive survey of the likely elements of the future operational environment
- But not clear as to implications specifically for the protection function
- Unclear: Does “protection” apply to forces protecting themselves, or does it also apply to forces protecting populations, property, economies, etc., which seem like an operational mission vice a function?
- Lacking: What are the types of actions joint forces are likely to have to protect against in 2015?



4

The paper provides a very comprehensive description (taken from the Institute for Defense Analyses) of the likely elements of the future operational environment, to include the types of enemies the U.S. is likely to face, but the specific implications for the protection concept are unclear. This section should pose the problem that the rest of the paper will solve. As a result, it should provide a compelling exposition of the types of attacks that joint forces will likely have to protect against in 2015.

It is unclear from the description in this section and elsewhere where protection applies only to joint forces protecting themselves against attack or also includes joint forces defending populations, property, economies, etc. The latter seems to be more of an operational defense mission than an ongoing protection function. E.g., see para. 1.a(7) in Chapter 3:

“Adversary objectives in attacking personnel, physical assets and information may include: inflicting large numbers of casualties; destroying politically significant property; disrupting the U.S economy; impeding military force deployments, logistical support and C2; and, creating psychological shock to reduce public support for U.S. policies, both in the homeland and abroad.” (p. 13)

This question should be cleared up one way or the other. It has implications for the concept.

## Description of the Problem (Cont'd)

- Relationship to StratDet and HLS problem spaces
  - Though outside the protection function, StratDet contributes to protection by dissuading potential attackers
  - Protection is a major means by which much of HLS is achieved?



5

This concept seems to have particularly tight linkages to strategic deterrence and homeland security in particular. The paper should make the point that although strategic deterrence is outside the realm of the protection function, deterrence contributes to protection by discouraging potential attackers. In fact, deterrence is listed as one of the steps in protection. The paper should also make the point that protection is one of the primary means by which homeland security is accomplished. Neither requires extensive explanation, but the points should be made clearly.

## Synopsis of the Central Idea

- “Chapter 4. Synopsis of the Central Idea” does not provide much of an idea
  - “Defining Protection”
    - Ought to be defined initially in introduction
    - Not an *ability* but a process, function, set of activities
  - Fig. 3 (20<sup>th</sup> vs. 21<sup>st</sup> Century) not helpful: recommend deleting
  - Much of the information in section 2.b. (especially under discussion of MCO) better fits as part of the problem description



6

Chapter 4, in which we would expect to see the central idea primarily described, does not provide much of an idea. The section starts by defining protection; it is recommended that this definition be provided in the introduction to the paper, so that readers understand the topic of the paper.)

Protection is defined as the “ability ... to *protect*,” which is defining the term in terms of itself. Another verb should be chosen. Possibilities include “secure” or “prevent or mitigate.”

Protection is defined as an *ability*. We believe it is better defined in terms of activity or process. For example, in Joint Pub 102, security is defined as “measures taken by a military unit ...” Force protection is defined as “actions taken to prevent or mitigate hostile actions ...” Either of these approaches would seem more appropriate. (Capabilities, rather than concepts, should be expressed in terms of “the ability to...”)

The DART did not find helpful Fig. 3, which compares the characteristics of 20th and 21st Century warfare, and concludes with the generic attributes already established in the *Joint Operations Concepts* paper.

Much of the information in para. 2.b.(1)(a), “Major Combat Operations,” seemed more like elements of the military problem than part of the central idea, and it better belongs in that section.

## Synopsis of the Central Idea (Cont'd)

- The protection process is actually described in 5.1, “The Protection Network in 2015”
- Better described as a process than a network
- Describe phases in greater detail, specifying which phases are covered by other concepts
  - Detect and Assess (BA)—Assuming no separate protection information system?
  - Warning (C2?)—Assuming no protection warning system
  - Deter (StratDet)
  - Prevent , i.e. preempt (FA?)
  - **Defend**
  - **Recover**
- Emphasis on Defend & Recover phases?

DART

7

Section 5.1, “The Protection Network in 2015” provides some description of the “how” for the concept. This description could be expanded. A consideration of how this concept differs from the current approach to protection should be included.

In the description of the protection process, the point can be made that most of the steps or phases will actually be addressed by other concepts. The Detect and Assess phase is a function of battlespace awareness. The Warning phase is presumably a function of C2. The Deter phase is described by the Strategic Deterrence concept. The Prevent phase (i.e., preemption) is a function of force application.

The only phases that are not covered by other concepts are Defend and Recover (and even the latter shares much in common with the Civil Support section of the Homeland Security concept). Therefore, it is recommended that these phases be described in greater detail than the others.

## Synopsis of the Central Idea (Cont'd)

- Emphasis on Defend & Recover phases as the two phases unique to protection?
- Compared to last draft, why has description of Warning phase dropped out?
- Fuller description of physical means of Defend phase
- Little reference to protection of info, which seems like it would warrant discussion



8

The previous draft of this concept included a heavy emphasis on the Warning phase. In fact, at the first workshop the DART criticized the paper as being a warning concept rather than a protection concept. Much of that material has been eliminated in this draft. However, because warning is still an important part of the Protection concept, we recommend somewhat more discussion of this issue than remains in the current draft.

If the next draft of the paper addresses “Defend and Recover” in more detail, as we have recommended, it would be appropriate to provide more detail various means of active and passive defense.

The paper makes little reference to the protection of information, which may be a topic of great concern in the 2015 time frame. If information protection is an element of this concept, it warrants discussion; if not, a reference to the appropriate concept would be useful.

## Synopsis of the Central Idea (Possible ideas)\*

- Based on persistent detection of threats in the battlespace and an alert system that disseminates accurate and timely warnings which will allow the joint force to protect itself against specific potential attacks.
- This protection takes the form of a diverse variety of active and passive measures in all domains (aerospace, land, sea and cyberspace): weapons, armor, camouflage, stealth, pre-emption, deception, etc.
- These measures are layered—redundant and concentric.
- Protection tailored to each situation out of the full range of possible measures.
- Measures are linked to form a network.
- Protection generally follows the process: anticipate, detect, assess, warn, deter/prevent/defend and recover.

 DART

9

This slide is taken directly from the DART critique of the earlier draft of the protection concept reviewed at the Quick-Look Workshop in July. The intent of this slide at that time was to suggest substantive ideas that could be included in the synopsis of the central idea. Some of those ideas may still be of use, and the slide is included again as food for thought.

## Capabilities and Attributes

- No capabilities listed
- 5.2, “Overarching Protection Attributes,” are generic attributes taken from JOpsC rather than “testable or measurable characteristics that describe some aspect of a capability”\*
  - Not very helpful
- 5.3, “Describing Protection Functions and Their Attributes,” seem more like the kinds of capabilities and attributes needed.

 DART

\* CJCSI 3170.01C, p. GL-4

10

The paper provides no substantive discussion of required protection capabilities. It does, in section 5.2, provide a discussion of “Overarching Protection Attributes,” but these are generic attributes taken from the *Joint Operations Concepts* concept. They are not, per the guidance, “testable or measurable characteristics that describe some aspect of a capability,” since they are independent of any capability. The discussion is not very helpful in terms of providing guidance for force development.

The following section, “Describing Protection Functions and Their Attributes,” does however get to the point. This discussion seems to get more to the kinds of capabilities and attributes that will be needed.

## Potential Incompatibilities with Other Concepts

- None identified, despite overlap



11

The DART identified no incompatibilities or inconsistencies with respect to other concept papers, either in content or form. This is notable given the tight interdependencies this concept has with several others.

## **Applicability Across Range of Military Operations**

- Seems to apply broadly



12

As written this concept applies broadly across the range of military operations. The DART identified no limitations to its usefulness in that respect.

## Qualities of a Good Concept

- Serves stated purpose
- Stated in language that can be acted upon
- Accepts burden of proof
- Differentiated
  - Explicit relationship to other concepts
- Written in clear/precise language
  - Concise
  - Robust
  - Promotes debate



13

This slide lists the qualities of a good concept provided in the guidance. Areas to concentrate on during rewriting are:

- Differentiating this concept from the current way of performing protection. What is this concept adding to protection as currently performed? How might protection be qualitatively better in 2015 as the result of this concept?
- Clarity and precision of language, especially in defining and describing the protection function itself and its components and processes.
- Clear statements of capabilities and attributes.

## Revised Version

- Seems more to the point, more concise
- Eliminates a lot of unnecessary material
- Although also eliminates description of problem to be solved
- Not much substantive difference, except a greater emphasis on MCA/MCE
  - Are these meant to replace capabilities and attributes as guidance for force development?



14

These comments refer to the revised version of the concept.

This version was quite a bit shorter than the primary version. As a result, it was more to the point, eliminating much unnecessary material. This had the effect of taking the reader more quickly to the important content. However, the revised version also eliminated the description of the military problem, which is an essential element of the paper since it establishes the problem that the concept will solve.

## Revised Version (Cont'd)

- Assumptions: Again, most not significant to concept
  - “The lack of tactical warning inherent in asymmetric threat ...” (p. 7)—belongs in problem description and seems like key idea worthy of greater discussion
- Risks: Most are operational risks vice concept risks



15

As in the primary version, most of the assumptions were not significant to the concept one way or the other. On p. 7, the revised version introduced an interesting point (which had been in the earlier draft of the primary version, but had been eliminated in this draft) about the “lack of tactical warning inherent in asymmetric threats ...” This seemed like an element of the military problem worth discussing rather than treating as an assumption and not dealing with again.

As in the primary draft, most of the risks were operational vice concept risks.

## Revised Version (Cont'd)

- “The Protection Network in 2015”
  - “Currently the protection mission area does not capitalize on the advantages of a fully integrated system of functions that provides the synergy that provides the joint force with seamless protection. This results in a loss of efficiencies and effectiveness.” (p. 9)
    - **Seems to differentiate; could use explanation & examples**
  - “Future joint protection is achieved through the collective effort of ‘networked’ functions across the air, land, sea, space and cyber domains. This networked approach allows for the continuous interaction of functions, constant exchange of fused intelligence information, and timely responses to identified threats, providing the JF with the required protection across the full ROMO.” (pp. 9-10)
    - **How does this “networked approach” work and why is it significant?**

**DART** 

16

In the section on “The Protection Network in 2015,” the revised version does introduce two passages, which are not in the primary version, that seem to speak to how protection could be different in 2015. These ideas could be further developed, with explanations of both “how” and “why important.”

## Revised Version (Cont'd)

- “Chapter 2. Mission Capability Areas”
  - 2.1, “Enablers of Protection ...”
    - Generic and generally not very helpful
    - Four MCAs vice seven in
  - 2.2, “Utilizing Existing MCA and MCE Concepts and Architectures”
    - More to the point
    - Actionable
    - Though not based on any capabilities developed in the concept

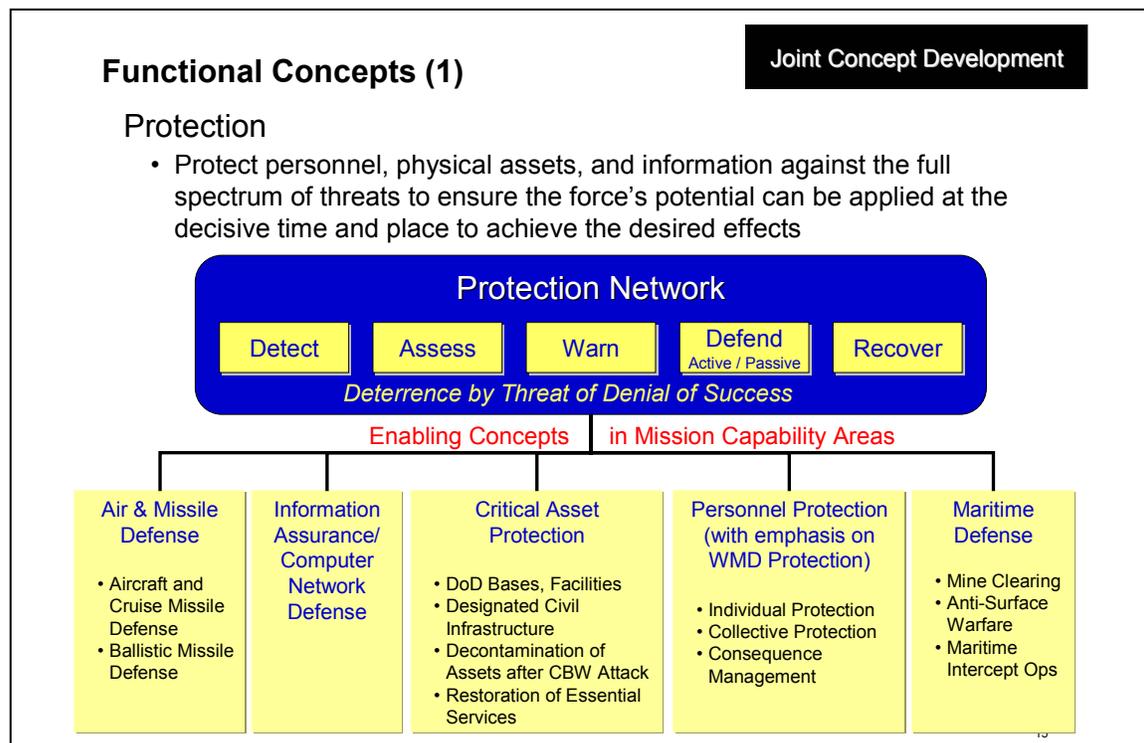


DART

17

The discussion of Mission Capability Areas (Chapter 2) was a mixed bag. Section 2.1, “Enablers of Protection,” was mostly generic and did not seem very helpful as guidance for force development. The DART noticed the list of seven MCAs in the primary draft was trimmed to four in this draft. The significance of this change was unclear.

More useful was the discussion on section 2.2, “Utilizing Existing MCA and MCE Concepts and Architectures,” which seemed more to the point and seemed to provide actionable guidance. These MCAs and MCEs, of course, pre-date the concept, and it is clear from the reading that they do not derive from the concept. This does not mean that they are not useful. It may mean that some reverse engineering may be necessary to show how the existing MCAs and MCEs are consistent with the requirements that emerge from the problem description and subsequent concept.



The Protection JFC established four capability areas: air and missile defense, critical asset protection, personnel protection, and WMD protection.

A workshop participant, Dr. Edward L. Warner, proposed the alternative mission areas shown above. Relative to the current JFC:

- Air and missile defense, and critical asset protection remain essentially the same.
- Personnel protection and WMD protection are combined.
- Information assurance/computer network defense and maritime defense are added.

In the view of the DART, information assurance/computer network defense and maritime defense both seem to fit in the Protection JFC.

With regard to personnel protection, either the current approach or that proposed by Dr. Warner should work. The critical question is whether there are enough unique capabilities associated with personnel protection that do not relate to WMD that it is worth breaking this area out separately.

## **Issues to Consider in Concept Refinement & Experimentation**

- **Feasibility**
- **Adversary Counters**
- **Potential Failure Modes**
- **Possible Unintended Effects**



18

The following slides are the result of a red teaming session designed to probe for potential weaknesses in or issues with respect to the concept. The points raised are not necessarily issues that need to be addressed immediately in the concept paper, if at all. In fact, the authors may feel they have addressed these issues. The DART's intent was simply to raise issues—potential failure modes and unintended consequences and likely adversary counters—which may come up during experimentation, so that the authors can begin thinking about those issues as they continue to refine the concepts.

## Feasibility Concerns

- Time Frame 2015: Can the DOD field a networked system in time?
- Bandwidth
- Fiscal Constraints
- Cooperation of other agencies (US/non-US) to get the information into the network.
- Access – will the right people have access to the right information in a timely manner?
- HUMINT – can the information be distributed without compromising HUMINT sources?
- Information pedigree – How good is it? How do you know? (Can this issue be integrated into network?)

DART

19

Most of the DART's feasibility concerns have to do with the technological feasibility of fielding a fully networked protection system by 2015, and with the cost of fielding such a system if it were technologically achievable.

A fully networked protection system will require that a significant amount of bandwidth be available to link the various elements in the system. The DART also points out that there will be fiscal constraints in implementing such a system.

## Adversary Counters

- **Reduce Signature:** Emphasize attacks (including weapons production) that create minimal observables (e.g., covert BW)
- **Go for Soft Spots:** Focus attack on supporting civilian personnel or infrastructure, either overseas or in CONUS.
- **Deception:** Conduct overt activities that lead US astray.
- **Focus Effort:** Concentrate attacks on key US/coalition nodes and/or focus efforts narrowly so that defenses are overwhelmed.
- **Exploit the Seams:** Exploit seams between defensive systems (e.g., SAMS and airborne interceptors)
- **Electronic Warfare:** Conduct cyber attack, or flood sensors with decoys and dazzlers to leave the US exposed to physical attack.
- **Attack from within:** Enlist aid of sympathizers within US military.



DART

20

These identify courses of action an adversary might be likely to try, whether they exploit weaknesses in the concept or not. Most of them have to do with trying to avoid detection by U.S. collection assets or by selecting targets of attack carefully based on the premise that the U.S. cannot protect equally everywhere.

## Potential Failure Modes

- US mirror images in threat assessment – reinforces what we would expect to see.
- Lack of host nation intel cooperation leaves key gaps
- Catastrophic network failure leaves force open to attack
- Low-Hi Mix
  - Adversary emphasizes low-tech threats – many available to small groups and individuals (e.g., some BW)
  - Some technologically savvy states and well-organized groups go high-tech (e.g., bio-engineered BW)



**DART**

21

If the protection system is to fail catastrophically, these are ways it might happen. They are not necessarily weaknesses in the concept. They may not even be factors under control of the joint force, but they are factors that concept developers should be aware of.

## Possible Unintended Effects

- Protection measures isolate deployed force from local populace, reducing information the force will need. US forces leave the perimeter and are exposed.
  - “We're easy targets. If they really want to get us they can.” Staff Sergeant Paul Anderson, in Afghanistan, (NY Times, Friday Sept 19<sup>th</sup> 2003)
- Or, less dramatically: Attention devoted to protection slows deployment or pace of operations.
- Or, at the other extreme: Protection is taken for granted and is not integrated into operational plans.



DART

22

Concept developers should be aware of potential unintended consequences or possible reactions to the concept or the protection system in general.

# **APPENDIX 7.**

## **DART REVIEW OF THE JOINT COMMAND & CONTROL JOINT FUNCTIONAL CONCEPT**

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**A Red-Team Critique of the**

**Joint Command and Control**  
**Joint Functional Concept**  
**(v0.6.6/05Sep03)**

Defense Adaptive Red Team  
Arlington, VA  
30 Sep 2003  
v1.0



1

The structure and language of this draft are much improved over the version DART reviewed for the first workshop. The concept is better on the exposition of a big idea, although it still needs work in this area. It is weak on actionable capabilities.

## Introduction

- Well organized overall
- Purpose: Fine
- Scope: Okay
- Assumptions: Okay
- Risks: Good; best example of concept-specific risks
- Time Frame: Not specifically stated, though inferred elsewhere

 DART

2

The introductory section of the paper is well-organized overall. The statement of purpose is fine. The time frame of the concept is contained within the Scope, which also includes an initial definition and even a very concise discussion of command and control.

### Assumptions

The Assumptions are a mixed bag. Many of them are insignificant to the concept, meaning that they do not necessarily invalidate the concept if untrue. Examples (all p. 3):

The DoD will continue to investigate, support, develop, acquire and invest in information technology.

There will be a management mechanism to continually integrate and assimilate technological advances and improve Joint C2 capabilities.

Successful military operations will continue to require highly qualified personnel, trained to specific standards and educated to function within a joint force.

Emerging technologies will have a significant impact on doctrine, organizations, training, material, leaders, personnel, and facilities initiatives. Actions affecting any one of these areas will impact the others, thus requiring close coordination.

Some of them could more properly be elements of the description of the military problem which the concept must solve. Examples (all p. 3):

“Global interests and responsibilities of the U.S. will endure and threats to those interests and responsibilities, or to our allies, will not disappear.”

“As potential adversaries will reap the benefits of the information revolution, the U.S. and its allies will be required to maintain information superiority.”

“Participation by the joint force in operations with civil authorities will likely increase in importance due to emerging threats to the U.S. homeland.”

“The joint force will continue to depend heavily upon coordination and synchronization with interagency and multinational partners.”

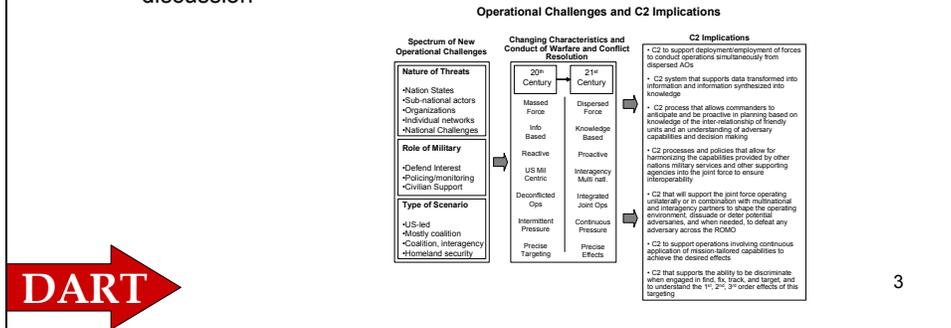
At least one is better stated as a requirement arising from the concept: “The Department of Defense (DoD) will undergo a change in culture designed to foster jointness and innovation in rapidly adapting to the changing future operating environment.” (p. 3)

### **Risks**

The description of risks is good. It is the best example of concept-specific risks in any of the concepts.

## Description of the Problem

- “2.2 The Changing Operating Environment”—generic without specific implications for C2
  - Table 1 not very useful
    - Arguable
    - Introduces a host of short-hand terms without explaining what they mean
- “2.3 Implications for C2”
  - The “21<sup>st</sup> Century characteristics” and “C2 Implications” from Fig. 1 are the essence of the problem; would like to see this fleshed out as a discussion



Section 2.2, “The Changing Operating Environment,” was not a very useful section. It was mostly generic without deriving specific implications for the C2 function. Likewise, Table 1 was not very helpful. It posits supposed differences in the character and conduct of 20th- versus 21st-Century warfare. Some of the characterizations are simplistic and arguable, and are likely to invite disagreement without providing much insight. The table also introduces numerous not-self-explanatory short-hand terms without explaining them. The result is a table that does not provide much useful information.

By comparison, Fig. 1, “Operational Challenges and C2 Implications,” from Section 2.3, “Implications for C2,” is much more useful and germane. Most interesting of this is the right half of the diagram, which lists the characteristics of 21st-Century warfare and the implications for C2. This is the essence of the description of the military problem. It could be developed further and written as a text passage, which would be richer than any table could be.

## Description of the Problem

- Purpose of “2.4 Top-Level Capabilities” unclear
  - If these are capabilities, they belong after the concept, not as part of the problem description
  - But they aren’t really capabilities; they are arbitrary domains
  - Not clear why this organization is necessary or helpful
- “2.5 The Need to Move from Industrial Age to Information Age C2”—okay
  - People may take issue with the Industrial Age description
  - Especially if portrayed in strongly negative terms



DART

4

Section 2.4, “Top-Level Capabilities,” was unclear in its purpose. If these are required capabilities, they ought to derive from the central idea. Why are they introduced as part of the problem description, before the central idea?

As it is, they are not capabilities, but rather, they are abstract domains, the purpose of which is not clear in reading the concept. Additionally, the Network-Centric Warfare concept similarly introduces three domains, but only one of which (cognitive) is the same while the other two of which are different. So the use of “domain” here is potentially confusing.

Section 2.5 describes “The Need to Move from Industrial Age to Information Age C2.” The Battlespace Awareness concept also took this approach. This approach is not required by the Terms of Reference, but in this case it generally works fairly well. A caution: It is often tempting to describe some unknown thing by comparing it to something better known. The danger is in trying to cast the new thing favorably by portraying the thing it is being compared to negatively. This can promote an either-or debate which is not beneficial to the ultimate objective. So, this approach is taken, it is important to be balanced in the portrayal of past operational practices.

## Synopsis of the Central Idea

- Basic idea: Be agile, which is done by putting everybody on a network
- Misses opportunity to envision powerful new way of performing C2; needs to be stronger, clearer
- Introduces OODA Loop as model, but does not explain C2 according to it.
- Instead, then introduces list of “basic functions” of C2 and maps them to OODA—doesn’t work
- “Commanders make decisions after reducing their uncertainty about the operational environment” (p. 12)—not necessarily true
- “Selecting a course of action consists of developing several alternatives, assessing the alternatives and then selecting the best one” (p. 14)—usually not true
  - Future C2 concept ought to explore more natural, faster models of decision making

DART

5

The central idea seems to be to be agile, which is done by connecting everybody via a network. There is something to this. Simply networking a large number of decision makers can result in some emergent improvements, but this misses the opportunity to provide a powerful description of new ways to perform C2. We can envision what some of the emergent properties might be, but the paper does not capture them as strongly as it could.

A key element of capturing the “how” of C2 is a description of the C2 process. The paper introduces the OODA loop as a model, but quickly drops it and does not use it to actually discuss the performance of C2. Instead, it lists “basic functions” of C2, which it tries to map back to OODA. The “basic functions” are not a model, since they do not capture process, but are merely a list. It would be preferable to rely on one model throughout and describe C2 according to it.

The paper makes several statements about the nature of decision making (see above) that are not necessarily true given recent research. A concept for future C2 ought not to assume traditional decision-making models, but should be familiar with emerging research in “naturalistic decision making.” See some of Dr. Gary A. Klein’s work.

## Synopsis of Central Idea (Cont'd)

- Also introduces list of “Collaborative C2 Functions”—doesn’t work very well
- Collaboration ought to be described within context of C2 process (OODA); not as a list
  - “The collaborative C2 functions give the C2 system its agility and facilitate command by influence rather than command by direction or plan”—specific concepts that go unexplained\*
  - Sharing info/awareness/understanding construct seems artificial; differences unclear
  - “Collaboratively Deciding: Collaborative decisions are based on the decisions being made by others.”
    - Awkward term
    - No, those are coordinated decisions
    - Collaborative decisions are those made by multiple decision makers working together



\*Thomas Czerwinski, “Command and Control at the Crossroads,”  
*Parameters*, 1996

6

The paper then goes on to list “collaborative C2 functions,” and again the result is less than satisfying. This is yet another list, without any correlation to the basic functions or OODA, requiring another act of translation or synthesis on the part of the reader. Clearly collaboration is an essential element of this concept. It would be preferable to have collaboration described within the context of the C2 process (i.e., OODA loop)

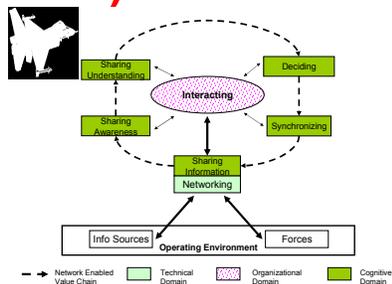
The paper uses three terms—command by influence, by direction and by plan—introduced in a landmark article: Thomas Czerwinski, “Command and Control at the Crossroads,” *Parameters*, Autumn 1996. Czerwinski assigned those terms very specific meaning. The paper does not cite the article or explain the terms. It should do both.

The sharing info-sharing awareness-sharing understanding construct used in this section seemed unnecessarily complicated and unnecessary to the argument, especially since the distinctions between the levels seemed somewhat arbitrary.

Finally, the paper introduces “collaboratively deciding,” an awkward phrase with unclear meaning. The paper defines this as “decisions [that] are based on the decisions being made by others.” This seems more like coordinated or informed decisions, and in any event people have been deciding this way for ages. There seems little new there. A more logical definition might be “decisions made by multiple decision makers working together.” This seems like a potentially more powerful idea with more fundamental implications for the way C2 is performed. The authors should decide how revolutionary they want to be in their concept. Whatever they decide, a better term is probably in order.

## Synopsis of Central Idea (Cont'd)

- Fig. 5, “Collaborative C2 Functions and Their Relationship ...”—not helpful
- Ought to describe collaboration within context of the broader C2 process (OODA)



7

Fig. 5, “Collaborative C2 Functions and Their Relationship to the Capabilities,” does not seem to provide much useful information. It does not capture a collaborative process. The objective again should be to capture collaboration within the context of the broader C2 process.

## Synopsis of Central Idea (Cont'd)

- “3.2.3 Joint C2 in 2015”—okay
  - “The ultimate goal is to have a shared holistic view of the operational environment that is customized to the unique demands of each commander” (p. 18)—is it shared or customized
  - “The decision to select a particular course of action remains with the individual” (p. 18)—seems to contradict “collaborative deciding”



8

Section 3.2.3, “Joint C2 in 2015,” is a satisfactory section, although it clearly is composed from several separate sources. Anything that can be done to synthesize the discussion into a more cohesive whole would be helpful.

The section introduces the idea of a “shared, holistic view” (clearly a reference to the Common Operational Picture, or COP) that is also “customizable.” This point is made several times. There is a problem between “shared” and “customizable.” If a view is shared by everybody, how can it be customizable for anybody? Maybe the more correct idea is this: Everybody has access to a common data pool, but from that common data pool each decision maker creates a customized visualization based on his own needs.

On p. 18, the paper states: “The decision to select a particular course of action remains with the individual.” This would seem to contradict the common understanding of collaborative decision making.

## Capabilities and Attributes

- There are no capabilities described
  - There are abstract “domains” only
  - Not actionable
- Attributes:
  - Very broad and abstract
  - Not “testable or measurable characteristics that describe some aspect of a system or capability”\*



\* CJCSI 3170.01C, p. GL-4

9

The paper contains no meaningful discussion of capabilities. It includes the “top-level capabilities,” but, as discussed, these are really abstract domains rather than actionable sets of capabilities.

The discussion of attributes starts with one “overarching” attribute—agility—and then lists nine more derivative ones. The discussion was generally fairly broad and abstract rather than “testable or measurable characteristics that describe some aspect of a system or capability.”

With some editing, the lists of “basic functions” and “collaborative C2 functions” could provide the basis for some capabilities. This might be a place to start.

## Potential Incompatibilities with Other Concepts

- Does not account for effects-based approach of MCO concept



10

This concept does not account for the effects-based approach which figures prominently in the MCO concept and is essentially a C2 concept. This does not mean that the C2 concept must adopt effects-based approach; but it does mean that, if the concepts are to hold together as a cohesive whole, the issue should be resolved one way or another.

Also, this concept does not use the term common operational picture (COP) or global information grid (GIG), although others do.

## **Applicability Across Range of Military Operations**

- Seems fully applicable



11

As written this concept applies broadly across the range of military operations. The DART identified no limitations to its usefulness in that respect.

## Qualities of a Good Concept

- Serves stated purpose
- Stated in language that can be acted upon
- Accepts burden of proof
- Differentiated
- Explicit relationship to other concepts
- ✦ Written in clear/precise language
- ✦ Concise
- Robust
- Promotes debate



12

The language and presentation of the concept is much improved over the previous draft, but it can still stand a general tightening of the language.

## **Issues to Consider in Concept Refinement & Experimentation**

- **Feasibility**
- **Adversary Counters**
- **Potential Failure Modes**
- **Possible Unintended Effects**



13

The following slides are the result of a red teaming session designed to probe for potential weaknesses in or issues with respect to the concept. The points raised are not necessarily issues that need to be addressed immediately in the concept paper, if at all. In fact, the authors may feel they have addressed these issues. The DART's intent was simply to raise issues—potential failure modes and unintended consequences and likely adversary counters—which may come up during experimentation, so that the authors can begin thinking about those issues as they continue to refine the concepts.

## Feasibility Concerns

- Costs to develop required systems and integrate with legacy systems.
- Time Frame 2015...DoD better get moving.
- Technical problems with distributed C2 (take time, \$\$)
  - Bandwidth
  - Communications reliability and availability (e.g., urban canyons)
- Requires changes in military culture (acknowledged) – implications for education, doctrine, training, recruitment.
- Coalition operations – widening the capability gap between US forces and allies?
- Hot, cold, wet, dirty – how will systems cope with broad range of environments?



14

The costs of integrating the developing technology with legacy systems could turn out to be much greater than anticipated. This is going to be a tough technical problem to solve by 2015 especially with regards to bandwidth constraints, and communications reliability.

The biggest issue with respect to coalition operations might be multi-level security. Because of security concerns, it may be difficult to get coalition partners fully integrated into the network.

## Adversary Counters

- **Network Attack:** e.g.,
  - Electronic jamming of key nodes
  - Spamming or cyber attack on the network
  - Spoofing the network by sending false data – biggest impact may be causing users to lose confidence in system.
  - Insider threats, including coalition personnel
- **Network Exploitation:**
  - Many nodes = many chances for compromise
  - Sympathetic personnel with access to the network pass intelligence
- **Distributed Ops & Mission Orders:** Use distributed operations and mission-type orders to stay inside the decision cycle of US forces employing this concept.



15

These identify courses of action an adversary might be likely to try, whether they exploit weaknesses in the concept or not. Most of them have to do with attacks on the collaborative network, whether by electronic jamming, or sending false data over the network.

The DART points out that an adversary using extreme types of mission orders would be able to stay inside the decision cycle of US force using the command and control process outlined in the concept.

## Potential Failure Modes

- **Decision by Committee:** Collaboration results in decision by committee, reflecting compromise solutions.
- **Dominant Personality:** A strong personality (commander or other) dominates collaboration process, suppressing other views.
- **Never-Ending Meetings:** Collaborative decisions become a never-ending committee meeting. Decision-making is slowed rather than accelerated. Commanders spend their time collaborating, don't have time to reflect on the big picture and don't lead their units.
- **Security:** Security consciousness limits access to information and shuts down collaboration processes.
- **Excessive Formalization:** The new-found capability is used to formalize traditional C2 processes, making them more cumbersome and time consuming.



16

If the C2 system were to fail to deliver on its potential, these are ways it might happen. They are not necessarily weaknesses in the concept. They may not even be factors under control of the joint force, but they are factors that concept developers should be aware of.

## Possible Unintended Effects

- **Lost art of command:** Commanders are trained to rely on results from collaborative processes and decision aids vs. asking the hard questions and applying their judgment.
- **Reduced ability to cope with uncertainty:** The system trains commanders and staff to expect certainty, and they are paralyzed (or just make bad decisions) without it.
- **Micromanagement:** New technologies allow for skip echelon intervention. Higher commander's micromanagement make lower echelon commanders hesitant in their actions.
- **Over reliance on the system:** Commanders and staffs lose the ability to conduct traditional C2 when the system has a technical failure.
- **Logistical burden:** Larger requirement for electricity increases logistical burden – complicated further by distributed operations.
- **Watch the action vs. do the job:** Commanders and staff track the most interesting issues of the moment, neglecting long-range planning, other tasks.



DART

17

Concept developers should be aware of potential unintended consequences or possible reactions to the concept in general. Some of these unintended effects could be offset in the process of implementation of the concept. For example, the problem of a reduced ability of commanders and staff to cope with uncertainty might be offset to some degree by appropriate education and training.

# **APPENDIX 8.**

## **DART REVIEW OF THE BATTLESPACE AWARENESS JOINT FUNCTIONAL CONCEPT**

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**A Red-Team Critique of the  
Battlespace Awareness  
Joint Functional Concept  
(05Sep03)**

Defense Adaptive Red Team  
Arlington, VA  
30 Sep 2003  
v1.0



1

This concept has eliminated much of the jargon, acronyms and buzzwords which characterized the previous draft. While much improved, it could still stand work on clarity.

This is an example of a concept paper that seems to be well researched and is familiar with current technology trends, etc.

It is still struggling with finding a compelling description of the big idea, however. In some places it reads like a collection of disparate program ideas in search of a unifying theme.

## Purpose

- Good

## Scope and Portfolio

- Scope: Includes time frame.
- Portfolio:
  - Don't understand the significance of this organization; doesn't seem to carry through the rest of the document
  - Content seems to belong under discussion of the substance of the content rather than in the introduction



2

### **Purpose**

The purpose statement is good.

### **Scope and Portfolio**

The Scope is a nice, concise statement of the space the concept paper will fill, including the time frame of the concept. An initial concise definition of battlespace awareness would be helpful here.

The Portfolio discussion was confusing. The four-part organization of the portfolio does not seem to carry through the rest of the paper and does not add anything to the concept. The discussion of the elements is mostly substantive and better belongs in the appropriate part of the synopsis of the concept. In its current location, it is an obstacle to getting to the main point of the paper.

## Overview of Battlespace Awareness Functional Concept

- No concise definition of BA (which would belong in the intro section)
- Much of the discussion better belongs later, in the discussion of the big idea

## Background & Guidance

- Mostly unnecessary
- Not necessary to justify the concept
- Drop or move to appendix?



3

### Overview

In an “Overview” section we would expect to see a concise definition of the topic, but there is none. In fact, battlespace awareness is defined nowhere in the document. The section gets to a level of detail that better fits with the later discussion of the central idea. While it is a very good idea to introduce the concept very briefly up front to set the stage, this discussion goes into a little more detail than is necessary here.

### Background & Guidance

Most of this section is unnecessary background information which can be eliminated altogether, or moved to an appendix. The citing of numerous sources of guidance almost comes off as trying to justify the concept. There is no need to justify the concept.

## Assumptions

- First one (“Advances in technologies ...will provide opportunities ... to transform ...,” p. 11) fairly obvious but pretty important
- General assumptions about nature of enemy, if they impact the concept, belong in description of the problem

## Risks

- Mostly pretty good and specific to the concept (especially in micro-management and reliance on technology and infrastructure)
- Better treated as a discussion than a table



4

### Assumptions

The first assumption, while fairly obvious, is truly a necessary condition. The description of assumptions about the nature of possible enemies better fits in the description of the problem. The characteristics of possible enemies do not invalidate the concept if not true, but they do help describe the nature of the problem that must be solved.

### Risks

The discussion of risks is generally good, especially the risks of micromanagement and over-reliance on technology and infrastructure. They are risks specifically of the concept. They might be more powerfully explained as text rather than as a table (or in addition to the table); no table can capture the richness of a good description.

## Description of the Problem

- “2.1 Shortcomings in the Mission Area”
  - not called for in guidance, but it works
  - “BA’s ability to collect information far outweighs its ability to process, exploit, disseminate and utilize it” (p. 14)—given emphasis on sensors, seems like a risk of this concept as much as a current shortcoming
- “2.2 Threat Areas and Technology Trends”
  - Generic without implications for BA
  - Likewise Table 2-1 (though thorough)
  - Should describe the problem that BA must solve

DART

5

The guidance does not call for a discussion of current shortcomings, but section 2.1 on that subject works pretty well. The statement on p. 17 about the ability to collect outpacing the ability to process seems like a might be a risk of this concept, given the concept’s emphasis on sensors and current technology trends which seem to indicate a potential breakthrough in sensor technology.

Section 2.2, “Threat Areas and Technology Trends,” is not very useful. It provides a fairly generic description of the future without deriving any specific implication for battlespace awareness. This criticism applies also to Table 2-1. What is needed is a compelling description of the problem that battlespace awareness must solve in 2015.

## Description of the Military Problem (Possible ideas)

- What are the characteristics of the future operating environment that will directly affect battlespace awareness?
  - Wide variety of target activities with differing signatures and observables
  - Masked by cities and populations
  - “Deep” targets
  - Possible stealth
  - Fleeting targets with requirement for rapid assessment
  - High tempo of support required
  - Continuous pressure against enemy
  - Interagency/coalition ops
  - Information assurance required

 DART

6

This slide is taken directly from the critique of the previous draft of this concept at the “Quick-Look” Workshop in July. The intent behind it was to suggest some ideas of what could be elements of the battlespace awareness problem in 2015. Some of these ideas may still be helpful.

## Synopsis of the Central Idea

- Never defines what BA is (which it did last time)
- Talks about relatively minor details about nature of information, etc. without getting to essence of BA
- Good: Relates to intel (should be part of intro)
- No big idea for how BA function will be performed
- Sometimes reads like a collection of disparate program ideas in search of a unifying theme
- Lists “Battlespace Awareness Components,” but these do not describe a process
  - How are “components” different from “portfolio”?
  - C2, warfighter needs & weapon systems are *components* of BA?
  - Each “component” is discussed, but never integrated into a description of BA process
- Networked, IP Accessible Data Base, and Services = GIG?
  - Are sensors and sources part of the GIG?



7

This is where the DART would expect to see a thorough description of how battlespace awareness will be achieved in 2015, starting at the highest order and becoming increasingly more specific. One would expect to see battlespace awareness defined, but it is not. Instead, the concept gets fairly quickly into relatively minor details without first providing a broad description.

One thing the paper did well here was lay out the relationship of battlespace awareness to intelligence.

However, the concept paper lacks a cohesive idea on how the battlespace awareness function will be performed from beginning to end. Rather than being a cohesive whole, the text sometimes reads like a series of disparate programs in search of a unifying theme. The discussion lists the components of battlespace awareness, but these are not integrated into any kind of process description. It was explained later that these components were discussed in the general order of the process, but this was not evident from the text.

At one point it seems that the concept is listing C2 as a component of battlespace awareness (when it would seem to be the other way around). It is not immediately clear that this refers to the C2 of intelligence assets rather than C2 in general.

## Synopsis of the Central Idea (Cont'd)

- “C2 and weapon systems are the ultimate customers for BA ...” (p. 20)—C2 and weapons are not customers; decision makers are
- “One of the core challenges for future sensors and collection methods ...” (p. 21)—seems that this paragraph ought to be part of the problem description
- “As a result, the BA functional concept calls for several strategic shifts in the U.S. sensing approach. The most critical of these is the shift from reconnaissance to surveillance ...” (p. 21)
  - “Strategic shifts” seems like it would be key and should be prominent in the concept, yet it is mentioned only once in passing at the end of a paragraph
  - Shift “from reconnaissance to surveillance” is never explained, never raised again. Again, if “strategic,” would expect it to be prominent
  - What are the other strategic shifts?

DART

8

The passage on p. 21 about “One of the core challenges for future sensors and collection methods ...” seems like it might better be an element of the problem description.

The “shift from reconnaissance to surveillance” seems like it would be a key issue, and not an uncontroversial one. It should be explained in greater detail. The reality is probably not a shift from one to the other, but a change in emphasis, with reconnaissance being used to augment a baseline of comprehensive surveillance. The passage mentions “several strategic shifts.” What are the others? These would all seem to be key. Identifying such shifts would help to differentiate this concept from other concepts.

## Synopsis of the Central Idea (Cont'd)

- “Each warfighter brings a different set of experiences to the battlespace. This can lead to differing pictures of the battlespace even from identical data. Through training, warfighters can be guided to view the battlespace in a consistent and commonly understood way.” (p. 24)
  - C2 concept moving away from this view of the COP
  - Differing pictures probably a good thing
  - Differing pictures not necessarily at odds with “commonly understood”
  - If concept applies across ROMO, *commander* or *decision maker* vice *warfighter*



9

This is a key substantive issue. This passage is a standard interpretation of the common operational picture (COP), which this concept addresses more specifically than the C2 concept. The C2 concept seems to be moving away from this interpretation toward the idea that from a common data set decision makers create *customized* visualizations or pictures based on individual need. Different pictures, rather than a common picture, could be seen as a good thing.

## Synopsis of the Central Idea (Cont'd)

- “This concept also calls for a redistribution of sensing platforms, in favor of covert, proximate, highly distributed, and unmanned—as opposed to the large, overt platforms that characterized Cold War-era systems.” (p. 21)
  - Good example of differentiating the concept in clear, concrete terms; would like to see more of it
  - Betrays the emphasis on technology sensors
- “Under the BAFC, unique and innovative types of processing will be used to thwart adversary ...” (p. 22)—what are those techniques?
- “Weapon systems draw information, but every sensor in our weapon systems is linked to the information grid and is able to transmit its information back for use and exploitation by other assets. Every infantryman in the field is a potential sensor for BA.” (p. 24)
  - Another good example of a key idea in clear, concrete terms not getting prominence deserved
  - Feasibility in 2015?



10

The passages on pp. 21 and 24 are excellent cases of using a simple example to differentiate the concept from others in unmistakable, concrete terms. A few of these examples can go a long way in brining a concept to life. A few more in this concept would be helpful. Issue: With respect to the last example on the chart, there is a question of feasibility by 2015.

## Synopsis of the Central Idea (Cont'd)

- “The environment is a key input into the BAFC ... The environment includes: weather, terrain, time, enemy, and friendly forces, but it also includes significant social aspects such as cultural, political situation, etc. and resources such as water, energy sources, infrastructure, etc.” (p. 25)
  - By this definition, what is *not* part of the environment?
- “3.2 Illustrative Scenario”
  - No scenario
  - More conceptual description vice illustrative example
- “The key capability needed to support this concept is high-confidence, synoptic, continuous tracking of high-value ground mobile threats. ... The ability to engage tracks rather than locations effectively removes the ‘time-critical’ characteristics of attack on many threats.” (p. 27)
  - Synoptic? Needs explanation in this context
  - Real difference between “tracks versus locations”?
  - Betrays emphasis on BA as a process for supporting engagement of ground targets?

DART

11

The description of environmental information is so broad that it would seem to cover all information. This grouping probably ought to be limited to information about the terrain and weather and should not include information about forces, culture, political structure, etc.

Section 3.2 is called “Illustrative Scenario,” but it really is not. The “scenario” is not developed nearly enough to be useful as an example. Most of the discussion in this section is as conceptual as the discussion that precedes it. The expectation would be for a much more concrete example to bring to life the abstract concepts under discussion.

The concept discusses continuous tracking versus sporadic position reporting. This seems like a significant distinction, but the implication could be better explained.

Observation: There seems to be an emphasis throughout the document on battlespace awareness in support of tracking and targeting as opposed to other types of decision making and the ability to track things in case someone wants to shoot it.

## Synopsis of the Central Idea (Impressions)

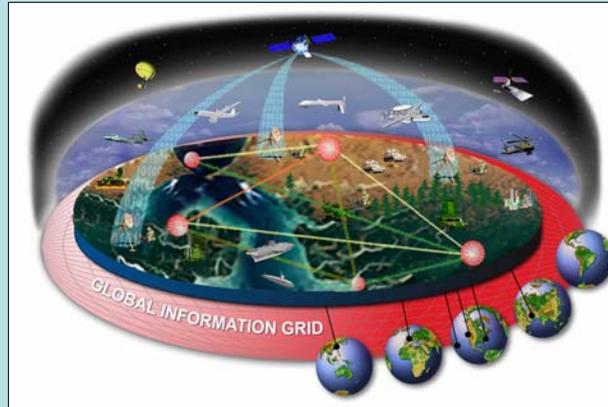


Figure 1.1-1: BA High-Level Operational View (OV-1)

- “Constellation” of sensors
- Saturated coverage
- Platform-based
- Feeding into digital global info base ...
- ... available to all

**DART**

•Paints a picture, although never really addressed in text.

12

This slide is taken directly from the DART Quick-Look Workshop. It was meant to convey a possible big idea. The point was made that sometimes a simple diagram can be more useful in capturing a high-order idea than text can. The slide is provided again as food for thought.

## Capabilities and Attributes

- “Chapter 4. Battlespace Awareness Attributes” seem more like capabilities than “testable or measurable characteristics that describe some aspect of a system or capability”\*
- “Users at all levels will be able to share information through a tailored, secure information view that includes an accurate common intelligence picture, tailored to each user’s position and mission” (p. 31)—if “common,” cannot be “tailored”
  - “Information derived from single or multiple sensors will be disassociated from sources and methods ...” (p. 31)—why? Seems valuable to know sources and methods by which info is derived
  - Much of this discussion is substantive and rightly belongs under the description of the concept

DART

\* CJCSI 3170.01C, p. GL-4

13

The attributes listed in Chapter 4 read more like capabilities. The subsequent explanation of those capabilities could provide the basis for some useful attributes to be developed.

This chapter includes some substantive discussion that might better belong in the description of the “how.” Some substantive issues:

- The first passage on p. 31 raises the “common” versus “customized” issue again. This has already been discussed.
- The second passage states that “information ... will be disassociated from sources and methods.” Why will information necessarily be disassociated from its source? Many times knowing the source of a piece of information allows decision makers to make assessments about the validity and reliability of the information.

## Capabilities and Attributes (Cont'd)

- “4.5 Predictive Analysis Attributes”
  - “... involves identifying assessing, and estimating centers of gravity, capabilities, limitations, intentions, and courses of action of global actors” (p. 33)—most of these are not predictions but estimates
  - Prediction is “the making of a statement or forming of an opinion about what will happen in the future”\*
  - Why “global” actors?



\* Encarta online dictionary

14

Most of the elements in this passage from p. 33 are estimates about the situation rather than predictions about what will happen in the future.

Why does this passage specify “global” actors? Why is the modifier necessary? Why not simply “actors”?

## Potential Incompatibilities with Other Concepts

- Seems to encroach on the C2 concept; relationship between the two not clear
- GIG is central to this concept, but C2 concept does not talk about the GIG
- C2 concept does not talk about the COP, but instead talks about collaborative pictures built from a universal data base, but unique to each commander's requirements



15

“Encroach” in this slide may be too strong a word. But the relationship between this and the C2 concept could be clearer. The global information grid (“GIG”) figures prominently in this concept, but is never referenced per se in the C2 concept (though it is certainly implied). This is simply a matter of agreeing on common language.

Likewise this concept discusses the common operational picture, or “COP,” which the C2 concept does not reference by name. The differences here are not merely terminological: the two documents have differing conceptions of the COP.

## Applicability Across Range of Military Operations

- Seems to apply best in operations in which much of required info has to do with detection of platforms (MCO?)
- Does not match up well with situations requiring more qualitative info (StratDet, StabO, HLS)
- With focus on technology sensors, does not match up well with situations requiring significant HUMINT (StabO, HLS)



16

While this concept could be said to apply across the full range of military operations, because of its emphasis on technology sensors, it seems like a better fit with operations in which many or most information requirements have to do with the detection of platforms. This would seem to be more conventional sorts of warfare such as MCO.

The concept does not seem to match up as well with situations requiring “softer” information, such as stability operations, homeland security or strategic deterrence (in which the fundamental questions have to do with thought processes as opposed to platforms). Similarly, this concept would not seem to match up with those types of situations that put a premium on HUMINT—again stability operations or homeland security.

## Qualities of a Good Concept

- Serves stated purpose
- Stated in language that can be acted upon
- Accepts burden of proof
- Differentiated
- Explicit relationship to other concepts
- Written in clear/precise language
- Concise
- Robust
- Promotes debate



17

Because of the close relationship of this concept with C2, that relationship could stand to be clearly delineated.

The concept is dramatically improved in clarity, conciseness and use of language, but can still stand improvement in those areas.

## Language

- Treats BA as if it is some kind of physical system rather than merely a concept
  - “The BAFC will also include information on cultures ...” (p. 23)
  - “The BAFC uses innovative approaches to symbology ...” (p. 25)
  - “The BAFC will identify salient environmental factors, track them in real time ...” (p. 25)
  - “To enhance survivability, BA must apply de-massification techniques.” (p. 29)



18

The text throughout frequently treats battlespace awareness as if it is some sort of physical system with hardware and software tools, rather than merely a concept. Battlespace awareness and the battlespace awareness concept do not “do” anything. They do not:

- “... include information on cultures ...”
- “... use innovative approaches to symbology ...”
- “... identify salient environmental factors, track them in real time ...”
- “... apply de-massification techniques.”

## **Issues to Consider in Concept Refinement & Experimentation**

- **Feasibility**
- **Adversary Counters**
- **Potential Failure Modes**
- **Possible Unintended Effects**



19

The following slides are the result of a red teaming session designed to probe for potential weaknesses in or issues with respect to the concept. The points raised are not necessarily issues that need to be addressed immediately in the concept paper, if at all. In fact, the authors may feel they have addressed these issues. The DART's intent was simply to raise issues—potential failure modes and unintended consequences and likely adversary counters—which may come up during experimentation, so that the authors can begin thinking about those issues as they continue to refine the concepts.

## Feasibility Concerns (Concept Risks)

- Fiscal constraints may limit ability to integrate legacy systems into the GIG.
- Parochial attitudes within Services/agencies and within communities in the Services/agencies may frustrate attempts to create an integrated system of systems.
- Bandwidth constraints, especially in forward areas, may constrain the ability to integrate many elements of the envisioned “system of systems”, e.g., sensor equipped shooters.
- The challenge of integrating HUMINT in a way that allows it to cue and be cued by technical collection systems may be underestimated.
- The challenge of keeping doctrine, organization, training, and leader development up to date with progress toward the BA vision may be underestimated.
- The concept of “Predictive Analysis/Awareness” may be beyond the realm of the possible, given the inherent unpredictability of human behavior.
- Attempts to be predictive may leave us more vulnerable to D&D.



DART

20

Perhaps the largest feasibility concern had to do with the predictive analysis elements of the concept. There are some very finite limits to the ability to predict human behavior, regardless of advances in artificial intelligence. The concept may err by underestimating these limits.

## Potential Adversary Counters

- **Passive Countermeasures:** Adversary masks hostile activities in dual use facilities or complex terrain, or by going underground. Adversary may shift to more distributed, low tech operations that lower his signature below sensor thresholds.
- **Active Countermeasures:** Jam, spoof, or spam the sensors to counter, mislead or overwhelm the network. Enemy attacks on key nodes of the BA network – modeled after our own use of network analysis, using kinetic and/or non-kinetic means – to include human agents.
- **Mirror Imaging:** Adversary exploits the US tendency to mirror image. Adversary uses deception operations to show the US what it wants to see while masking true intentions and actions.
- **Organization:** Adversary adopts organizational structures that limit our ability to penetrate with human agents (e.g., Al Qaeda.)



DART

21

These are a fairly standard list of potential adversary counters that could be expected. In general, the adversary without significant financial means would attempt the passive counters, while a more sophisticated adversary would perhaps take a more active approach. It should be noted, however, that the active countermeasures are still relatively cheap operations to conduct.

## Failure Modes & Limiting Factors

- **Network Failure:** A cascading series of internal failures in an interdependent networked system of systems (ala northeast power grid)
- **Data Overload:** Technical collection overwhelms the ability to analyze the data or to fuse the information. Collecting and understanding are two different things.
- **Focus on Data vs. Problem:** Abundance of BA products leads decision-makers to focus on the data rather than the problem.
- **DOTMLPF:** Failure to adapt doctrine, organization, training and leadership development to changes in BA systems.
- **Collection Resources:** Overemphasis on theater sensors can lead to unacceptable reductions in tactical reconnaissance. Unconventional warfare and stability ops need other means to collect.
- **Seeing is believing?** If you see it, you don't necessarily understand it (e.g., adversary motivation – or deception)



22

The obvious critical factor in this concept is the information grid. If the grid goes down, either through break-down or hostile action, the concept will not work.

## Possible Unintended Effects

- **Tyrannical COP:** Building one joint COP degrades the quality of information. In essence it forces all views of the battle into one, marginalizing key dissenting opinions. Encourages group think.
- **Focus on the Minutiae:** COs and staffs spend all their time focused on small details instead of making quality decisions. If training and education don't reinforce need for judgment in command, then the problem is exacerbated.
- **IT Makes you Stupid:** "Predictive Analysis" removes commanders and staffs from the data so they don't actually understand how the system arrives at the assertion. Predictive analysis does not allow commanders and staffs to draw on their own experiences.
- **Uncertainty:** COs trained to expect near perfect intelligence may be unprepared for uncertainty if the GIG goes down – or if the intel just isn't there.
- **Allocation of Resources:** Overemphasis on theater sensors can lead to unacceptable reductions in tactical reconnaissance.
- **Security:** Security consciousness limits access to the necessary information required down to the lowest echelons.



23

The third point on the above chart requires more explanation: Dr. Gary Klein gives a compelling lecture on "How IT Makes You Stupid." In essence it does this by removing decision makers from the original data and forcing them to deal instead with interpretations of the data. These interpretations are arrived at by algorithms, but the decision makers don't always understand the algorithms, so they don't understand how the interpretations were reached. Not understanding how the interpretations were reached, they don't know how to assess the validity or reliability of those interpretations and are forced to either accept or reject them on faith.

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**APPENDIX 9.**

**DART REVIEW OF THE**

**FOCUSED LOGISTICS**

**JOINT FUNCTIONAL CONCEPT**

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**A Red-Team Critique of the  
Focused Logistics  
Joint Functional Concept  
(v0.5/05Sep03)**

Defense Adaptive Red Team  
Arlington, VA  
02 Oct 2003  
v1.0



1

Overall this is a very solid concept paper. It is clear and well written.

The paper could be stronger in the explanation of the logistics process and in how logistics in 2015 might be different than it is today.

In addition, the paper includes several separate sections relating to guidance and logistics challenges. The issues raised in these sections should be addressed elsewhere, as appropriate in sections on the military problem, the statement of the concept, and the description of required capabilities.

## Purpose

- Excellent
- Thorough and clear

## Time Frame, Assumptions & Risks

- Time Frame: Fine
- Assumptions: Fine
- Risks: Adequate



2

### **Purpose**

The statement of purpose is well done. It is comprehensive and very clear.

### **Time Frame, Assumptions & Risks**

These are all satisfactory, although some of the assumptions listed may not invalidate the concept if not true.

## Description of the Military Environment

- “... able to project overwhelming combat power anywhere in the world on short notice ...”
  - Short notice is relative
  - Maybe limited combat power rapidly, overwhelming combat power over time
- Logistics pipeline a lucrative target—okay, but how solved in concept?
- Other possible ideas:
  - Forces operating worldwide, in multiple theaters simultaneously
  - In austere areas of operations



3

The description of the military environment is generally good. In the case of logistics, this means providing a vision of the types of military operations that must be supported. The paper portrays this.

The paper mentions being “able to project overwhelming combat power anywhere in the world on short notice.” (p. 9) This seems a little simplistic. The paper can afford to be a little more sophisticated in its portrayal—something to this effect: “able to provide limited combat power rapidly and increasingly overwhelming combat power over time.”

The paper makes a very good point about the logistics pipeline being a lucrative and likely target. But the concept does not adequately solve this problem. It may be implied that the pipeline will be less vulnerable because total asset visibility will reduce the total amount of flow, but, if true, the point can be made more strongly. If the responsibility for solving this problem is meant to be covered by the protection concept, this should also be made clear.

Other ideas about the military problem that might be raised include the strain on lift assets due to forces operating in multiple theaters at once and the strain on the system in general due to lack of infrastructure in some theaters.

An additional idea that came up in later discussion was the requirement to support distributed operations—that is, widely distributed, non-contiguous forces without secured ground lines of communication. The paper mentions this, but not in any detail. It could be a major element of the problem, and therefore a challenge that the concept would have to overcome.

## Synopsis of the Central Idea

- Focused logistics is the *process of vice concept for or capability to*
- Posits network as means for improving logistics performance—could be stronger on implications (such as better anticipation, right-sizing, etc.)
- “Synopsis”
  - Excellent presentation of hypothesis
  - Will provide strong basis for experimentation
- Watchwords of *capacity, control and certainty* okay



4

The paper wrestles with the definition of focused logistics. This paper defines focused logistics as “a concept for ...”; the previous draft defined it as a “capability.” Military functions are fields or sequences of activities and are best described that way. The traditional definitions of logistics and sustainment do this very nicely. (See definitions below).

By comparison, this paper defines focused logistics as “a concept for providing the joint force the right personnel, equipment, supplies, and support in the right place, at the right time, and the right quantities, across the full range of military operations.” It thus defines focused logistics as one concept for performing the logistics function, rather than as the function itself. This may cause confusion. The following approach would clarify:

- “Logistics is ... [using the approved DOD definition]”
- “Focused logistics is a concept for doing this by ...”

The paper posits that the network will improve logistics performance. This may be true. Just the act of networking the logistics field may result in some qualitative changes to the way logistics is performed. But just to make this point is not sufficient. The paper should try to envision what those changes will be. In other words, it can be stronger on describing the likely implications of this change for logistics.

### Synopsis

The section called “Synopsis” is an excellent statement of the hypothesis of this concept—expressed explicitly as a hypothesis. It is a powerful expression. This makes clear what the

objectives of logistics transformation are. It will provide unmistakable guidance for future experimentation.

The paper then goes on to describe what is calls the three “watchwords” of the concept. These do not constitute a *how*, but they do provide a sense of desired qualities. During discussion at the workshop, the question arose whether these were actually high-level attributes (something akin to the attributes of the joint force described in the *Joint Operations Concepts*) and, if so, how they relate to other attributes. This should be clarified.

Definitions from Joint Pub 1-02:

**logistics**—(DOD) The science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, those aspects of military operations that deal with: a. design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of materiel; b. movement, evacuation, and hospitalization of personnel; c. acquisition or construction, maintenance, operation, and disposition of facilities; and d. acquisition or furnishing of services.

**sustainment**—(DOD) The provision of personnel, logistic, and other support required to maintain and prolong operations or combat until successful accomplishment or revision of the mission or of the national objective.

## Synopsis of the Central Idea

- But lacking in description of *how* the process will work
  - Qualitative description of asset flow stage-by-stage through the pipeline
- Good decomposition of sub-functions (“Focused Logistics Challenges”)
- Big idea from 1<sup>st</sup> workshop, Joint Theater Logistics Command, not picked up



5

The single biggest shortcoming of this paper is that it does not provide a description of *how* it envisions that logistics will be performed in 2015. It should provide a broad process description of the flow of material through the pipeline from beginning to end (i.e., production to expenditure).

The next step would be to decompose the process by organizing it into its subfunctions. The paper does this well in what it called the “Focused Logistics Challenges,” but it does not provide a sense for how any of those subfunctions will be performed.

This single biggest substantive idea to come out of the “Quick-Look” Workshop in July, based on Gen Zinni’s experiences as a combatant commander, was the Joint Theater Logistics Command, a logistics functional component. The revised draft did not include this thought explicitly, although it discussed theater logistics management and footnoted a logistics component as one option. The authors explained that this idea was not dead, but that there was much resistance to it among the services. It was pointed out that this should not constrain the concept. A future concept is not meant to describe the final, approved solution. It is a hypothesis meant to provide the basis for experimentation and future development. If the concept authors (and more important, the Chairman of the Joint Staff) see possible merit in the idea, here is no reason that the concept should not hypothesize a theater logistics command; experimentation will validate or invalidate the idea.

## Capabilities and Attributes

- Captured as “pillars” of Logistics Transformation Initiative and “initiatives” of Focused Logistics Enterprise rather than as capabilities and attributes per se
  - Would work better if expressed explicitly as “capability to ...”
    - Would require integrating and rationalizing capabilities now listed in separate sections
  - Talks in terms of the “customer”—who is the customer?
  - Clearly influenced by industry, but analogy only carries so far
  - More “musts” than “hows”—e.g., “To preclude a ‘business as usual’ solution to related problems, bold new ‘out of the box’ initiatives must be introduced to provide a mechanism to pull all the parts together ...” (pp. 18-19)
  - Could benefit from a few simple, illustrative examples



6

There was no discussion of capabilities and attributes per se, but the content was generally present in one form or another. The “pillars” of the Logistics Transformation Initiative and the “initiatives” of the Focused Logistics Enterprise discussed what were essentially required capabilities, although not expressed in those terms. With some editing to capture the ideas in the form of “... ability to ...” phrasing, these discussions could be turned into useful capabilities. These would then need to be integrated into a single list, perhaps organized according to the subfunctional areas.

This concept clearly is influenced by the revolution in business practices, which is fine. A lot of what works well for Fedex and Wal-Mart is evident in the paper. In fact, the paper adopts business language, talking in terms of the “customer,” for example. Without a doubt, logistics has much in common with business, but it should be kept in mind that the analogy only carries so far and that military operations face unique challenges and requirements that business does not. The paper should not lose sight of this.

Some of the “capabilities” discussion borders on the abstract. It might be helpful to readers to provide a few simple, concrete illustrative examples. These would not have to be lengthy descriptions, but a single sentence—enough to make the reader realize exactly what the abstract language means. The battlespace awareness concept does this very well in several places.

## Potential Incompatibilities with Other Concepts

- C2 concept does not talk in terms of COP or CROP (BA talks of COP)



7

This concept talks explicitly about the common operational picture (COP). Friendly status information especially is a critical part of this concept. Obviously this is something that falls under the C2 function. The C2 concept does not refer to the COP. Some terminology reconciliation is needed.

## Applicability Across Range of Military Operations

- Seems to apply fully



8

The concept has no problems in this area. As written, it clearly applies across the full range of military operations—and then some, into other actions not part of that range.

## Other Comments

- Well written, well organized
- Clear, concise
- Could use fuller description of the logistics process
- Strong on distribution end of process; not so strong on production end
- Focuses on optimization of the process—possibly insensitive to fog and friction?
- Could benefit from a few illustrative examples



9

In general the concept paper has made remarkable progress given its state at the “Quick-Look” Workshop. It is well on the way to becoming a useful document.

A few general observations follow, which do not fit neatly into any of the topics considered in preceding charts:

- The concept paper seems to put more emphasis on distribution than production. The paper does assume that production capability will be sufficient for operational needs, but the authors might consider greater attention to this important aspect of logistics.
- The paper may undervalue the significance of fog and friction on military operations. This may be due to the influence of ideas from the business world, which does not have to deal with these factors to nearly the same extent. We have no specific recommendations, other than that we encourage the authors to keep this in mind during further revisions.
- Finally, the paper could benefit from a few well-placed illustrative examples of some of the capabilities or solutions it envisions.

## Qualities of a Good Concept

- Serves stated purpose
- Stated in language that can be acted upon
- Accepts burden of proof
-  Differentiated
- Explicit relationship to other concepts
- Written in clear/precise language
- Concise
- Robust
- Promotes debate

 DART

10

This concept is not always clearly distinguished from the way logistics is performed currently. The authors might consider what can be done to help differentiate this concept from other logistics concepts.

## **Issues to Consider in Concept Refinement & Experimentation**

- **Feasibility**
- **Adversary Counters**
- **Potential Failure Modes**
- **Possible Unintended Effects**



11

The following slides are the result of a red teaming session designed to probe for potential weaknesses in or issues with respect to the concept. The points raised are not necessarily issues that need to be addressed immediately in the concept paper, if at all. In fact, the authors may feel they have addressed these issues. The DART's intent was simply to raise issues—potential failure modes and unintended consequences and likely adversary counters—which may come up during experimentation, so that the authors can begin thinking about those issues as they continue to refine the concepts.

## Feasibility Concerns

- Fiscal constraints to wire and implement the network
- Difficulty integrating legacy systems
- Parochial attitudes within Services and within communities in the Services may frustrate attempts to create an integrated system
- Bandwidth constraints, especially in forward areas, may constrain the ability to integrate many elements of the envisioned system



12

The biggest feasibility concern unique to the logistics field is service parochialism. This may be the most difficult challenge to overcome in realizing this vision.

## Potential Adversary Counters

- **Cyber attack:** Adversary hacks into system and re-allocates logistics thus destroying confidence in the system, or destroys the system altogether
- **Sabotage:** Sympathizers sabotage parts so that they are either defective at point of production, or they fail further down the chain once in theater
- **CONUS Attacks:** Adversary attacks logistics bases in CONUS, or at point of production
- **Labor Problems:** Sympathizers at intermediate staging bases or forward ports obstruct or cause work slowdowns (US dependent on host nation support and contractors)
- **Attack APODs/SPODs/ISBs/Lift Assets:** Can take this as a given...



13

The paper correctly identifies the logistics pipeline as a target. The concept document may not address these issues directly, but it should explicitly establish the requirement for the protection concept to do so.

## Potential Failure Modes

- Tighter coupling increases efficiency but creates cascading errors or failures, and make systems more fragile
  - Unexpected resistance could demand more logistics than anticipated, causing a cascade effect throughout the system
  - Incorrect algorithms in the system could lead to incorrect forecasting for parts
- Lack of adequate processes to ensure system meets commander's needs
- Staff involved in collaborative planning make decisions based on functional interests, not the interests of the commander
- Aging systems require more, not less support in 2015
- Health systems overwhelmed by BW attack



14

This concept seems to argue that optimization will be possible in logistics. The issue is whether the necessary efficiencies will be achievable given the inherently wasteful nature of war. When a tightly coupled system with little margin for error is disrupted in some way, the results can be catastrophic. Most of the above failure modes have to do with this idea.

## Potential Failure Modes (2)

- Lack of rapid production capability when operations don't go exactly as planned
  - e.g., new enemy armor that requires 2 TOWs vs. 1 assumed in algorithms
- Lack of rapid prototyping and modification capability when new requirement arises
  - e.g., new enemy armor that requires new charge on TOWs
- Deficiency in training and supply discipline (hoarding etc.) in units lead to suboptimal delivery performance
- Attack on the network forces the joint force to the old way of doing things
- Coalition logistic needs add unanticipated loads
- Political failure to allow US access to critical infrastructure
- Inability to control our lines of communication (al Nasiryah)
- Lack of unity of command



15

The DART identified additional failure modes which the concept authors may or may not want to take into account as they refine their concept and move into the experimentation phase. The common thread among some of these failure modes is what happens when the enemy adapts or the situation changes unexpectedly and the logistics requirements are suddenly increased.

## Possible Unintended Effects

- The network which allows distributed operations actually complicates and increases logistics requirements.
  - More lift required to re-supply distributed forces and command elements.
  - Electricity concerns in a distributed command.
    - Batteries, generators etc.
  - Suboptimal delivery quantities.
    - Now delivering less stuff to more places.



16

A system that is responsive to a finer level of granularity loses economies of scale. This could put an additional strain on already-limited lift.

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