

Army Design Methodology

A Guide to Assessing Your Implementation
of the Army Design Methodology



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Introduction

Introduction

The Army Design Methodology

As a result of our increasingly interdependent world, Army leaders are facing more interrelated and complex challenges. Devising security solutions in such a world therefore requires a holistic understanding of the situation. In response to the increasing complexity of the operational environment, the Army has recently codified the Army Design Methodology (ADM) as an approach to enhance the conceptual aspects of the planning process (Department of the Army, 2010). Design applies a mindset and practice of creative and critical thinking, collaboration and dialogue, problem framing and reframing, narrative construction, and visual modeling – to help the commander and his planning staff successfully answer the following questions:

- *What is going on in the environment?*
- *What do we want the environment to look like?*
- *Where do we act in order to achieve our desired end state?*
- *How do we act in order to realize that desired end state?*

In doing so, ADM is meant to work within the planning process to serve as a tool for conceptual thinking to ensure commanders and their planning staff are achieving a holistic understanding of the operational environment before implementing their approach in a detailed plan.



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Introduction

Why the Need for Self-Reflection?

While doctrine offers guidance for creating formal assessment plans for operations there currently is no guidance for commanders and planning teams on how to assess and improve their design efforts. Therefore, additional support is needed to help planning teams self-reflect on and assess the effectiveness of their approach. The goal of this resource was to provide planning teams with actionable guidance for assessing the implementation of ADM in their planning process.



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Introduction

Definitions and Terminology

Over the past few years, the concept of design has appeared in various Army doctrinal and educational publications and each has used slightly different terminology (Department of the Army, 2010). However, we also note that issues surrounding terminology can lead to misunderstandings and barriers to acceptance (Grome, Crandall, Rasmussen, & Wolters, 2012). Therefore, for the purposes of this resource we will be using the terms design and Army Design Methodology (ADM) interchangeably, even though we are aware that some in the academic community on the topic criticize the doctrinal use of ADM in capturing the essence of design (Martin, 2012). When referring to the different stages of design, we will use doctrinal terms, specifically:

- *Environmental frame* to describe the process of defining the actors in the environment, as well as their interrelationships;
- *Problem frame* for describing the process of determining which problem to solve;
- *Operational approach* for describing how to bring about the desired change; and
- *Integrated planning* for describing how elements of design are incorporated into the Military Decision Making Process (MDMP).

Finally, we will use the term *planning team* to describe

those individuals (e.g., commander, staff, planners, subject matter experts) who come together during a military planning effort and utilize the ADM as part of that planning effort. By doing so, we hope to dispel the myth that design is an activity separate from planning done by a select, talented few individuals. Additional terms are defined in the glossary at the end of this resource guide.

Introduction

Organization of this Resource Guide

The resource is divided into five chapters and each chapter reflects a different challenge facing planning teams as they utilize the Army Design Methodology (ADM). Each chapter provides guidance in the form of self-reflection questions and actionable feedback, along with tips and lessons learned for improving design performance. The five major challenges were identified through an iterative process of interviews with active duty and retired Army planners. The five challenges and corresponding chapters are:

- Team Membership
- Team Climate
- Knowledge Management
- Integrated Planning
- Reframing

The chapters and the guidance contained within the resource are modular in format so the reader does not have to review the chapters in order. Nor does the reader need to review the entire resource at one time; the modular format should allow the reader to quickly find and read the relevant information and then return to planning activities. For example, the reader can consult the resource after key milestones in the ADM process such as after reframing or when a planning team takes



on a new member. Again, the goal was to provide clear, actionable guidance so the reader could address their problem quickly and then return to planning activities. Specifically, the reader can consult the introduction of each chapter for a list of the key issues related to each challenge to quickly identify and sort the content contained in the chapter. At the back of the resource, the reader will find a set of recommended reading materials, a glossary of key terms, and note pages to write down thoughts.

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Team Membership

Team Membership

Team Membership Defined

Design emphasizes dialog and discourse to develop a deep understanding of the operational environment. To aid in promoting this discourse a commander forms a team to aid him in employing ADM. The commander will want to select a team of professionals with a range of technical backgrounds and perspectives; people who are willing to express their opinions, especially if they are not popular ones, and who can work together toward a common goal.

The commander will often supplement the core team with outside Subject Matter Experts (SMEs). Some of these SMEs may be permanent members of the team, and will be physically co-located. Others will temporarily augment the core team, and may join in the discussions from a physically remote location. There is often a trade off when determining the appropriate team size and composition. Specifically, additional members add a much needed diversity of opinions, but as the team becomes larger, it may also become more difficult to manage.

The self-reflection questions in this section focus on challenges that are associated with staffing the team. Critical issues to be addressed include:

- Does the planning team have a diversity of perspectives in order to view the problem?
- Does the planning team provide sufficient context to their Subject Matter Experts (SMEs) so that they can quickly obtain the necessary information?
- Does the planning team have ways to evaluate Subject Matter Experts' cognitive lenses and experiences?
- To what extent are the planning team members effectively executing their defined roles (scribe, red team, devil's advocate, facilitator, etc.)?
- Is the degree of integration between the conceptual planners and the detailed planners optimized to address the commander's needs?
- Does the planning team parse out the data collection assignments to their respective organizations?

Team Membership

Does the planning team have a diversity of perspectives in order to view the problem?

An effective understanding of the situation is enhanced by including a diversity of perspectives. These perspectives come from the team members' prior education, professional experiences and deployments, and from having different cultural lenses with which to view the problem space. In addition, academic experts can join the planning team's discussions and periodically review the team's work. The academics do not need to be physically co-located with the rest of the planning team. They can provide their expertise using synchronous communication mechanisms, such as telephone, video-teleconference, and remote desktop sharing. Alternatively, they can provide their expertise using asynchronous means, such as contributing opinions via e-mail or sharing documents (e.g., their scholarly writings). Joint and coalition partners, civilian agencies, nongovernmental organizations, and even indigenous personnel (such as trusted local religious, political, and business leaders) can also provide a diversity of perspectives. Finally, it is critical to remember that National Guard and Army Reserve personnel bring with them a wealth of experiences from their civilian roles. These could include backgrounds in business, agriculture, law enforcement,

logistics, and education. If a commander knows the team well, it's easier to assess the range of perspectives. The commander should always ask *What perspective is missing?*

“The more perspectives you bring to the table, the better.” (Perez, 2011)

Team Membership

“Planning teams need to recognize that they will need to spend a sufficient amount of time building a relationship with their SMEs, so that they can truly benefit from their unique expertise and perspective.”

Does the planning team provide sufficient context to their Subject Matter Experts (SMEs) so that they can quickly obtain the necessary information?

Planning teams frequently solicit the advice of Subject Matter Experts (SMEs) to provide much-needed perspective to inform their design efforts. When bringing in an outside expert, it is important to spend a sufficient amount of time “bringing them up to speed” on the planning team’s activities and their understanding of the problem space. Failing to do so can result in the SMEs providing overly-simplified (or possibly incorrect) information, because they were not sufficiently briefed on situation-specific nuances that would otherwise have caused them to caveat their recommendations. Planning teams also need to spend time building rapport with their SMEs in order to develop a relationship and culture of trust so the SMEs feels comfortable sharing their expertise. Lastly, because environmental conditions trigger an iterative process of reframing, SMEs may rotate in and out of the core planning team as their expertise is needed. Therefore, the planning team has to be effective at rapidly orienting all the members to the team.

Team Membership

Does the planning team have ways to evaluate Subject Matter Experts' cognitive lenses and experiences?

Expertise is, by its very nature, a highly bounded and compartmentalized concept. Every expert will likely focus on one specific part of their specialty domain (e.g., a subdomain), and will likely have favorite theories or approaches. Therefore, if you need to bring in an expert on a specific topic - such as law enforcement in general, or community policing in particular - recognize this individual will approach the topic with a particular lens or viewpoint. To better evaluate the information that is being provided to the planning team, one could ask the expert to provide a high-level overview of the topic, or to describe their specific theoretical approach or lens by which they approach their topic, and/or to describe the competing lenses or theories. By having the SMEs describe their lens; the team will be better prepared to accept the differing perspective which aids in deeper understanding.

“It follows that the Army’s approach to Design does nothing more than give a bit of structure to those periodic conversations any commander has with his staff officers to improve his appreciation of the mission. Of course, the practice of Design benefits from a multiplicity of perspectives, whether these come from military officers, scholars, interagency representatives, nongovernmental organization (NGO) workers, or indigenous persons.” (Perez, 2011, p. 43)

Team Membership

To what extent are the planning team members effectively executing their defined roles (scribe, red team, devil's advocate, facilitator, etc.)?

Some planning teams have found it helpful to assign pre-defined roles to individual team members. For example:

- The *scribe* is to document the planning process and to help the team “trace back” their evolving understanding of the situation;
- The *red team* helps to identify gaps and logical inconsistencies in the planning team’s understanding of the situation;
- The *devil’s advocate* forces the team to confront differing viewpoints; and
- The *facilitator* is to ensure the team stays focused on schedule and does not suffer from “paralysis by analysis.”

Formally assigning roles to individual team members offers a number of advantages. First, it ensures all of the tasks are performed. Failing to do so often results in specific activities being forgotten because nobody remembered to perform them. Second, it ensures that when problems do arise – such as the team members engaging in a disagreement due to differences in perspective – they are largely devoid of negative emotions which can cloud the team’s decision-making. Finally, they help to keep the team focused on providing the commander with actionable guidance in a timely manner.

Is the degree of integration between the conceptual planners and the detailed planners optimized to address the commander's needs?

There is no one correct way to perform the Army Design Methodology. ADM is dynamic; and will be tailored to the needs of the commander and the situation. Some commanders may choose to have a full-time design team and a full-time planning team which have no overlapping membership. Other commanders may have a design team which is a subset of the planning team. Each approach has its own unique strengths and challenges. Having a dedicated design team may allow its members more time to engage in reflection and synthesis, since they are not encumbered with other additional duties. However, this may convey the mistaken impression that there are a talented few individuals who perform design, and a less talented set of planners who perform traditional planning activities (Grigsby et al., 2011). Non-overlapping teams also require the design products and briefings be of greater clarity to ensure that everyone shares the same mental model. Overlap among the design and planning teams provides a shared frame of reference, at the cost of planning team members potentially being overloaded due to performing multiple roles. In summary, each approach has its own benefits and trade-offs. Sometimes, the commander may wish to experiment with different staffing options to determine which works best given the nature of the situation.

Team Membership

Does the planning team parse out the data collection assignments to their respective organizations?

To fully understand the complexity of the environment, the planning team will be tasked with collecting a wealth of information. Some of this information may be available to specific cells within the organization, such as the G-2. Other information will need to be collected from other organizations, such as joint and coalition partners, the host nation government, and non-government organizations (NGOs). Sometimes, the planning team may feel they need to personally perform all of these data-collection activities so they provide the right information, in the right format, at the right time, to the rest of the planning team. However, doing so can leave the planning team with little time to reflect and synthesize the data. Therefore, planning team members should determine what data collection requests they must perform personally, and those which can be delegated to others. Some team members will hesitate to delegate (e.g., because of inherent personality traits or the organization's culture) therefore team members need to watch for signs of possible task overload.



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Team Membership

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Team Climate

Team Climate

Team Climate Defined

As the planning team goes about employing the ADM, they will need to organize their physical workspace and establish norms of appropriate and inappropriate behavior. The team will also need to develop processes and procedures for completing design-related activities, such as developing and disseminating the design frames, as well as for de-conflicting their design-related responsibilities with their other planning responsibilities.

Sometimes, the design-related discussions will become heated. However, not all disagreement is detrimental. Conflict over ideas can be beneficial for group discourse while conflict over personalities can hamper the team's performance.

The commander will play a key role in setting the tone for how discussions are to be conducted and how conflicts are to be resolved. Some commanders and their planning teams have found it helpful to establish roles – such as the scribe, the devil's advocate, and the moderator – to help keep the team focused on the task rather than personalities.

The self-reflection questions in this section focus on challenges associated with maintaining a positive team climate that encourages a diversity of opinion, but which

also prevents paralysis by analysis. Critical issues to be addressed include:

- Is the planning team's work environment (i.e., work space) conducive to dialogue and the free exchange of ideas?
- How should the commander set the appropriate tone for the first planning team discussion?
- Does the planning team's climate allow members of different ranks to voice their opinions without fear of reprisal?
- How does the planning team handle points of disagreement?
- Are planning team members actively listening to each others' ideas before critiquing them?
- Do the planning team members allow themselves sufficient time away from the problem so that a solution can come to them?
- Does the planning team move beyond simply asking *What is happening?* and attempt to determine *Why is this happening?*
- Does the planning team regularly engage in self-reflection to identify ways for improving their performance?
- Does the planning team have the flexibility to move seamlessly back and forth between the frames?

Team Climate

Is the planning team's work environment (i.e., work space) conducive to dialogue and the free exchange of ideas?

The physical configuration of the planning team's work space can have a powerful effect on their performance. For example, sitting around a table allows all of the team members to engage with one another, leads to more natural discussions, and promotes a sense of egalitarianism among the team members. A setting where everyone's perspectives feel valued is critical for ADM because a greater understanding of the problem is only achieved with the input of multiple perspectives. Laptop computers, while critical for research purposes, should be close at hand so that they can easily be accessed, if needed. However, when not in use, the screens should be closed to ensure that the focus is on the group discussion. Similarly, large-screen monitors tend to focus the group's attention away from the discourse. When not in use, they should be turned off, or moved aside (for example, if they are mounted on a wheeled cart). Some planning teams have even found it useful to use roll-around and reconfigurable workstations which facilitate transition between large group discussion and small break-out groups.

How should the commander set the appropriate tone for the first planning team discussion?

The tone of the planning team's first discussion is critical to its long-term success. When beginning the discussion, the commander will want to stress the importance of open, honest, and full participation by all team members regardless of rank. He will also want to provide detailed guidance on issues such as the desired level of focus, depth, etc. to ensure that the discussion does not go off course. The level of trust, which is based on previous experiences with one another, will also influence the dynamics of the group. The commander's response to the first question or disagreement should be measured. When working with a new planning team lead, there may be some initial apprehension regarding how the commander will handle constructive criticism. If the commander's understanding of the situation is ultimately flawed, the planning team needs him to be aware of this. Provided that the criticism is respectful and offered with the intention of improving the commander's decision making, the commander should take great care to respond in a way that is not perceived as punitive, lest he run the risk of stifling future discourse. Only when the planning team knows they can honestly express their views will the ultimate benefits of design be fully realized.

Team Climate

Does the planning team's climate allow members of different ranks to voice their opinions without fear of reprisal?

While many commanders are open to discourse and want honest, forthright, and fearless opinions from their subordinates, it can be difficult for subordinates to engage in an open and honest debate of ideas with their superiors. As a result, some planning team members, particularly junior members, may tend to censor themselves, even when they do not agree with the substantive facts being discussed. To overcome this, commanders need to set a climate of trust by taking active steps to listen and give respect to ideas that are not their own, and ensure team members are not rebuked either explicitly or implicitly for voicing their opinions, especially when they disagree with the commander.

How does the planning team handle points of disagreement?

It is often helpful for the planning team to establish a formal method for resolving group disagreements, and for the equitable inclusion of all team members' inputs. For example, the team could establish a rule whereby participants are not allowed to interrupt one another in mid-sentence. Alternatively, the team could establish specific roles (time keeper, agenda keeper, devil's advocate, etc.) to help keep the discussion on track. Doing so will help to ensure that the diverse team membership can have an effective discourse and propose a recommendation to the commander.



Team Climate

Are planning team members actively listening to each others' ideas before critiquing them?

During the discourse, members of the planning team may find themselves thinking about what they are going to say (while the other person is still talking). Because they were focusing more on their own arguments – rather than what the other person was saying – some discontinuity will occur during the discourse. This is not unique to the ADM process and it can be avoided by engaging in active listening techniques. For example, one can keep written or mental notes of important points or points for clarification (Department of the Army, 2006). Further, pay attention to the nonverbal aspects of the message as well the verbal message. Nonverbal aspects may include the urgency or emotion in which the message is spoken.

Do the planning team members allow themselves sufficient time away from the problem so that a solution can come to them?

There are five critical things that planning team members need to do every day: sleep, eat, read, do physical training, and take time away from the problem for thinking and reflection. Team members may notice that thoughts will come to them when their minds are not focused on the problem. Therefore getting away from the workspace is critical. Similarly, physical training is also a great way to clear one's mind. Planning team members should consider taking some time to chat with people whom they don't normally work with, perhaps during meal time, because it will expand their perspective. They should also consider reading a book or newspaper article, or watching a news program that they might not normally be inclined to. Finally, battlefield circulation with subordinate, higher, and Coalition units is another great way to get a different perspective about what is really going on.

Team Climate

Does the planning team move beyond simply asking “What is happening?” and attempt to determine “Why is this happening?”

The purpose of design is to more fully understand the underlying logic or rationale of a system-of-systems. Simply answering the question *What is happening?* will only provide a list of facts and figures. Such information does little to assist in answering more important questions, such as *What will the enemy do without prompting?* or *How might the enemy respond if we do...?* The answer to the question *Why is this happening?* enables the prediction of future events. That is why it is so critical that the planning team take the time to reflect on the raw data and better understand its implications. Finally, it is important to remember that the answer to *Why?* is not fixed. Both individual and group allegiances change over time as the environmental context changes. Answering the question *Why is this happening?* will also help the planning team to determine if their underlying logic of the system needs to be updated via reframing.

Does the planning team regularly engage in self-reflection to identify ways for improving their performance?

The planning process is continuous: it does not stop with the production of a set of orders. The rapid operational tempo may create stress for many planners. This is particularly true for members of the design team, who are likely to experience overload caused by the simultaneous demands of their conceptual and detailed planning responsibilities. While there is no good time to break away from the demanding planning process, it may be best to critically self-reflect on the team's performance early and often. Frequent, informal After Action Reviews (AARs) can be performed in a reasonable amount of time, usually under one hour. The fundamental features of an effective AAR are to: 1) review what was supposed to be accomplished; 2) review what actually happened; 3) analyze why things happened as they did; 4) determine what needs to be sustained (continued) or improved (changed), and; 5) assign responsibility for implementing the "fixes."

Team Climate

Does the planning team have the flexibility to move seamlessly back and forth between the frames?

The purpose of design is to help the commander to answer four basic questions: *What is going on in the environment? What do we want the environment to look like? Where do we act in order to achieve the desired end state? and How do we act to achieve the desired end state?* The planning team will need to confront these four questions simultaneously. Due to time constraints, the team may need to temporarily put one of the frames aside, even though it is not fully developed, and move on with the discourse. For example, even if members still disagree upon the interpretation of a piece of information after a reasonable amount of discourse, it may be necessary to leave the issue for later consideration. Discussions and insights from the other frames may result in a level of understanding that is required to settle the parked issue. Therefore, it is important that someone on the team be given the specific responsibility and authority to serve as facilitator for the group.



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Knowledge Management

Knowledge Management

Knowledge Management Defined

To support effective dialogue and discourse ADM requires the gathering of source data. The source data – required to establish facts and to verify assumptions – are collected from a variety of sources, including subject matter expert opinion, intelligence reports, Requests for Information (RFIs) from other agencies, open source information, and specially-collected data (such as polling data), among others.

The source data are then used to develop the design frames, visualizations, and narratives which are integrated into the detailed planning. These materials – both the source data and the design products which derived from them – will need to be reviewed and updated.

Managing large volumes of data can be a challenge; therefore the planning team will need to establish policies and procedures for annotating and archiving their source data and design products. For example, as new information becomes available they may want to verify their original interpretations of the source data. Similarly, during reframing the planning team will want to critically re-examine the evolution of their logic over time.

The self-reflection questions in this section focus on challenges associated with effective knowledge management. Critical issues to be addressed include:

- Can members of the planning team easily access their original source materials in order to review their prior interpretations?
- Does the planning team use a framework for evaluating the operational environment?
- Can the planning team reconstruct their original understanding of the problem?
- Does the planning team create and track Requests for Information (RFIs) to fill the knowledge gaps?
- Does the planning team go into sufficient depth of analysis when exploring the environment, problem, and solution frames?
- Does the planning team incorporate cultural differences (including differences from U.S. culture, as well as differences among host-nation sub-cultures) in their source data?
- Do the graphical visualizations clearly communicate essential information?
- Do the products make use of visualizations to provide a backbone for their core narratives?
- Does the planning team capture end-user feedback and use it to refine the design products?
- Are planning teams annotating and archiving their source data and design products developed during the ADM?

Knowledge Management

Can members of the planning team easily access their original source materials in order to review their prior interpretations?

One of the first steps in the ADM is to collect background information about the key actors in the environment. These may include digital/paper documents and subject matter expert (SME) opinions which are obtained via e-mail or interview. A common problem is the tendency for planning teams to lose track of what they have already read and concluded. Further, during discussions there will often be shifts in the interpretation of the data. Therefore, it is critical for the planning team to develop a formalized system or process that will allow them to retrieve the original information sources (so that they can check to see if their new interpretations are consistent with the original, raw data). Also information sources are not equally reliable and judgments about the reliability of a source may shift over time. Hence, it is important that the team be able to review and revise its earlier work, should its faith in previously relied-upon sources change.

Does the planning team use a framework for evaluating the operational environment?

There are many things that one can potentially measure, but if the information does not help support a decision, then it is not useful to the commander. Too much information can be a distraction, can cloud the picture, and can waste time because you don't have the resources to process, evaluate, or ascribe meaning to it. That's why you need the Commander's Critical Information Requirement (CCIR) to focus your data collection efforts on the status and disposition of blue, green, and red forces. In the beginning, you don't know what you don't know. So you end up consulting experts potentially collecting a wide variety of data. As you move forward in the ADM process, the data collection will become more focused because you will start to understand the problems, actors, and enemies. In practice, you typically end up with two or three competing theories about *What's going on here?* The CCIR will help you to identify which theory or theories to discard by process of elimination.

Knowledge Management

Can the planning team reconstruct their original understanding of the problem?

Since operations are continually evolving the planning team may need to reconstruct their original understanding of the problem. To do so, the team will need to review their original notes and source data. Unfortunately, losing track of information is all too common. However there are practical steps to ensure information is not lost throughout the design process. For example, the use of a standard lexicon helps to facilitate the search for information by ensuring members are using the same terminology. Similarly, centralized file servers and standardized data collection forms facilitate the search for information, because they provide standardized locations of where to search for critical information. Finally, embedding meta-data within documents – such as speaker’s notes in a presentation – can provide critical context to help the planning team reconstruct how the source data were transformed into assumptions and conclusions. The G-6 and the staff’s knowledge manager (if one is assigned) can also share additional best practices and lessons learned with the planning team.

Does the planning team create and track Requests for Information (RFIs) to fill the knowledge gaps?

As mentioned, one of the first steps in the ADM is to collect information about the operational environment. Although decision-making based on incomplete or missing information is extremely common, outcomes are likely to be better if such gaps in knowledge are explicitly taken into account. Planning teams often submit a Request for Information (RFI) when trying to obtain missing information. Planning teams should take active steps to avoid common RFI management pitfalls. These include: not submitting duplicate RFIs; ensuring that every RFI receives a response; and verifying that the RFI response adequately addresses the original information request. Some planning teams find it helpful to develop a RFI tracking log – this can be done using a whiteboard – to streamline the RFI process. When the RFIs produce answers that invalidate critical assumptions, it is important to revisit the decisions that were based on the faulty information.

Knowledge Management

Does the planning team go into sufficient depth of analysis when exploring the environment, problem, and solution frames?

Can the planning team make specific predictions about enemy capabilities or intentions with regard to time, space, and purpose? Do they maintain a clear linkage between observable facts and the deductions from those facts? Can they explain, in practical terms, the implications of what the data mean? Have they kept their assumptions explicit? Have they identified the CCIR to confirm the accuracy of these assumptions? Have they assessed their information collection process to confirm or deny the underlying assumptions (environment frame) and the theory of action (problem frame)? Affirmative answers to these questions demonstrates a high level of analytical rigor.



Does the planning team incorporate cultural differences (including differences from U.S. culture, as well as differences among host-nation sub-cultures) in their source data?

A major pitfall when operating in unfamiliar cultures is to assume that others will think and react as we do. For example, in developing the operational approach, we identify strategies that (we believe) will help to bring about the desired end state. However, the local populace may interpret our actions and plans much differently than we intended. Therefore, it is critical to understand the cultural differences of the environmental actors. To do so requires diligent research to uncover and understand the cultural factors that exist within the target environment. The planning team can draw on a wide range of subject matter experts (SMEs), including members of the DoD, non-governmental organizations, joint and coalition partners, and academics who have appropriate backgrounds with regard to the specific context to help ensure this knowledge is captured within the planning team's understanding of the broader situation.

Knowledge Management

Do the graphical visualizations clearly communicate essential information?

Graphical visualizations are frequently used to help explore and then communicate the most important issues, effects, and inter-relationships of the information. Visualizations may array actors, relationships, interests, tensions, states, and actions, as abstract diagrams, or plotted in geographic, temporal, or other value spaces. Typical visualizations include:

- Environment maps which show actor/relationship or node/linkage diagrams;
- Problem maps which show inter-relationships among reinforcing and competing states and processes; and
- Operational approach diagrams which depict lines-of-operations that map from current states to desired states, along with decision points and branches.

Visualizations often become the drivers for group discourse as team members share key pieces of what they have learned with other team members. As team thinking converges, visualizations are eventually polished and used to support the presentation of ADM arguments in final products and briefings.

Do the products make use of visualizations to provide a backbone for their core narratives?

To communicate complex ideas, design products usually combine a mixture of both text and graphics. The graphics generally derive from the working visualizations developed by the team through the processes of research, distillation, and discourse. These graphics should provide the backbone for many sections of the discussion. The discussion takes the form of a narrative that talks through the logic behind the graphics. For many end users, the graphics are likely to have the greatest impact, because they are included in multiple briefing slides. The planning team can reach out to individuals with graphics design experience – such as engineers or intelligence officers – to explore the best ways to visually convey complex ideas. In addition, graphics should be developed using standard software so that they are easily updateable by other team members. Finally, the planning team should maintain effective version control, for example by including the revision date within the actual file name, to ensure that users are referencing the correct graphic.

Knowledge Management

Does the planning team capture end-user feedback and use it to refine the design products?

Briefings generally correspond with the delivery of each major design product. Initially these may be used to share the planning team members' thoughts and interim conclusions with other stakeholders. Later, they may be used to brief the commander on the team's progress and recommendations. In such cases, an important purpose of the briefing is to elicit feedback that can be incorporated into revising future design products. As part of these briefings, the planning team should solicit remedial feedback from the end users to ensure that future versions are presented in sufficient detail; that the organization/flow is logical and straightforward; and that the content answers the critical questions of *Why?* and *What are the implications?* Feedback can be collected interactively during the briefing, or during a post-briefing question and answer session with members of the audience. In summary, the design briefings are a critical means for conveying feedback back to the planning team from end users.

Are planning teams annotating and archiving their source data and design products developed during the ADM?

There will likely be a significant amount of overlap between the team members working on the conceptual design plan and those charged with implementing the design into a detailed plan. However, there are always likely to be some planners (as well as other outside stakeholders) who were not deeply involved in the design effort, and they will need help in understanding the design and what it implies for planning decisions. Some of the documentation that must be developed during the standard Army planning process essentially duplicates information that would normally be developed during design. For instance, many planning documents start with a mission statement that should have been captured (and perhaps refined) during design. Course-of-Action (COA) descriptions typically include “Lines of Effort” and “Key Actions” both of which should be developed during the design process. The Commander’s Estimate should include lists of “Key Facts” and “Assumptions” many of which, again, should have been developed during an analysis of the operational environment. The incongruence of team members and the marrying of data needed in design and detailed planning highlights the need for planning teams to accurately annotate and archive their source data and design products.

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Integrated Planning

Integrated Planning

Integrated Planning Defined

Army doctrine explains that planning involves both a conceptual component and a detailed component (Department of the Army, 2010). Further, the Army Design Methodology was codified as a supporting approach to improve the conceptual aspects of the planning process and seeks to ensure conceptual planning occurs prior to and integrates iteratively with detailed planning and the Military Decision Making Process (MDMP) (Department of the Army, 2010). The design process and products, therefore, should be used to inform the MDMP and Troop Leading Procedures. For example, elements of the design should be used to develop Commander's Critical Information Requirements (CCIR) and the staff running estimates. Similarly, the narrative and visualizations should be referenced in operational briefings and mission rehearsals.

The self-reflection questions in this section focus on challenges that are associated with integrating design within the planning process. Critical issues to be addressed include:

- Are the design discussions developing the groundwork for the Commander's Critical Information Requirements (CCIR)?
- Are design sessions included in the planning battle rhythm to ensure adequate focus to conceptual planning?
- Is the design terminology appropriately tailored to the target audience?
- Does the planning team use all available resources to share critical information with individuals who are not part of the team?
- Does the planning team develop a compelling graphic to generate shared understanding?
- Do the design products improve understanding in the planning process?

Integrated Planning

Are the design discussions developing the groundwork for the Commander's Critical Information Requirements (CCIR)?

Commanders spend a substantial portion of their time attempting to understand the environment and assess how well the mission is accomplishing its objectives. The Commander's Critical Information Requirements (CCIRs) help the commander to gain a better situational understanding, provide clearer statements of intent, and prioritize limited resources. As the planning team develops the design frames, they should concurrently develop the initial CCIRs that will enable the commander to make the best possible decision. The planning team should also review the initial CCIRs that were developed during the design process as they brief the design products to the staff planners who will execute the MDMP process. Finally, the planning team should re-examine the CCIRs during each reframing exercise.

Are design sessions included in the planning battle rhythm to ensure adequate focus to conceptual planning?

In most commands at the Division level and below, the “core design team” is a subset of the planning team. This structure does help to ensure a shared understanding amongst some or all of the team members. However, it can be difficult for members of the planning team to make the cognitive shift between conceptual planning and detailed planning. To help the planning team in this cognitive shift, design sessions should be included in the battle rhythm and should be explicitly labeled as “design sessions” or “conceptual planning.” Doing so will help to ensure team members can mentally transition from “figuring out what problem to solve” to “solving the right problem.” Doing so also helps to ensure a sufficient amount of time is allocated for conceptual planning.

Integrated Planning

Is the design terminology appropriately tailored to the target audience?

Disagreements over the terminology used in design can lead to misunderstandings and barriers to acceptance (Grome et al., 2012). For example, the audience may embrace the concepts of design but react negatively to the terminology used. Several early practitioners of design noted that their choice of language – including terms such as “framing” – prompted negative reactions from some commanders and their planning teams. When this happens, the planning team may find it helpful to use terminology that is more familiar or language that is already acceptable to the audience. For example, an intelligence officer found it was helpful to present information related to the environment and problem frames during the intelligence briefing using intelligence-related terminology. Doing so “won over many converts” because people were no longer arguing over terminology. In addition to using familiar terminology, the design team should consider preparing a condensed terms and references guide to provide to planners who have not received formal training in design.

One early practitioner of design (who had a background in intelligence) found that it was helpful to present the environment and problem frames during the intelligence briefing while using intelligence-related terminology.

Integrated Planning

Does the planning team use all available resources to share critical information with individuals who are not part of the team?

In garrison, the planning team is likely to be using similar equipment on the same network. As a result, information sharing is relatively easy. While deployed, the planning team will likely experience challenges when trying to share information with joint, coalition, host nation, and NGO partners. These challenges will be due in part to security considerations, but also to connectivity issues when working in austere conditions. The planning team should coordinate with the G-6 to ensure that they have the necessary level of connectivity to effectively integrate with Liaison Officers from partner organizations. This process should begin during home station training and should occur throughout the deployment cycle. It is critical that Liaison Officers be provided with the appropriate network connectivity to facilitate coordination between organizations. However, technology alone is not sufficient to ensure effective inter-organization coordination. As noted in ATTP-5.01 “Effective liaison elements work toward establishing mutual trust and confidence, continuously coordinating actions to achieve cooperation and unity of effort” (page 9-7).

Does the planning team develop a compelling graphic to generate shared understanding?

Briefing charts and graphics have become the norm for planning teams to convey their conceptual plan to stakeholders (although see Zweibelson, 2012 for criticism regarding this practice). Regardless of the reasons for the emphasis on briefing graphics vs. narratives, planning teams may have difficulty developing a compelling graphic. Very often the abstract concepts and ideas to be represented in the graphic can be difficult for some planning teams to express and the team may also have limited experience using graphical tools to express their thoughts visually. Therefore, it may be helpful to consult with personnel outside the planning team, such as intelligence or engineer officers, because they have extensive experience developing timelines, map overlays, network diagrams, and flowcharts. The planning team should have access to a number of graphic design tools, and with sufficient practice will become familiar with their use.

Integrated Planning

Do the design products improve understanding in the planning process?

The outcome of design is an operational approach that portrays the friction between systems of support and systems of opposition. It is based on a clear understanding of objectives, capabilities, and intentions. *What would we do without prompting? What would the adversary do without prompting? Where will these systems likely collide?* It's not just the tactile metaphor of units colliding on the battlefield, but all of the available capabilities: land, air, cyber, influence operations, space assets, etc. Planning staffs often tend to focus on the obvious things such as land units. But as part of the larger theory of action, it is important to consider all of the capabilities that are relevant to addressing the problem.



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Reframing

Reframing

Reframing Defined

Reframing is a critical component of design. Reframing can be triggered by a number of external factors, such as: the introduction of a new actor in the environment, a change of alliances among key actors, or a significant battlefield event.

Similarly, reframing can be triggered by a variety of internal factors, such as: new data that cannot be reconciled with the existing logic or theory of action, or a “push” by the commander when the planning team has not sufficiently examined the operational environment.

The team members will often find themselves having to move back and forth between the problem frame, environmental frame, and operational approach. While doing so can present a challenge, it also represents a unique opportunity to ensure that data and assumptions from one frame are accurately represented in the others.

The self-reflection questions in this section focus on challenges that are associated with reframing and when moving back and forth among the three design frames. Critical issues to be addressed include:

- Is the planning team willing to reframe, as necessary? And have they set up rules to identify the need to reframe?
- Is the problem becoming less complex and better understood through reframing?
- What factors lead the planning team to engage in reframing?
- Are elements from the earlier frames being carried through to subsequent frames?
- Does the planning team engage in synthesis?
- Does the planning team adjust the solution by conducting a reframing effort and/or re-evaluating the suitability of the metrics?
- Does the planning team identify conditions that might indicate the need for reframing?
- Is the planning team capable of differentiating an aberration from a meaningful trend in the outcome measures?

Reframing

Is the planning team willing to reframe, as necessary? And have they set up rules to identify the need to reframe?

Information is continually being gathered during the course of an operation. As a result, new information may contradict what was previously known and will need to be reconciled with the design concept. Sometimes the new data can be integrated into the design concept with minor modifications. Other times, the data will not fit with the underlying logic or theory of the conceptual plan and therefore cannot be integrated. When the data no longer fits the underlying logic or theory, the planning team must be willing to abandon their original design concept and start anew. The previous points introduce the elements of responsiveness (“push”) and intervention (“pull”) into the planning team’s activities. Responsiveness to reframe can be enabled by establishing rules up front that require the group to reframe. For example a change in the Commander’s Critical Information Requirement (CCIR), a new actor in the environment, or a significant battlefield event. The rules push the team into reframing. However, it is impossible to develop rules for every possible situation. Sometimes, a “push” is required by the commander, the design team lead, or the team moderator. The ability to push the team to reframe is mainly a function of the climate that was established early in the planning team’s life cycle, where all ideas carry equal rank even if the source of those ideas do not. Pushing old or new ideas to the forefront by intervention can energize the reframing process.

Is the problem becoming less complex and better understood through reframing?

Planning teams should avoid measuring success in terms of the number of problems solved, because there will always be new problems to be solved. Some designers believe that planning teams should focus instead on an “aiming point” or a “range of acceptable outcomes” which would suggest that the situation is moving in the correct trajectory. According to this perspective, as long as the trend is positive, the organization is gradually nudging the environment away from its current state and more closely approximating the desired end state. The planning team has a number of tools with which to assess if (and how much) the complexity of the problem has changed. These may include Commander’s Critical Information Requirements (CCIRs), assumptions, constraints and limitations, measures of effectiveness and performance, and knowledge of the state of things and events. Each serves as an indicator. The planning team should ask the following questions: *Have assumptions turned to facts? Have environmental constraints been removed? Have deficiencies in the plans been addressed?* and *Has the trend in events taken a more favorable direction?* If the answers to these questions are affirmative, it means that the problem is becoming less complex and better understood through reframing.

Reframing

What factors lead the planning team to engage in reframing?

A number of factors should prompt the planning team to engage in reframing. One factor is the planning team's own battle rhythm. Specifically, the planning team should engage in periodic reframing exercises so they can be prepared for contingencies before they occur. While this is clearly the best case scenario, it is also the most difficult, because there are many other factors that demand the planning team's attention.

The "triggering" or answering of the Commander's Critical Information Requirements (CCIRs) should also prompt the team to engage in reframing. Each component of CCIR (Friendly Force Information Requirements – FFIR; Essential Elements of Friendly Information – EEFI; and Priority Intelligence Requirements – PIR) is linked to a set of the commander's decisions. When any are "triggered," one or more decisions are typically made as a result. Such decision-making should also trigger a reframing exercise, because the environmental and/or problem frames have likewise changed.

Are elements from the earlier frames being carried through to subsequent frames?

The problem frame, environmental frame, and operational approach collectively produce a design concept (Department of the Army, 2010). The planning team engages in the process of thesis, antithesis, and synthesis to ensure a connectivity of ideas and theory from the environmental frame, to the problem frame, and then to operational approach. To the extent that the frames do not build off and inform one another, the design process does little to support the commander's decision-making.

Each frame should capture in writing the underlying facts, assumptions, constraints (variables which confine one's actions), and limitations (known deficiencies). Facts can and should be validated, but the planning team should fully understand their implications for planning. Because a thesis is a proposition that is offered for consideration, each point of argument for or against the thesis necessarily rests upon assumptions regarding the environment and the actors in it. Assumptions from one frame must be verified in another, or else their full impact will be lost. Similarly, each frame has constraints and limitations which must be addressed in the operational approach. Testing these for accuracy both within and across the frames improves the fidelity of the commander's decision-making.

Reframing

Does the planning team engage in synthesis?

Synthesis allows the planning team to move beyond merely describing what is happening on the ground. It allows them to understand why things are occurring and what the implications may be as the operation moves forward. Whereas current operational assessments often rely upon snapshot status indicators such as stoplight charts (red-amber-green), the planning team must think beyond the relative positioning of things and events. To progress toward the desired end state, the dynamic changes in the interim state of events must be identified, tracked, and understood over time. Real synthesis takes place when the planning team can answer the questions *Why are things unfolding in this manner?* and *What are the implications for the way forward?* Synthesis can only be achieved by extensive dialogue and collaboration to understand behaviors and events from the perspective of the system-as-a-whole (Department of the Army, 2010).



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Reframing

Does the planning team adjust the solution by conducting a reframing effort and/or re-evaluating the suitability of the metrics?

Measurement is critical to the success of the ADM because design is driven by information. During design, the commander and his planning staff develop a theory of interactions among the key actors in the environment (the environment frame) and a logic of action (the problem frame). The product of these two frames is the operational approach (the solution frame) or planned series of actions that are organized in time, space, and purpose to change the fundamental conditions in the environment so that it more closely approximates the desired end state. A formal assessment plan will also be developed to determine the extent to which the end state is being met. Therefore, as the operation continues the commander and his planning staff will need to evaluate their design concept based on the metrics within the assessment plan and other information coming in to the planning team concerning the environmental situation. The extent of the discrepancy may trigger a reframe of their operational approach.



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Reframing

Does the planning team identify conditions that might indicate the need for reframing?

An essential part of planning and operations is identifying appropriate assessment measures, determining ways to carry out such assessments, and establishing requirements for monitoring and interpreting significant results. However, measuring progress in conflict environments is extremely complex. In response, the DoD and interagency partners have been developing a framework for Measuring Progress in Conflict Environments (MPICE; Agoglia, Dziedzic, & Sotirin, 2010). Planning staff should be cognizant of the issues raised in the MPICE framework. When developing measures of progress, planning teams should strive to identify a subset of measures that might indicate a need to reframe the design.

Is the planning team capable of differentiating an aberration from a meaningful trend in the outcome measures?

The planning team should be periodically revisiting the underlying assumptions (the environment frame), the logic of action (the problem frame), and the operational approach (the solution frame) and comparing it with assessments of the current operational environment. If the team observes a discrepancy between what they have projected and the current environment, it could just be an aberration in the system. Alternatively, it could be something much more meaningful. Your experience will need to guide you and your team's understanding of the data. Frequency analysis may tell you one thing, but the magnitude of the event may tell you something else. Both need to be considered together. Therefore, continuous assessment is a key driver in reframing.

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Appendices

Glossary

ADM - Design / Army Design Methodology

CCIR - Commander's Critical Information Requirements

Environmental frame - An analysis of actors in the environment and their inter-relationships

Problem frame - The process of determining which problem to solve

Operational approach - Recommendations for how to bring about the desired change

Integrated planning - How elements of ADM are incorporated into the military decision making process (MDMP)

Planning team - Individuals who are charged with implementing the design process

Thesis-Antithesis-Synthesis - The Socratic method of debate and dialogue

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