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SUBJECT: **Bi-SC ALTERNATIVE ANALYSIS HANDBOOK**

DATE: 7 December 2012

REFERENCES: A. IMSM-0245-2012, Development of a Bi-SC Concept for Alternative Analysis, dated 16 May 2012.
B. CPP/SPL/9400-27/12-283020, Alternative Analysis Training Development Support, dated 26 April 2012.

1. At Reference A, IMS endorsed the Bi-Strategic Command Concept for Alternative Analysis (AltA) and requested the further development of the capability.

2. At Reference B, SHAPE requested Allied Command Transformation (ACT) to develop the required training and education to meet the agreed Initial Operating Capability (IOC) and Full Operating Capability timelines of January and May 2013 respectively. The enclosed AltA Handbook represents the second step toward IOC. As requested, the AltA Handbook is herein provided for Military Committee notation.

3. As a comprehensive guide to AltA, this Bi-SC Handbook provides a critical building block supporting implementation and use of AltA within Allied Command Operations and ACT, and ultimately at all levels within the Alliance.

4. Should there be any questions, our Bi-SC points of contact are: LTC Federico Catapano, ITA F, federico.catapano@act.nato.int and CDR Pawel Lewandowski, POL N, pawel.lewandowski@shape.nato.int .

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ENCLOSURE:

1. Bi-Strategic Commands Alternative Analysis Handbook (AltA).

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NORTH ATLANTIC TREATY ORGANISATION

Bi-STRATEGIC COMMANDS ALTERNATIVE ANALYSIS HANDBOOK (AltA)

AltA

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Preface

The Alliance relies on thoroughly considered and well-implemented plans, policies and procedures created with an understanding of the unique strategic and operational issues it faces. For a number of reasons, our processes necessarily drive towards a consensus opinion, often at the expense of unique or divergent perspectives. The application of independent critical thought to a problem can offer the decision maker a broader view and possibly expose unforeseen considerations that might cause failure of otherwise thoroughly considered solutions.

Alternative Analysis (AltA) is a broadly applicable capability that supports the inclusion of independent, critical thought and alternative perspectives to support decision making. AltA offers the opportunity for NATO staff to inject additional knowledge, or knowledge perceived in a different way, into a decision making process alongside traditional problem-solving processes. Regardless of the specific function, the goal is reduced risk and expanded opportunities through better decision-making.

AltA builds on and enhances various processes NATO already has in place that aim at improving decision-making and support problem solving.

As a comprehensive guide to AltA, this Bi-SC Handbook provides a critical building block supporting implementation and use of AltA within Allied Command Operations (ACO) and Allied Command Transformation (ACT) and ultimately at all levels across the Alliance. It is specifically designed for use as a quick reference guide for staff to assist problem solving in many diverse situations.

Many of the Alternative Analysis techniques are easy-to-use methods that bring structure to existing processes thus allowing the staff to deliver products that reflect analysis in an efficient manner.

This handbook has been developed through the collaborative efforts of a Bi-SC AltA Working Group consisting of representatives from SHAPE, HQ SACT, JFC Brunssum, JFC Naples, JFC Lisbon, FC Madrid, AC Ramstein, JWC and JALLC. The Handbook is intended to continue evolving through the use and additional development of AltA; HQ SACT, ACOS Capability Engineering, specifically the Operational Analysis Branch, is responsible for updating the Handbook and aligning it with NATO processes and doctrines.

User's Guide

This Handbook is the definitive reference for the implementation and application of AltA throughout all NATO commands. It is intended for the use of all NATO personnel and is structured as follows:

Chapter 1 provides a general understanding of AltA by defining AltA, describing the principles of AltA and explaining the components in the development of AltA. All commanders and staff unfamiliar with AltA should read this chapter.

Chapter 2 provides an overview of AltA by discussing roles and responsibilities of the personnel involved in AltA and the considerations for the application of AltA. The AltA Facilitator is required to have an in-depth understanding of this chapter. Commanders, senior leadership, and staff officers should read this chapter to understand how the AltA Facilitator supports their command.

Chapter 3 describes a general process involving AltA. It is necessary to read this chapter to understand how AltA will assist the staff. This chapter provides a step-by-step outline of the AltA process.

The annexes provide further information supporting the use of AltA:

Annex A provides detailed descriptions of a variety of AltA techniques. Each description is structured in "when to use", "benefits", "application" and "support needed", providing comprehensive guidance for when, why and how each technique should be applied. Introductory tables summarise core characteristics of each technique to further facilitate choosing a technique. This annex is intended to be a living document, periodically reviewed and updated with appropriate techniques.

Annex B provides a detailed explanation on how AltA can be used in the NATO Operations Planning Process with a theoretical introduction and hands-on practical guidance.

Annex C provides an introduction to training requirements for the commanders, supervisors and staff.

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CHAPTER 1 – INTRODUCTION

1-1. Aim of the Handbook

a. This handbook provides staff members with the information required to understand why, when, & how to apply Alternative Analysis (AltA) and a list of AltA analysis techniques from which to choose the one that most appropriately fits the problem to be solved and the skill level of the user.

b. This handbook is a stand-alone document. It establishes a common baseline of processes and techniques for use across the NATO Command Structure and, where appropriate, to any NATO organisation.

c. The NATO staff officer only needs a clear understanding of his task or problem, this handbook (specifically the techniques described in Annex A), and the time to conduct the analysis. Additionally, the staff member may draw from analytical techniques outside the ones in the handbook.

d. This handbook describes AltA principles, AltA application and processes, techniques and coordination with selected existing NATO processes. It also demonstrates how AltA is able to continuously support and enhance problem-solving processes to reduce risk in the decisions commanders make.

e. This handbook is gender neutral. The use of masculine throughout the handbook is just for simplicity.

1-2. **Use of the Handbook.** This handbook is designed to be used by all staff across different functional areas within NATO headquarters.

1-3. Alternative Analysis Explained

a. Alternative Analysis is defined as **“the deliberate application of independent, critical thought and alternative perspective to improve decision-making”**. AltA offers the opportunity for NATO staff to inject additional knowledge, or perceptions, in a different way into a decision-making process alongside traditional problem-solving processes. This facilitates improved creativity and, generally, broadens the understanding of the staff. The purpose of AltA and this Handbook is to support staff members with analytical techniques to enhance independent critical thinking, providing alternative perspectives in support of existing processes. It is intended to supplement instead of duplicate the functions performed by existing analysts or other staff.

b. AltA provides a vehicle for enriching understanding of the problem-space within which staff officers are seeking to solve problems. Many of the techniques are easy-to-use methods that can help provide structure to existing processes. AltA's analytical framework will often help produce better results, in a more efficient manner, than the results achieved by staff officers working alone or in an unstructured staff meeting or process.

c. AltA is also designed to assist overcoming biases that may exist in NATO decision-making processes. While considering the permanency of social and cultural factors (bias) that can hamper processes, AltA presents a useful and viable mitigation for groupthink, mirror imaging, and other pitfalls of decision-making. Figure 1 depicts common perceptual and cognitive biases.

Perceptual Bias	**Biases in Evaluating Evidence**
Expectations: We tend to perceive what we expect to perceive. More (unambiguous) information is needed to recognize an unexpected phenomenon. **Resistance:** Perceptions resist change even in the face of new evidence. **Ambiguities:** Initial exposure to ambiguous or blurred stimuli interferes with accurate perception, even after more and better information becomes available.	**Consistency:** Conclusions drawn from a small body of consistent data engender more confidence than ones drawn from a larger body of less consistent data. **Missing Information:** It is difficult to judge well the potential impact of missing evidence, even if the information gap is known. **Discredited Evidence:** Even though evidence supporting a perception may be proven wrong, the perception may not quickly change.
Biases in Estimating Probabilities	**Biases in Perceiving Causality**
Availability: Probability estimates are influenced by how easily one can imagine an event or recall similar instances. **Anchoring:** Probability estimates are adjusted only incrementally in response to new information or further analysis. **Overconfidence:** In translating feelings of certainty into a probability estimate, people are often overconfident, especially if they have considerable expertise.	**Rationality:** Events are seen as part of an orderly, causal pattern. Randomness, accident and error tend to be rejected as explanations for observed events. For example, the extent to which other people or countries pursue coherent, rational, goal-maximizing policy is overestimated. **Attribution:** Behaviour of others is attributed to some fixed nature of the person or country, while our own behaviour is attributed to the situation in which we find ourselves.

Figure 1: Common Perceptual and Cognitive Biases[1]

[1] From "A Tradecraft Primer: Structured Analytic Techniques for Improving Intelligence Analysis", US Government, dated March 2009.

1-4. **Principles.** AltA is intended to be flexible. It builds on existing staff and analytical capabilities where they are available instead of introducing a new entity or staff structure. AltA has eight principles:

a. **AltA must not be Constrained by Organisational Influence.** To be of value to a decision making process, AltA must be free to deliver independent or "out-of-the-box" thought that is not constrained by traditional hierarchal structures.

b. **AltA is an Intellectual Process not a Prescriptive Organisation.** The capability is adaptable to meet each organisation's unique needs. For example, a strategic command might organise an ad hoc team to analyse an issue of strategic importance to the Alliance; the operational level might establish a standing team in support of operations planning and assessment; while other organisations might desire staff-wide implementation of these analytical skills to support deeper understanding of the topics they examine.

c. **AltA does not Duplicate Existing Functions within an Organisation.** AltA is designed to complement and draw from other existing analytical functions (e.g. operational analysis), not to replace or duplicate them.

d. **AltA is Designed to Support Problem Solving.** AltA is performed to support a "Problem Owner", and will not normally provide a standalone solution to a problem. It will not deliver a parallel staff. Although there are techniques that can be used to review existing material, AltA is not intended to correct someone else's work - procedures already exist for that purpose. The value of AltA is in receiving an independent perspective.

e. **AltA is Best Applied throughout a Process.** Early engagement of AltA allows presentation of alternative perspectives and insights to better inform the supported process.

f. **AltA can Support Problem Owners at Any Level of Staff.** This principle will be most significantly influenced by how a command chooses to organise the capability. Whilst this capability ultimately supports command decision making, the greatest benefit is realised if it is not kept for the exclusive use of Command Groups. It has broad applicability from supporting a single staff officer faced with a problem to supporting the complex decisions faced by a large staff organisation.

g. **Mutual Understanding is the Key to Realising the Full Benefits of AltA.** Problem owners must be willing to accept that AltA input might be controversial. Simultaneously, AltA must respect the supported/supporting nature of the relationship and be sensitive to the potential impact of its product.

h. **AltA Requires Formal Direction and Guidance.** Direction and guidance must be tailored to the organisation's needs whilst balancing the necessity of defining intent and use without constraining independence and flexibility.

1-5. **Components.** AltA comprises three components to support all organisations within NATO. Organisations will implement and apply AltA in a manner that best suits their size, responsibilities, challenges and goals (see Chapter 2 for details).

a. **Analytical Techniques.** The core of the capability is the deliberate application of analytical techniques that help uncover unique "out of the box" perspectives and deliver independent critical thought. Different types of techniques provide support at all stages of the problem-solving process.

b. **AltA Facilitator.** While most AltA techniques are suitable for application by staff members aided by the AltA Handbook, the more complex techniques will require the support of an AltA Facilitator. The AltA Facilitator may work with problem owners directly in executing AltA or may simply advise and guide its use while other staff members perform the analysis.

c. **Education and Training.** Appropriate education and training is essential to ensure clear understanding of the techniques and their appropriate application. A course for staff officers, and an advanced course for facilitators are currently under development.

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CHAPTER 2 – OVERVIEW OF ALTERNATIVE ANALYSIS

2-1. **Personnel.** AltA capitalises on existing staff members and, if necessary, includes subject matter experts from outside organisations. Each Commander[2] can employ the capability in a manner that best suits the command's size, responsibilities, challenges and goals. Within each organisation, the personnel involved with AltA are:

a. **Commander (or Senior Leader).** The commander has an important role in the implementation of AltA and the continuous success of its application. He is responsible for the wide-spread acceptance and implementation of AltA within his command and its implementation. After the implementation of AltA, the commander continues involvement with AltA in the following ways:

(1) Create an environment for AltA. The successful application of AltA requires the support from the commander by creating an environment open to independent, critical thought and alternative perspectives. The commander can complement staff work by encouraging the use of AltA in taskings.

(2) Decide on resources and manning. The commander designates at least one AltA Facilitator and is responsible for resourcing AltA according to project priorities and requirements for AltA support. If there is more than one Facilitator within a single headquarters, the commander should appoint one as his AltA "Focal Point" to assume functional responsibility for AltA within the command.

(3) Consult with the AltA Facilitator on the use and performance of AltA. The Commander and the AltA Facilitator should regularly review the use and performance of AltA in order to refine its application and increase its effectiveness.

b. **Problem Owner.** A Problem Owner is the person responsible for a task to be completed. It may be the commander/senior leader, or responsibility for the task/problem may be delegated to a staff member or other responsible person. A Problem Owner can use AltA to support a problem-solving process. The Problem Owner can apply AltA techniques independently (without support from others) or consult with the AltA Facilitator to define the framework of AltA use. (See Para 2.3, Aspects of AltA Application).

[2] For the purpose of simplicity, "commander" is used to signify both military and civilian leaders and superiors.

c. **AltA Facilitator.** The AltA Facilitator provides guidance on the different AltA support requests. The AltA Facilitator is trained in AltA and assumes management responsibilities for this capability within his command. He ensures that AltA is widely understood and properly employed. The AltA Facilitator can but does not need to be involved in every AltA application.

(1) **Requirements.** The AltA Facilitator is key to the implementation and success of AltA throughout the NATO Command Structure. The AltA Facilitator needs to possess certain qualifications to facilitate the use of AltA. The AltA Facilitator is:

(a) Trained staff member. AltA is an intellectual capability drawing from a variety of analysis techniques. The AltA Facilitator is specifically trained (AltA course) and experienced in applying these techniques to a range of problems. In some cases, the AltA Facilitator may be a drawn from existing analytical organisations.

(b) Experienced staff member. The AltA Facilitator is the point of contact within the organisation or command for AltA. In order to make best use of AltA, a thorough knowledge or understanding of the organisation's tasks and work processes is important.

d. **Desirable Qualities.** The AltA Facilitator must possess certain qualities in order to succeed as a facilitator of AltA and to provide Alternative views and/or analysis when required. The AltA Facilitator is:

(1) Rational. We are thinking critically when we rely on reason rather than emotion, require evidence, consider all known evidence, and follow evidence where it leads; are more concerned with finding the best explanation than being right, analysing apparent confusion and asking questions.

(2) Self-aware. Weights the influences of motives and bias, and recognises own assumptions, prejudices, biases, or point of view.

(3) Honest. Recognises emotional impulses, selfish motives, nefarious purposes, or other modes of self-deception.

(4) Open-minded. Evaluates all reasonable inferences**,** considers a variety of possible viewpoints or perspectives, remains open to alternative interpretations**,** accepts a new explanation, model, or paradigm because it explains the evidence better, is simpler, or has fewer inconsistencies or covers more data**,** accepts new priorities in

response to a re-evaluation of the evidence or reassessment of our real interests, and do not reject unpopular views out of hand.

(5) Disciplined. Is precise, meticulous, comprehensive, and exhaustive**,** resist manipulation and irrational appeals, and avoid snap judgments.

(6) Sound Judgment. Recognises the relevance and/or merit of alternative assumptions and perspectives**;** recognises the extent and weight of evidence.

e. **Responsibilities**

(1) Support the Problem Owner. The AltA Facilitator's primary responsibility is to support the Problem Owner. The AltA Facilitator assists the Problem Owner the application of AltA or recommending the creation of an AltA team if necessary. The AltA Facilitator may directly participate in the analysis process of a task or may facilitate the use of an AltA technique while the Problem Owner or ad-hoc AltA team do the analysis.

(2) Facilitate understanding in the organisation. AltA is sometimes considered controversial as it may challenge traditional processes, mind-sets and/or solutions. This requires the AltA Facilitator to create an understanding of the benefits of AltA, and how it supports staff work & the problem-solving process.

(3) Provide "in-house" training. The AltA Facilitator is the primary trainer for leadership and staff in an organisation and should coordinate with the AltA Focal Point as required. To support training, he should develop and/or capture relevant case studies from within the command to provide training to staff members who would like, or have been directed, to apply AltA processes. Additionally, he should consider providing periodic briefings, particularly at the newcomer's orientation training.

f. **AltA Focal Point (FP).** In addition to the responsibilities of an AltA Facilitator, the AltA FP is the manager of the AltA capability within the command when there are two or more AltA Facilitators assigned. The purpose of an AltA FP is to synchronise and share information with all AltA trained personnel within a headquarters; additionally, the AltA FP serves as the primary point of contact for AltA for the command.

g. AltA Focal Point at Allied Command Operations and Allied Command Transformation Headquarters:

(1) Advise the Commander on AltA. AltA lacks a formalised assessment strategy. This requires the AltA FP to develop a feedback mechanism capturing the impact AltA had on problems and to derive lessons learned. This is a core responsibility of the AltA FP as it is the basis for reporting to the Commander and the improvement of AltA within NATO.

(2) Within NATO

(a) Engage with other AltA Facilitators and national experts. Exchanging experiences regarding the implementation and application of AltA with other AltA Facilitators is important to the growth and improvement of capability. Some NATO nations have similar capabilities (often with different names) their input and recommendations can be of great valuable to AltA.

(b) Support the implementation and application of AltA in other commands. Commands can benefit each other by exchanging experiences (Lessons Identified, Lessons Learned, Best Practices, training materials, etc.) concerning use and application of AltA.

(c) Develop improvements and recommendations for AltA. The AltA capability is flexible in nature and is open to improvement. The AltA FP aggregates experiences from AltA within his command to develop recommendations and potential improvements.

(d) Support AltA training. The AltA FP supports AltA training by proposing changes to the AltA training curriculum.

2-2. **External Support.** The AltA Facilitator may find the incorporation of outside expertise through subject matter experts is needed to best support the Problem Owner. This expertise may reside in any number of places, including other NATO commands, national or international institutions, or academia. The process of engaging with external subject matter experts (SMEs) must be coordinated with the relevant organisations through the command's AltA Focal Point.

2-3. **Aspects of AltA Application.** The Problem Owner has three aspects to consider after he decides to use AltA. Although optional, it may be beneficial for the problem owner to consult the AltA Facilitator for guidance after the decision to apply AltA has been made.

AltA

a. **AltA Application Objective.** The Problem Owner must decide what the objective of AltA application to a problem is. The objective of AltA application can be tailored to the process it supports and the Problem Owner's ideas. (See Para 2-4).

b. **AltA Application Types.** The application of AltA is adaptable to manning, adaptable to the task/problem, and adaptable to resource-constraints. (See Para. 2-4).

c. **AltA Techniques.** AltA includes many techniques that ensure availability of a variety of tools to apply at different stages of problem solving. (See Para 2-4).

2-4. Application Objective. The Problem Owner (and the AltA Facilitator) define(s) the expected objective of AltA application. Generally, there are three types of objectives for AltA application:

a. **Review of Existing Material.** AltA can be used to review existing material that has either been created during the problem-solving process or has been provided as an input into the process. Analysing this material from a different perspective can provide new insight into the problem. Applications of AltA techniques are intended to "test" the content (e.g., review the assumptions made during a planning process). This approach is the least resource- and time-consuming as it is limited in scope.

b. **Contribution to Process/Material.** Application of AltA throughout a process is the most comprehensive application and continuously encourages critical thinking at each stage of decision-making. The use of AltA techniques will often facilitate existing work processes, increasing efficiency and product content in a time constrained environment.

c. **Creation of New Material.** Certain problems/tasks require AltA to create new material that suggests a different interpretation of the data presented and the environment. This objective is time and resource intensive, but can provide significant insight for course of action development.

AltA

	Review of Existing Material	Contribution to Process/Material	Creation of New Material
Pros	+ Minimal time and resource requirements	+ Most holistic approach of applying AltA + AltA continuously challenges the outcome at all stages of the process + Techniques may increase effectiveness of existing processes	+ Particularly helpful during the creation of new and creative perspectives + Very few constraints on the application of AltA
Cons	- A mere review limits the potential impact of AltA on the work - Maintaining an independent perspective is difficult during a review	- Using AltA at every stage might be excessive and slow the process down - Danger of creating unnecessary challenges and drawing attention to inconsequential points ("red herring")	- Creating independent material could be time and manpower intensive - Potential of using AltA as a replacement of regular staff work

Figure 2.1: Pros and Cons of AltA Application Objectives

2-5. Application Types. The application of AltA to the respective task is the choice of the Problem Owner. He decides how and by whom AltA is applied. AltA may be applied in one of three ways. Pros and Cons associated with each type are shown in Figure 2.2.

a. **Problem Owner Applies AltA Himself.** The Problem Owner may apply AltA techniques independently. This Handbook serves as source of reference to aid the Problem Owner in this type of application.

b. **Problem Owner Receives Support from AltA Facilitator.** Certain problems may necessitate the guidance and support of an AltA Facilitator. This type of application is most common when the complexity of the problem exceeds the ability of the problem owner to apply AltA on his own. This is the reason why AltA facilitators' primary task is to assist problem owners.

c. **AltA Team.** An AltA Team may be assembled from various organisations to gain access to the skills and experience identified by the problem owner or AltA Facilitator as necessary to address the problem. Where feasible, the AltA Team should include members of the team that is involved in the "normal" process or problem under evaluation.

AltA

	Problem Owner Performs AltA Himself	**Support from AltA Facilitator**	**AltA Team**
Pros	+ Time-efficient + Little coordination with AltA Facilitator needed + Quick and easy way to enhance problem solving	+ Additional support and guidance in the application of AltA + Only slight delay in the problem-solving process	+ Strongest support in the problem-solving process + Large number of perspectives and approaches can be captured + Particularly helpful for large tasks that require deep analysis
Cons	- Problem Owner may be unfamiliar with AltA - Difficulty for Problem Owner to look at his own work from a different perspective	- AltA Facilitator is the bottleneck in the problem-solving process - AltA application can become dependent on the AltA Facilitator's availability and support.	- High coordination requirements between problem owner and AltA Facilitator - Potential time delay if commander approval is needed (resources) - Manpower-intensive

Figure 2.2: Pros and Cons of AltA Application Types

2-6. **AltA Techniques.** AltA consists of techniques that support the intellectual process of problem solving. The AltA techniques described in this handbook can be categorised into one or more of the following general categories:

a. **Creative Thinking Techniques.** Creative thinking is critical in the beginning of most tasks. Creative thinking techniques help in understanding the complete problem environment, defining the problem, and in developing new solutions to problems.

b. **Diagnostic Techniques.** Diagnostic Techniques support problem definition and problem analysis through the inclusion of the wider problem space and surrounding variables. Further, Diagnostic Techniques are used to develop alternative perspectives in order to evaluate multiple courses of action.

c. **Contrarian Techniques.** Contrarian techniques serve to understand the problem from a different, often opposing, view. This helps in the problem definition process, and is valuable during the development of solutions and in the evaluation of courses of action during the decision-making process.

2-7. **Training**

a. AltA requires multiple levels of training and understanding by various personnel at all NATO commands or agencies, therefore training must be tailored depending on the individual's role in AltA.

b. In general, commanders, senior leaders and staff do not require formal training, though it will often be appropriate to incorporate short introductory modules on AltA into existing courses. Formal training is designed for the AltA Facilitator.

c. See Annex C for more information.

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CHAPTER 3 – ALTERNATIVE ANALYSIS PROCESS

3-1. **Application.** AltA improves decision-making by supporting a problem-solving process at different stages. AltA can be particularly valuable in areas such as:

a. **Problem Definition and Structuring.** Obtaining a clear and accurate definition of the problem is critical to achieving a successful solution.

b. **Creating Solutions and Scenarios.** AltA enables alternative insight through creative thinking and the incorporation of different perspectives.

c. **Decision-making and Recommendations.** Faced with different options and the necessity to decide, AltA analysis techniques support sound and confident decisions.

3-2. **AltA Process.** Figure 3.1 depicts how AltA is applied to any task and which (additional) steps need to be taken in a general problem-solving process. The AltA process consists of four broad phases focussing on a problem or task to provide an outcome to the Problem Owner. The phases are, Initiation Phase, Preparation Phase, Application Phase, and Termination Phase.

AltA

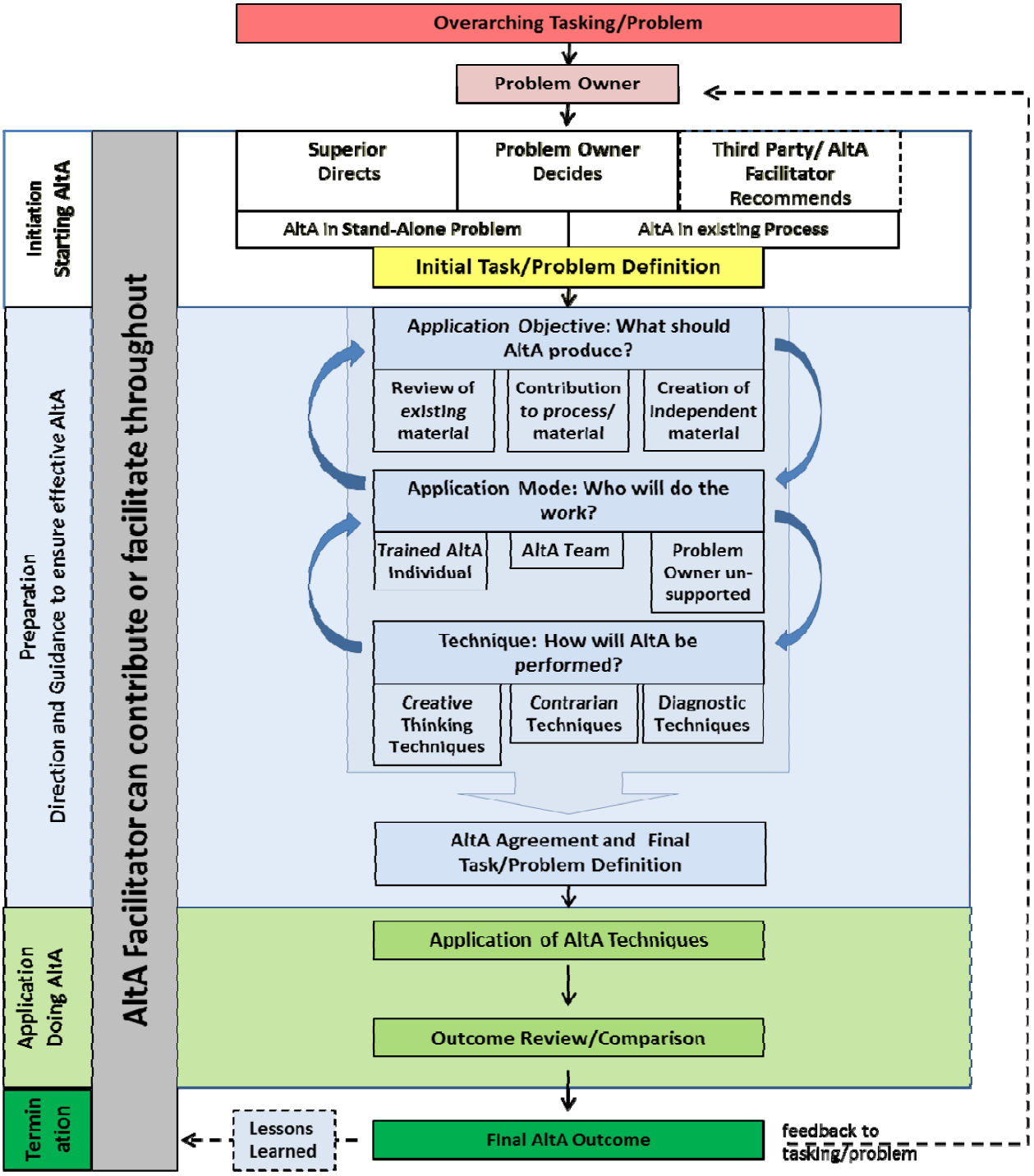

Figure 3.1: Alternative Analysis Process

3-3. Initiation Phase

a. **AltA is Initiated in Three Ways**

(1) A Superior directs the use of AltA in a task/mission. The Commander may consider AltA useful to a particular task/mission and directs the Problem Owner to apply AltA.

(2) The Problem Owner decides to apply AltA. The Problem Owner believes AltA to be of value to a particular problem.

(3) A Third Party/AltA Facilitator suggests the application of AltA. Other staff members or the AltA Facilitator may suggest the use of AltA for a task/mission the Problem Owner faces.

b. **Problem Definition is Critical to the Successful Application of AltA.** This is best accomplished in coordination between the Problem Owner (as the person with the clearest understanding of the task/mission) and an AltA Facilitator (the person who best understands both the AltA process and AltA techniques). The following list contains the simple steps used to define a problem:

(1) Create a problem definition and understand the particular viewpoints of stakeholders.

(2) Quantify if possible: provide facts and figures.

(3) Look for root causes and conditions behind the problem.

(4) Use the problem definition process to be creative about potential solutions.

c. During the initiation phase, the Problem Owner makes a decision as to whether it is best to undertake AltA process himself, use a team or whether it is more appropriate to consult the AltA Facilitator for further guidance. The decision to apply AltA should be continuously reviewed throughout the problem solving process.

3-4. Preparation Phase

a. The preparation phase confirms and refines the problem and establishes the methods to be employed. The outcome of this phase will be a formal or informal statement of the work to be undertaken.

b. In the Preparation Phase, the three aspects of AltA application (AltA Application Objective, AltA Application Type, and AltA Techniques) introduced in Para 2 -5 must be addressed. It is important to understand that these aspects must be considered together and not necessarily addressed in sequence.

(1) AltA Application Objective: What is the purpose of AltA application? The Problem Owner must decide on the objective of AltA Application as it relates to his task/problem. The Problem Owner options are to provide a **review of existing material or products, contribute to an on-going process or creation of other staff material, or create new and/or independent material or products**. AltA's greatest benefit is the enriched understanding of the problem-space gained by the Problem Owner/staff officers working the problem, therefore, contribution *to an on-going process or creation of other staff material* will generally be the most common objective of AltA.

(2) AltA Application Type: Who will do the work? The Problem Owner (perhaps together with the AltA Facilitator) assesses the "who" is conducting AltA: the Problem Owner by himself or leading a group, an AltA Facilitator leading the effort, or an AltA Team. This assessment is important as the problem definition and selection of the application objective may re-scope the task or problem, making it simpler or more complex. If the decision is to use an AltA Team or the AltA Facilitator, this may require Commander approval to accommodate potential resource limitations.

(3) AltA Techniques: What technique(s) will be used? The technique(s) to be applied must be selected during this phase. The appropriate choice will depend on the AltA Objective and AltA Application Type. Conversely, a technique may be particularly well suited to address the problem and may drive the selection of AltA Application Type or even impact the Objective. Chapter introduces the general technique categories, each of which is described in detail in Annex A. The charts as in Annex A are especially helpful in choosing which technique(s) to employ.

c. **AltA Task Agreement.** The output of the Preparation phase is a clear charter for the application of AltA to the task/problem defined. This agreement will identify the parameters for the AltA process to ensure the process is clear to all involved during the Application Phase. Examples of what should be included in the agreement are: task/problem statement, lead for the AltA application, organisation/manning to be used, other resources available, required timelines, etc. For a "small" problem, this agreement may be informal (not documented); for a "large" problem, a formal written agreement should be considered.

3-5. Application Phase

a. During this phase, it is important to maintain dialogue between the Problem Owner and the team applying AltA techniques. This will ensure the AltA process remains relevant as conditions change, in order to meet the Problem Owner's expectations.

b. The chosen AltA techniques are applied on the defined problem in order to achieve the desired objective. The numbers of techniques applied are only limited by time constraints and the participants' willingness to continue the process.

c. During the process, the AltA techniques applied can range from creative thinking techniques at the beginning, to diagnostic techniques at the end.

d. Applying different AltA techniques to a problem may yield different or complementing outcomes that must to be reviewed to achieve an AltA outcome.

e. The Problem Owner evaluates the AltA outcome against the original task. It is the Problem Owner's choice to accept or discard the outcome of the process.

f. Depending on the complexity of the task, the AltA process may identify additional requirements for analysis instead of a providing a solution or outcome. In this case, the identified requirements feed back into the initiation phase of the AltA Process.

3-6. Termination Phase

g. Intuitively, the process ends when the Problem Owner is satisfied that the defined task has been completed or, in limited cases, when the selected technique(s) has (have) been executed. Also, Problem Owner may elect to stop the process when he has received enough information to satisfy his analysis requirements, or when it appears the AltA process can add no further value.

h. As a final step in this process, the Problem Owner and/or the AltA Facilitator gather feedback regarding the process and outcomes. This helps understand the impact of AltA in the problem-solving process and allows the formulation and dissemination of lessons learned. The AltA Facilitator can use the collected data to update the Commander on the utility of AltA in the organisation and to provide feedback (as Lessons Identified/Learned, Best Practice, etc.) to the greater AltA community.

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ANNEXES:

A. Alternative Analysis Techniques.
B. Alternative Analysis in Support of the Operations Planning Process.
C. Training.
D. Glossary.
E. References.

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ANNEX A TO
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ALTERNATIVE ANALYSIS TECHNIQUES

This annex is divided into four sections. Section 1 contains tables to assist the staff officer in choosing an Alternative Analysis Technique for application to a task or problem. The remaining three sections describe the 20 different Alternative Analysis Techniques grouped by type of technique (creative, diagnostic, or contrarian). This annex contains information to support the selection and application of various techniques identified as being particularly well suited to NATO's AltA capability. The Catalogue is not all-inclusive; experienced staff officers and analysts may well be aware of additional techniques that can – and should – be used in the spirit of AltA. The descriptions of each technique, while intended to be sufficient to support application, should be seen as a starting point and not an inviolable step-by-step set of instructions. Any given technique can be modified to suit the particular needs of the problem being worked. With experience, users are also likely to find that two or more techniques may work well either in sequence or even in combination to address a given problem.

SECTION 1 – CHOOSING AN ALTERNATIVE ANALYSIS TECHNIQUE

1. The following tables present each of the techniques explained in this annex and are designed to assist the Problem Owner and/or AltA Facilitator in selecting the technique that best fits the problem under consideration and the audience addressing the problem.

2. Figure A.1 presents the “Applications Considerations” and is designed to assist the staff officer in determining which techniques might apply to their problem, while Figure A.2 identifies “support requirements” needed to conduct each technique. Applications Considerations table (Figure A.1).

3. **Type of AltA Objective**

a. **Review of Existing Material.** AltA can be used to review existing material that has either been created during the problem-solving process or provided as an input into the process.

b. **Contribution to Process/Material.** Applying AltA throughout a process is the most comprehensive application and helps to continuously encourage critical thinking at each stage of decision making.

c. **Creation of New Material.** Certain problems may necessitate the creation of new material that suggests a different solution for the problem or interpretation of the environment.

4. **Applicability to Problem-solving**

a. **Problem Definition and Structuring.** Problem definition and structuring is the critical first step in gaining complete understanding of a task.

b. **Creating Solutions and Scenarios.** AltA helps develop new solutions outside of traditional approaches through creative thinking and the incorporation of different perspectives.

c. **Decision-making and Recommendations.** Faced with different options and the necessity to decide AltA offers analysis techniques which are designed to ensure a sound and confident decision; refers to the areas explained in chapter 2 of this Handbook.

5. **Support Requirements Tables.** (Figure A.2) This table provides an idea of the average staff member’s requirements for applying the various AltA techniques listed.

a. **Manpower Requirements.** The numbers of personnel listed include the staff member responsible for using AltA. These numbers vary according to the technique, the task/problem and the availability of expertise or staff support.

b. **Problem Area Subject Matter Expertise.** It is not always important that those participating in the analysis (applying the technique) be experts in the problem area. It is important that they provide clear rational thinking to any problem they are given.

c. **Technical Subject Matter Expertise.** Requirement pertains to the actual understanding of the technique and how best to apply it. Some of these techniques are relatively simple and easy to apply, while some are difficult in their application for someone without training or experience.

d. **Ease of Application.** Techniques range from simple to difficult for the average staff member to use without specific training or experience. For those listed as difficult, it is recommended that the problem owner seek assistance or guidance from the AltA Facilitator before using.

e. **Time Required.** The amount of time the techniques require when applied. These times vary based on the size of the group conducting the analysis, the complexity of the problem, the difficulty of the technique and the thoroughness of the work.

f. **Notes:** This column is intended to suggest some administrative needs to conduct the technique. In most cases, a white board or other large writing space is all that is needed.

	Technique Type			**Application Objective**			**Applicability to Problem-solving**		
	Creative	Diagnostic	Contrarian	Review of existing material	Contribution to process / material	Creation of new material	Problem definition and structure	Creating solutions and scenarios	Decision-making and recommendations
1. Brainstorming	X			○	●	●	◕	●	○
2. Reverse Brainstorming	X			○	◕	●	●	○	○
3. Brainwriting	X			○	●	●	◕	●	○
4. Starbursting	X			○	◕	●	●	○	○
5. Outside-In Thinking	X			○	●	●	●	○	○
6. Surrogate Adversary/Role Play	X			○	◕	◕	○	◕	○
7. Alternative Futures Analysis	X			○	●	●	●	◕	◕
8. Pre-mortem Analysis		X		◕	○	○	○	◕	◕
9. "String of Pearls" Analysis		X		●	◕	●	○	◕	◕
10. Key Assumptions Check		X		●	◕	○	●	○	○
11. Quality of Information		X		●	◕	○	●	○	○

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Check									
12. Indicators/ Signposts of Change		X		○	●	●	◕	○	●
13. Deception Detection		X		○	●	◕	○	○	◕
14. Analysis of Competing Hypotheses		X		○	◕	◕	◕	○	●
15. Six Thinking Hats		X		◕	○	○	○	○	◕
16. Morphological Analysis		X		○	●	●	●	●	○
17. Devil's Advocacy			X	○	◕	○	◕	◕	○
18. Team A/Team B			X	○	●	○	○	◕	◕
19. High Impact/ Low Probability Analysis			X	○	○	●	○	◕	○
20. What If-Analysis			X	◕	◕	●	○	◕	○

○ = rarely applicable/low ● = fully applicable/high

Figure A.1: Application Considerations

	Manpower Requirements	Problem Area Subject Matter Expertise	Technique Subject Matter Expertise	Ease of Application	Time Required	Notes (useful supplies, other)
1. Brainstorming A-6	Most manageable for groups from 5-6 up to 20	Required	Recommended; No special requirement	Easily applied	Varies with group size; from 30-90 minutes	Post-Its, white board
2. Reverse Brainstorming A-9	Most manageable for groups from 5-6 up to 20	Required	Recommended; No special requirement	Easily applied	Varies with group size; from 30-90 minutes	Post-Its, white board
3. Brainwriting A-11	Most manageable for groups from 5-6	Required	Required	Easily applied	30-60 minutes	Pads of paper and pens for participants; white board
4. Starbursting A-13	Most manageable for groups from 5-6 up to 20	Required	Required	Easily applied	Varies with group size; from 30-90min	Post-Its, white board

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5. Outside-In Thinking A-15	Most manageable for groups from 5-6 up to 20	Recommended; No special requirement	Required	Easily applied	Varies with group size; from 30 to 90 minutes	White board
6. Surrogate Adversary/ Role Play A-16	3-6	Required	Required	Difficult to apply correctly	In-depth analysis can take very long (up to weeks or months)	NA
7. Alternative Futures Analysis A-18	3-10	Required	Required	Difficult to apply correctly	Worksho p of hours or days in length	NA
8. Pre-mortem Analysis A-21	3-10	Required	Recommended; No special requirement	Easily applied	30 minutes	Scribe, White board
9. "String of Pearls" Analysis A-23	1-6	Required	Should be experienced	Difficult to apply correctly	In-depth analysis can take very long (up to weeks or months)	White board, Database (Excel, Access, etc.)
10. Key Assumptions Check A-26	3-10	Recommended; No special requirement	Recommended; No special requirement	Easily applied	30-60 minutes	Post-Its, white board
11. Quality of Information Check A-29	3-10	Required	Recommended; No special requirement	Easily applied	Several days to create dB; review 1-4 hours	White board, Database (Excel, Access, etc.)
12. Indicators/ Signposts of Change A-31	3-6	Recommended; No special requirement	Should be experienced	Moderately difficult	Several hours to several days	Scribe, White board
13. Deception Detection A-33	3-6	Recommended; No special requirement	Should be experienced	Moderately difficult	Several hours	Scribe, White board
14. Analysis of Competing Hypotheses A-35	3-6	Required	Should be experienced	Moderately difficult	Several hours	White board
15. Six Thinking Hats A-38	**1-12**	Required	Required	Moderately difficult	Several hours	White board

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16. Morphological Analysis A-41	**1-6**	Recommended; No special requirement	Required	Easily applied	**30 minutes to several hours**	White board
17. Devil's Advocacy A-44	**1-4**	Recommended; No special requirement	Should be experienced	Moderately difficult	**30 minutes to several hours**	White board
18. Team A/Team B A-46	**4-10**	Required	Required	Moderately difficult	**30 minutes to several hours**	White board
19. High Impact/Low Probability Analysis A-48	**1-6**	Recommended; No special requirement	Required	Moderately difficult	**30 minutes to several hours**	White board
20. What If-Analysis A-50	**1-6**	Recommended; No special requirement	Required	Moderately difficult	**30 minutes to several hours**	White board

Figure A.2: Support Requirements

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SECTION 2 – CREATIVE THINKING TECHNIQUES

1. **Brainstorming.** Brainstorming is an unconstrained group process designed to generate new ideas and concepts.

a. When to Use

(1) This technique helps stimulate new thinking and is therefore a useful thinking aid for many other structured techniques. Brainstorming involves a group meeting to discuss a common challenge. This group process allows others to build on an initial idea suggested by a member of the brainstorming session. Moreover, an individual may have difficulty breaking free of his or her cognitive biases without the benefit of a diverse group.

b. Benefits

(1) This technique:

(a) Can maximise creativity in the thinking process.

(b) Assists team members step outside traditional mind-sets and suspend their judgement about the practicality of ideas or approaches.

(c) Allow team members to see a wider range of factors that may affect a topic that would otherwise go unconsidered. Military teams have a tendency to censor ideas that seem far-fetched, poorly sourced, or irrelevant to the question at hand.

(d) Brainstorming encourages participants to think more radically or outside the box. In particular, it can generate new ideas, ensure a comprehensive look at a problem or issues, raise unknowns, and prevent premature consensus around a single hypothesis – thus enabling the group to provide a more wide-ranging set of ideas and thoughts to a project or plan.

c. Application

(1) Paradoxically, to be most productive, brainstorming should be a structured, systematic process as this is the most effective way to break down mind-sets and produce new insights.

(2) The process involves a divergent thinking phase to generate and collect new ideas and insights, followed by a convergent phase in which ideas are grouped and organised around key concepts. The rules to be followed are:

(a) Never censor an idea no matter how unconventional it might sound. Rather find out what prompted the thought, as it might contain the seeds of an important connection between the topic and an unstated assumption.

(b) Give yourself enough time to do brainstorming correctly. It usually takes some time to set the rules of the game, get the group comfortable, and exhaust the conventional wisdom on the topic.

(c) If possible, involve at least one outsider in the process – that is, someone who does not share the same educational background, culture, technical knowledge or mind-set as the core group, but has some familiarity with the topic.

(3) A two-phase, eleven-step, structured process is often used to get the most out of the brainstorming sessions

(a) **Divergent Thinking Phase:** Distribute Post-It notes and pens or markers to all participants. Typically, 10-12 people works best.

(b) Pose the problem in terms of a focal question. Display it in one sentence on a large easel or whiteboard.

(c) Ask the group to write down responses to the question, using key words that will fit on the small Post-It note. There is no limit to the number of responses each individual can generate, but each separate idea must be on its own note.

(d) Stick all the notes on a wall for all to see – treat all ideas the same.

(e) When a pause follows the initial flow of ideas, the group is reaching the end of their conventional thinking and the new divergent ideas are then likely to emerge.

(f) End the collection stage of the brainstorming after two or three pauses.

(g) **Convergent Thinking Phase:** Ask the participants as a group to rearrange the notes on the wall according to their commonalities or similar concepts. No talking is permitted. Some notes may be moved several times as notes begin to cluster. Copying some notes is permitted to allow ideas to be included in more than one group.

(h) Select a word or phrase that characterises each grouping or cluster once all the notes have been arranged.

(i) Identify any notes that do not easily fit with others and consider them either useless noise or the beginning of an idea that deserves further attention.

(j) Assess what the group has accomplished in terms of new ideas or concepts identified or new areas that need more work or further brainstorming.

(k) Instruct each participant to select one or two areas that deserve the most attention. Tabulate the votes.

(l) Set the brainstorming group’s priorities based on the voting and decide on the next steps for analysis.

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2. **Reverse Brainstorming.** Reverse brainstorming helps the user solve problems by combining brainstorming and reversal techniques. To use this technique, you start with one of two "reverse" questions: Instead of asking, "How do I solve or prevent this problem?" ask, "How could I possibly cause the problem?" Instead of asking "How do I achieve these results?" ask, "How could I possibly achieve the opposite effect?"

a. When to Use

(1) Reverse brainstorming can be used to help understand and/or structure a problem. It reverses the thinking process and is best used when it is difficult to address the problem directly. In this approach, reverse brainstorming is more radical than most creative techniques and resembles in some parts the idea of adversary role-play.

(2) Note: it is very difficult to use reverse brainstorming after regular brainstorming as the freedom of thought may be hampered.

b. Benefits

(1) Many problems are difficult to think through. A problem-solving process often tries to immediately figure out a solution and is therefore too focussed on a solution-driven approach that hampers creative and out-of-the-box thinking. Reverse brainstorming helps move away from finding a solution directly but further defines the problem by suggesting different causes, which might have triggered the problem. This form of criticism is sometimes easier than positive idea generation.

c. Application

(1) Reverse brainstorming does not yield solutions to the problem and needs to be complemented by other creativity techniques that are aimed at deriving solutions. It follows a number of steps.

(2) Identify the problem

Example Problem: *"Our Customers are dissatisfied?"*

(3) Reverse the problem to 'how to cause it'

(a) Change the wording of the problem on which you are working from how to solve it to how to cause it.

Example Question: *"How can we cause customers to be dissatisfied?"*

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(4) Identify ways of causing the problem.

(a) Brainstorming (or any other method or combination of methods) is used to identify different ways of causing the problem. You can use creative approaches or analytic methods. An analytic approach would list all of the available elements of a process and then break these down further.

> **Example Element:** *"Our telephone customer service reps cannot answer customer questions and do not know what to do to answer the question or help the caller."*

(5) Find ways of preventing the problem being caused.

(a) Now use creative or analytic methods to identify ways of preventing the problem-causes identified in the previous step.

> *Example* **Solution:** *"Train the customer service reps to classify problems, identify the appropriate department and transfer the customer to the right person."*

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3. **Brainwriting.** Brainwriting is based on the concept of brainstorming. Similar to brainstorming, it is not the quality of ideas that matters but the quantity. The technique involves a group with a moderator where each participant generates ideas and draws on others' ideas for inspiration, thus stimulating the creative process.

a. When to Use

(1) Brainwriting can be used in all situations where brainstorming is applicable. The process of brainwriting allows others to build on an initial idea suggested by a member of the session.

b. Benefits

(1) Compared to brainstorming, brainwriting offers a number of benefits.

(2) Brainwriting is easier than group brainstorming because it does not require an experienced facilitator or many ground rules.

(3) Brainwriting often produces more ideas than group brainstorming. Since each person is writing down ideas at the same time, the process is mostly parallel in contrast to the serial technique of “one idea at a time” in group brainstorming.

(4) It is particularly useful when a team or group has some conflicts or when the group doesn’t know each other well.

(5) Brainwriting is a way to get input from new or shy colleagues who would not necessarily speak up in a group brainstorming session.

(6) Brainwriting reduces the possibility of social conformity.

(7) Brainwriting can be appropriate if you are working in a culture (or with a multi-cultural group) where brainstorming participants might be embarrassed to express extreme ideas or ideas that they believe may not be viewed positively by their more senior colleagues.

(8) However, there are also serious disadvantages compared to brainstorming which should be considered.

(a) Brainwriting is not as spontaneous as brainstorming. Participants might think about their idea too long before writing it down and maybe even drop it in their thinking process.

(b) Participants need to be concise in their ideas, which is not always easy.

(c) Participants might come up with the same ideas in the first round(s) of the process as everyone thinks individually in the beginning.

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c. Application

(1) The moderator controls the session and follows the structured process described below:

(a) Hand each person a page of blank paper and put some extra paper on the table.

(b) Describe the question or topic of interest and make sure that everyone is clear on what you are asking.

(c) Tell the group how long they will have to write on the page. Then give them a “Start” signal (a rule of thumb is 3 ideas in 5 minutes).

(d) Use the 5 minutes to write 3 ideas on the page.

(e) At the end of the 5 minutes ask the participants to pass their pages with ideas to the next person in the group (clockwise or counter-clockwise makes no difference; just ensure to continue in the same direction throughout the session).

(f) Ask each person to read the ideas from the preceding person silently and add new 3 ideas to the list without speaking to anyone else.

(g) After 5 minutes pass the pages with ideas from the first two people to the next person.

(h) Repeat the process several more times (ideally make one full round till everybody gets the page with his initial ideas back).

(i) Hand in the ideas to the moderator who will collate them. (Note: This can be the Problem Owner or the AltA-Facilitator).

(j) Now there are two options how to proceed. One can either discuss all ideas in the group or the problem owner individually analyses the input. The goal is to identify the “best” ideas.

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4. **Starbursting.** Starbursting is a form of brainstorming that focuses on generating questions rather than answers.

a. When to Use

(1) Starbursting is a form of brainstorming used to generate questions in a systematic, comprehensive way. It’s a useful tool to support problem-solving or decision-making processes by helping understand all aspects and options in a more complete way. It can be used iteratively, with further layers of questioning on the answers to the initial set of questions. It helps building a complete understanding of the problem environment by identifying the different areas that need to be taken into account.

(2) An individual or a group working together can use this approach.

b. Benefits

(1) The core benefit of Starbursting is the direction this technique offers to the brainstorming process. This is particularly helpful for individuals working alone without the benefit of a group to generate ideas or inspiration.

(2) Additionally, Starbursting requires users to come up with questions, which is oftentimes easier than delivering solutions at the beginning of a process.

c. Application

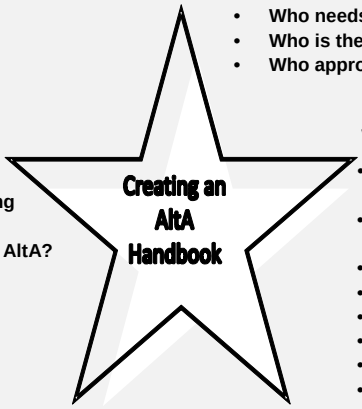
(1) To use the Starbursting technique, start out by drawing a five-sided star, then write the topic of the idea or problem in the middle and the words "who," "what," "where," "when," and "why" on each point. Then address each word in the starburst (the star can be extended to six-sides with the sixth side asking “how”).

(2) Think about (and write down) all the questions that might come up under each heading. There is no limit.

(3) Once all the questions that come to mind are written down, try to answer them until the topic has solidified into an actionable idea.

Illustration: Starbursting

Starbursting was one of the techniques used during the development of this Handbook. It can be a "messy" process with lots of interaction between participants. The diagram below illustrates some of the questions derived during the application of the technique.



Who

- **Who will lead the application of technique?**
- **Who should be the AltA FACILITATOR?**
- **Who owns the Hand Book?**
- **Who needs training?**
- **Who is the customer?**
- **Who approves the AltA Handbook?**

Where/How

- **Where i s AltA applicable?**
- **Where, in a specific decision making** process, is AltA best applied?
- **Which situations are applicable for AltA?**
- **How is AltA applied?**
- **How do we avoid misperception between AltA and OA/other ideas?**

What

- **What do I need to use the HB? Is the document stand-alone?**
- **What other documents link to AltA? (two way reference)**
- **What other documents should reference AltA?**
- **What are the sources?**
- **What is HB supposed to do?**
- **What is our expectation of the HB?**
- **What conditions require modification of HB?**
- **What is AltA not?**

When

- **When does a problem owner need AltA?**
- **When do you stop using AltA Techniques?**

Why

- **Why is the handbook needed?**
- **Why don't we have examples?**
- **Why do we try to link AltA to the OPP?**
- **Why do we think UFMCS are the best trainers of Red Teamers?**
- **Why do we not describe how to combine techniques in the handbook?**

In the next step answers to these questions were developed. Examples below:

Q1. Who is the customer?
A1. Primary customer is the staff officer (problem owner?). AltA Facilitator.

Q2. What are the sources?
A2. Bibliography is necessary referencing academic sources.

And then finally, in the last step, the importance of each question was discussed and each question expanded upon regarding its necessity in the Handbook.

Q1 and A1. Required, design of the handbook should reflect the staff officer as the primary customer.

Q2 and A2. Required, not currently included in draft HB.

Figure A.3: Starbursting

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5. **Outside-In Thinking.** Used to identify the full range of basic factors that would directly or indirectly shape an issue.

a. When to Use

(1) At the beginning of a project, when the goal is to identify all the critical, external factors that could influence how a particular situation will develop. Outside-in Thinking can reduce the risk of missing important variables early in the planning process.

(2) Outside-In Thinking can provide structure to exploring the various factors influencing the problem within the realm of PMESII (Political, Military, Economic, Social, Infrastructure and Information).

b. Benefits

(1) Most military staff think from the inside – namely, what they control – out to the broader world. Conversely, thinking from the outside-in begins by considering the external changes that might, over time, profoundly affect a plan or issue.

(2) This technique enables the user to get away from their immediate thinking and consider issues in a wider conceptual and contextual framework. By recasting the problem in much broader and fundamental terms, AltA is more likely to uncover additional factors, an important dynamic, or a relevant alternative hypothesis.

c. Application

(1) Develop a generic description of the problem or the phenomenon under study. Then:

(a) List the key factors (e.g. globalisation, social stress, the internet, or the global economy) within the Political, Military, Economic, Social, Infrastructure and Information domains that could have an impact on the topic, but over which one can exert little influence.

(b) Focus next on key factors over which an actor can exert some influence. (e.g. - In the business world, this might be the market size, customers, the competition, suppliers or partners; in the military domain it might include the actions or behaviour of allies or adversaries.)

(c) Assess how each of these factors could affect the topic.

(d) Determine whether these factors actually do have an impact on the particular issue based on the available evidence.

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6. **Surrogate Adversary/Role Play.** Models the behaviour of an individual or group by trying to replicate how an adversary would think about an issue.

a. When to Use

(1) When commanders face the challenge of forecasting how an adversary, competitor or other actor may behave, there is a risk of falling into a mirror-image problem. That is, we can sometimes assign these actors the same motives, values, or understanding of an issue that we hold. Traditional thinking sometimes assumes that other actors or groups will behave as we would if faced with the same threats or opportunities.

(2) History has shown that others often respond differently to events because of different cultural, organisational or personal experiences. Staff members using this technique should try to consciously place themselves in the same cultural, organisational, and personal setting as the outside actor, the target individual or group (put themselves in the shoes of the adversary).

(3) This form of role playing is useful when trying to replicate the mind-set of authoritarian leaders, terrorist cells, or other non-Western groups that operate under very different codes of behaviour or motivations.

b. Benefits

(1) Similar to Techniques #17 - Devil's Advocacy and #18 - Team A/Team B (both contrarian), Surrogate Adversary is aimed at freeing blue from the prison of a well-developed mind-set; in this case, the blue players' own sense of rationality, cultural norms, and personal values.

(2) The Surrogate Adversary technique transforms the user into an actor operating within the adversary's culture and political milieu.

(3) Often the technique can introduce new or different stimuli that might not have been factored into traditional thinking – such as the target's familial ties or the international political, economic, and military pressures felt by the individual. Additionally, this technique can factor in how personal power and status might influence a target's behaviour.

c. Application

(1) For this technique to work, it is essential that experts with in-depth knowledge of the adversary, competitor or other actor, perform it. They will need to understand the relevant history and geography, politics, cultures, and customs of the focus group. It is likely that suitable experts will share an appropriate ethnic background or have worked or closely studied the group of interest.

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The team members should:

(a) Envision themselves in the adversary's circumstances and react to foreign stimuli as the target would.

(b) Develop a set of first-person questions that the adversary would ask, such as an example:

Example Questions:

"What do my peers, family, or tribe expect me to do?"

"How do we perceive the external threats and opportunities?"

"How do I perceive incoming information?"

"What are my personal concerns?"

"To whom do I look for an opinion?"

(c) Draft a set of policy papers in which the leader or group makes specific decisions, proposes recommendations, or lays out courses of actions. The more these papers reflect the cultural and personal norms of the adversary, the more they can offer a different perspective on the problem.

(2) Playing a Surrogate Adversary is difficult. It requires significant time to develop individuals who can think like the adversary. The Surrogate Adversary has to distance itself from blue and work as though living in the world of the adversary. Without a sophisticated understanding of the culture, operational environment, and personal histories of the adversary, this technique will be difficult at best. Individuals can never truly escape their own experiences and mind-sets, but this technique can at least prevent them from unconsciously falling into mirror-imaging.

7. **Alternative Futures Analysis.** Systematically explores multiple ways in which a situation can develop when there is high complexity and uncertainty.

a. When to Use

(1) This technique is most useful when a situation is viewed as too complex or the outcomes as too uncertain to trust a single outcome assessment.

(2) First, the user must recognise that there is a high degree of uncertainty surrounding the topic in question. Second, they and the wider staff should recognise that they need to

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consider a wide range of factors that might bear on the question. And third, they must be prepared to explore a range of outcomes rather than be drawn to any preconceived result.

(3) Depending on how elaborate the problem, the effort can amount to a considerable investment in time, resources, and money. Several hours or days can be spent conducting brainstorming and developing multiple futures; alternatively, a larger-scale effort can require preparing a multi-day workshop that brings together a larger number of participants, including outside experts.

(4) Such an undertaking often demands the special skills of trained scenario-development facilitators and conferencing facilities. Alternative Futures Analysis is a divergent thinking technique that tries to use the complexity and uncertainty of a situation to describe multiple outcomes or futures that commander should consider, rather than to predict one outcome.

b. Benefits

(1) This technique is useful in highly ambiguous situations, when commanders confront not only a lot of known unknowns but also unknown unknowns. What this means is that commanders recognise that there are factors, forces, and dynamics among key actors that are difficult to identify without the use of some structured technique that can model how they would interact or behave. As the outcomes are not known prior to the futures exercise, commanders must be prepared for the unexpected and be willing to engage in a more free-wheeling exchange of views than typically occurs in order to imagine the future. Futures analysis done well is resource and time intensive.

(2) Involving commanders in the alternative futures exercise is the most effective way to communicate the results of this exploration of alternative outcomes and sensitise them to key uncertainties. Most participants find the process of developing scenarios as useful as any finished product that attempts to capture the results of the exercise. Commanders benefit from this technique in several ways:

(a) It provides an effective means of weighting multiple unknowns or unknowable factors and presenting a set of plausible outcomes.

(b) It can help bound a problem by identifying plausible combinations of uncertain factors.

(c) It provides a broader framework for calculating the costs, risks, and opportunities presented to commanders by different outcomes.

(d) It aids commanders in anticipating what otherwise would be surprising developments by forcing them to challenge assumptions and consider possible wild cards or irregular events.

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(e) It generates indicators which can be used to monitor developments and assess trends.

c. Application

(1) The most common approach used in involves the following steps:

(a) Develop the focal issue by systematically interviewing experts and officials who are examining the general topic.

(b) Convene a group of experts (both internal and external) to brainstorm the forces and factors that could affect the focal issue.

(c) Select by consensus the two most critical and uncertain forces and convert these into axes or continua with the most relevant endpoints assigned.

(d) Establish the most relevant endpoints for each factor.

(e) Form a futures matrix by crossing the 2 chosen axes. The 4 resulting quadrants provide the basis for characterising alternative future worlds.

(f) Generate narratives that describe these futures and how they could plausibly come about. Signposts or indicators of progress can then be developed.

(g) Participants can then consider how current decisions or strategies would fare in each of the four worlds and identify alternative plans that might work better either across all the futures or in specific ones.

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Illustration: Alternative Futures

The graphic below captures four potential futures to understand how foreign insurgents might carry out an attack on NATO.

A brainstorming exercise helped analysts identify two key uncertainties (the sophistication of weapons used by the insurgents and the intended impact of the attack) and arrayed these factors on a graph as the “x” and “y” axes. The four resulting quadrants in the 2 x 2 matrix allowed analysts to visualize potential targets from the various combinations (low to high sophistication of weapons and selective to broad intended impact of an attack).

For example, if a group possessed highly sophisticated weapons and intended a broad attack on NATO, potential targets could include computer networks and domestic drug supplies. Having filled in a quadrant, analysts can then turn to devising likely indicators or signposts of such a future.

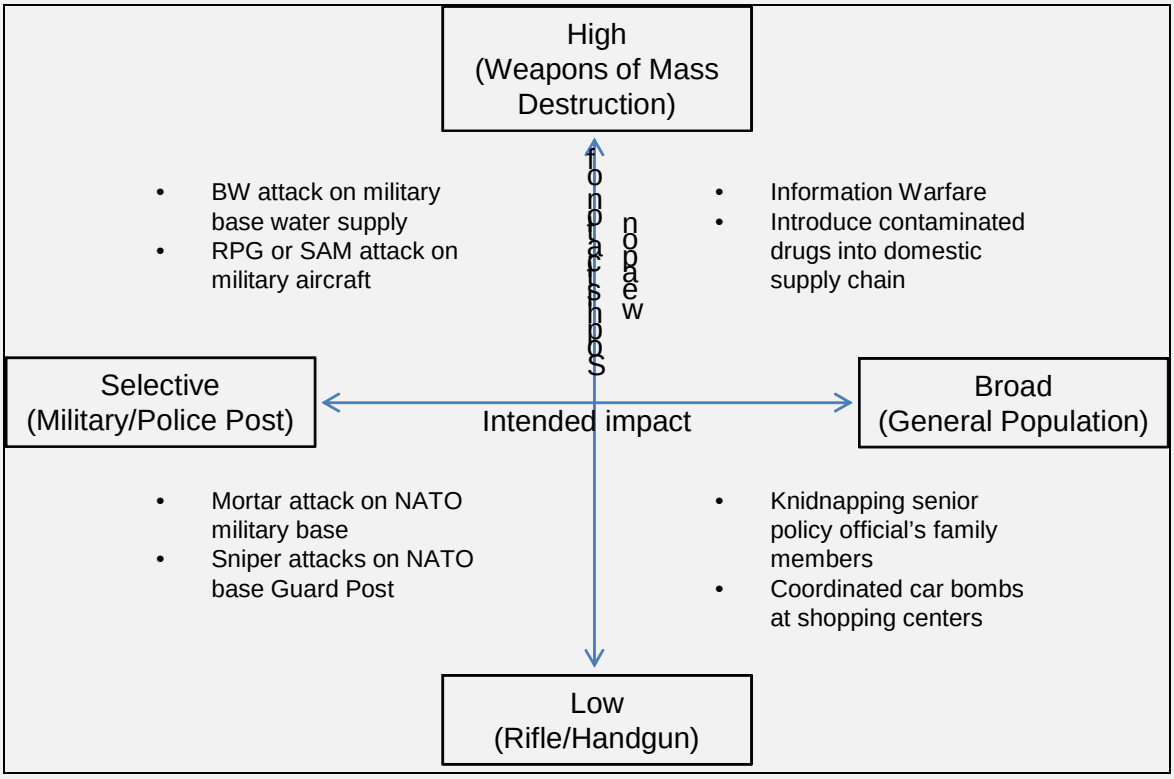

Figure A.4: Alternative Futures

SECTION 3 – DIAGNOSTIC TECHNIQUES

8. **Pre-mortem Analysis.** This is a powerful tool focusing on Operations Planning. The pre-mortem analysis uses reverse brainstorming (see technique 2) on an existing plan rather than an existing problem.

a. When to Use

(1) The ideal time to use a pre-mortem analysis is just before a war gaming step in the decision making process, either the war game that analyses proposed COAs or the war game that refines the selected COA into the concept of the operation.

b. Benefits

(1) This technique is simple to use, simple to understand and when used during the decision-making process will empower the AltA team and members of the larger planning team to question the premise of a proposed course of action, assumptions, or specified tasks.

(2) The use of a pre-mortem analysis will break the ownership of a particular course of action by a thorough, if rapid, session of answering the question, “What would cause this course of action to fail if it is the basis for the operations plan?”

c. Application

(1) Pre-mortem analysis is an application of mental simulation; the objective is to explain why the plan would fail. The premise for pre-mortem analysis is that people may feel overly confident once they have arrived at a plan, especially if they are not highly experienced. The pre-mortem analysis requires one person to take notes and must be limited in duration to no more than 30 minutes, ideally 20.

(a) In preparation, participants should already be familiar with the plan being analysed.

(b) Imagine a fiasco. The plan has failed, a total, embarrassing failure. Ask; “What could have caused this?”

(c) Generate the reasons for failure. This can be done using e.g. brainstorming or brainwriting techniques (similar to techniques 1 and 3). Ensure the reasons are recorded so that by the end of this step the group should have a comprehensive list of concerns with the plan.

(d) Revisit the plan using the comprehensive list of concerns to determine what to mitigate. At this point the planners may begin to develop potential branch plans.

(2) Periodically review the list. Do this for the duration of the planning process and during execution. This helps keep the possibility of different types of failure fresh in everyone's mind.

9. **String of Pearls Analysis.** The string of pearls concept is a rigorous analysis of assumptions. If assumptions fail to become fact, they affect the specified tasks articulated within the plan. This is a time consuming analysis best suited for the product of a structured planning process. This tool helps provide a sensitivity analysis on a friendly plan or order. A sensitivity analysis may show how vulnerable the plan is to faulty assumptions during planning; dependencies that are not in place before plan execution; or unmitigated, potential 2nd and 3rd order effects. There are an infinite number of 2nd and 3rd order effects for any action. This technique will help identify those that are most likely to occur and most likely to generate effects which may need to be mitigated by planning branches to the plan.

a. When to Use

(1) String of Pearls is a time consuming process, requiring both expertise in the subject being studied and experience in applying the technique. It is best used when the AltA objective is used to do an independent assessment of an existing plan (i.e., review of existing material). This can also be used in a focused manner to analyse and challenge assumptions associated with a plan, as well as showing the effect of a failed assumption on the entire plan.

(2) This analysis of the plan can stand alone or be used in a comparison with the analysis of possible enemy courses of action. The staff may identify an adversary’s strategy that is “unanswered” by a friendly course of action.

b. Benefits

(1) The methodology will:

(a) Help prevent “assuming away” the problem,

(b) Identify weaknesses in a plan,

(c) Highlight the need for focused branch plans.

c. Application

(1) There are four basic steps to conducting the analysis:

(a) Identify all the major tasks in the plan.

(b) Take each task that you’ve identified and identify three elements of each task:

1/ Challengeable stated and implied assumptions for each task.

2/ Key dependencies for each task.

3/ Possible 2nd and 3rd order effects for each task.

(c) Depict how the combined assumptions, key dependencies, and possible 2nd and 3rd orders of effects for each task accumulate across the entire plan.

(d) Analyse how the cumulative effect you have depicted above might indicate any gaps or weaknesses in the plan.

(2) Using a “Spider-Web” as graphical representation for each task’s assumptions, dependencies, and 2nd and 3rd order effects helps organising the work.

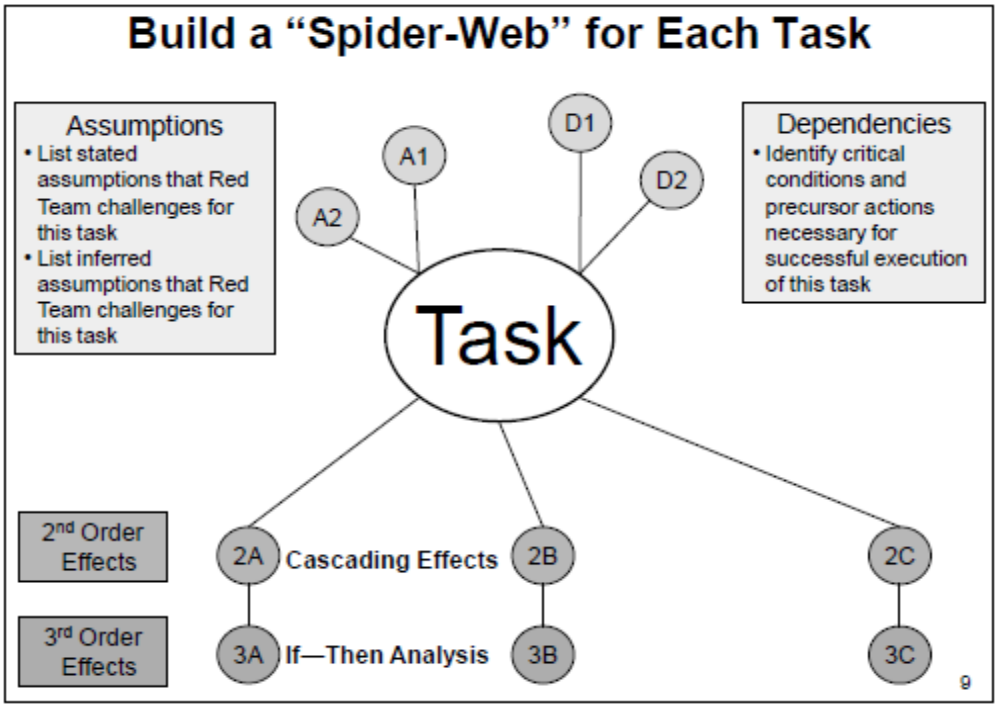

Figure A.5: Spider-Web Illustration

(3) After this in-depth analysis of individual tasks the findings need to be summarised and the most critical tasks need to be identified. Particular sensitive tasks are characterised by a high number of dependencies, and 2nd and 3rd order effects.

(4) A first summary can be done in a spreadsheet such as the one shown below.

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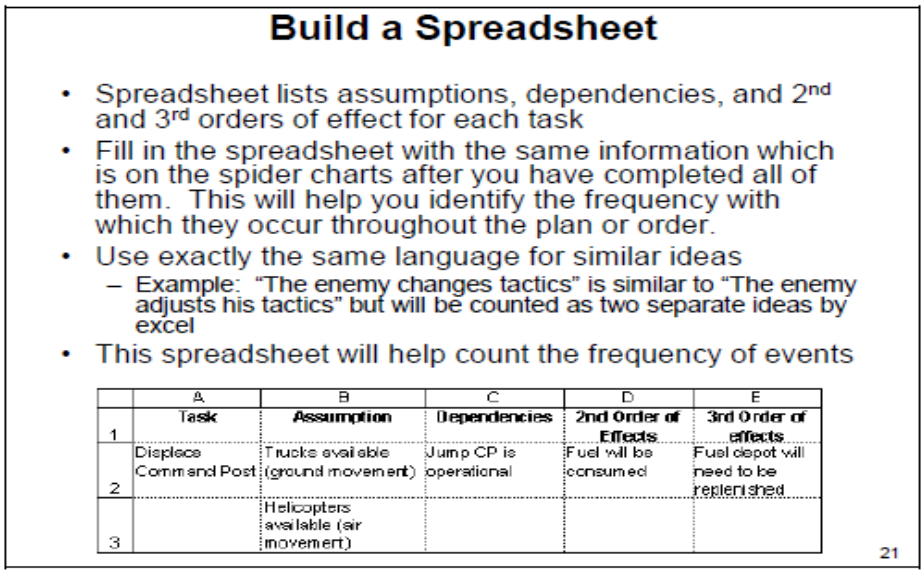

Figure A.6: Build a Spreadsheet Illustration

(5) In the next step, the spreadsheet data can be prepared in a shorter form. The graphic below just presents the different tasks numbered 1 to 12 and the respective implicit assumptions, dependencies, and 2nd and 3rd order effects. Tasks 5 and 10-12 are particularly sensitive in this example given the number of dependencies and effects.

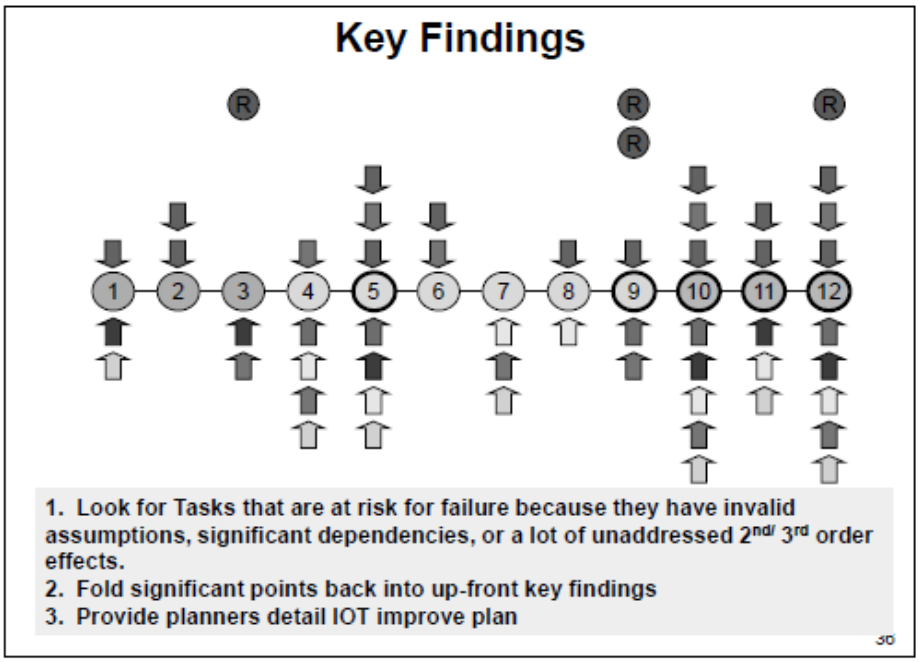

Figure A.7: Key Findings Illustration

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10. **Key Assumptions Check.** List and review the key assumptions on which fundamental decisions rest. Identifying hidden assumptions can be one of the most difficult challenges an analyst faces, as they are ideas held to be true – often unconsciously – and therefore are seldom examined and almost never challenged.

a. When to Use

(1) Consider performing a Key Assumptions Check – at least at a cursory level – as a first step time you begin a new task.

(2) The technique is particularly useful at the beginning of a project, but can be very helpful whenever entering a new phase.

(3) At any time prior finalising decisions.

b. Benefits

(1) Rechecking stated assumptions can be valuable to ensure that the assessment does not rest on flawed premises.

(2) Explicitly identifying (implicit) working assumptions during a project helps:

(a) Explain the logic of the argument and expose faulty logic,

(b) Understand the key factors that shape an issue,

(c) Stimulate thinking about an issue,

(d) Uncover hidden relationships and links between key factors,

(e) Identify developments that would cause you to abandon an assumption,

(f) Prepare analysts for changed circumstances that could surprise them.

c. Application

(1) The aim is to consider how plans, ideas or decisions depend upon underpinning assumptions and question the validity of those assumptions. A four step process may be used:

(a) Review the current line of thinking/reasoning (or several lines of thinking/reasoning) on an issue; write it down for all to see.

(b) Articulate all the premises and assumptions, both stated and unstated, which are accepted as true for this line of thought to be valid.

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(c) Challenge each assumption, asking whether it “must” be true (for the line of thinking to be valid) and whether it remains true under all conditions.

(d) Refine the list of key assumptions to contain only those that must be true; consider under what conditions or in the face of what information these assumptions might not hold.

(2) Questions to ask during this process include:

(a) How much confidence exists that this assumption is correct?

(b) What explains the degree of confidence in the assumption?

(c) What circumstances or information might undermine this assumption?

(d) Is a key assumption more likely a key uncertainty or key factor?

(e) Could the assumption have been true in the past but less so now?

(f) If the assumption proves to be wrong, would it significantly alter the plan? How?

(g) Has this process identified new factors that need further analysis?

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Illustration: Key Assumptions Check

This illustration highlights the importance of the Key Assumptions Checks.

The sniper shootings in the Washington, DC area during the fall of 2002 provide a good example of why this technique should have been applied.

After the first incidents investigators quickly made some operating assumptions which could have been assessed individually to ensure their validity.

Assumption	Assessment	Reality
The sniper is male	Highly likely (but not certain) given past precedent with serial killers. We are taking little risk by not looking for a female.	Correct, the sniper was male.
The sniper is acting alone	Highly like (but not certain) given past precedents.	Incorrect, the attacks were carried out by two people (one of them underage)
The sniper is white	Likely, but not as certain, given past precedents. We would be taking some risk if we rule out non-whites as suspects	Incorrect, both perpetrators where of African-American descent.
The sniper has military training/ experience	Possible, but not sufficient reason to exclude from consideration potential suspects without military training.	Correct, the main perpetrator served in the military for 7 years.
The sniper is driving a white van	Possible because of a credible eyewitness account but worthy to continue scrutiny given the number of white vans in the area and different kinds of vehicles described.	Incorrect, the car used was a blue sedan.

The table shows that only 2 of the 5 main assumptions made by investigators were correct. This is a strong case for why the critical review of assumptions is crucial.

Figure A.8: Key Assumptions Check Illustration

11. **Quality of Information Check.** Evaluates completeness and soundness of available information sources.

a. When to Use

(1) Weighing the validity of sources is a key feature of any critical thinking. The confidence level a commander can have in his judgements and decisions depends upon the accuracy and reliability of the information base. Checking the quality of information

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used in analysis is an important and on-going process. Problem Owners should perform periodic checks on the quality of the information base. Otherwise, important decisions can become anchored to weak information, and any caveats attached to that information in the past can be forgotten or ignored over time.

b. Benefits

(1) A thorough review of information sources provides the Problem Owner with an accurate assessment of what we know and what we do not know. It is also an opportunity to confirm that sources have been cited accurately.

(2) In the case of Human Intelligence, this will require extensive review of the sources' background information and access as well as his or her motivation for providing the information. Similarly, reviewing technical sourcing can sometimes reveal inadvertent errors in processing, translation, or interpretation that otherwise might have gone unnoticed.

(3) In addition, a quality of information check can be valuable to:

(a) Identify key intelligence gaps and new requirements for collectors.

(b) Assist commanders in understanding how much confidence to place in information and judgements derived from it.

(c) Help detect possible deception and denial strategies by an adversary.

c. Application

(1) Users might begin a quality of information check by developing a database in which information is stored according to source type and date, with additional notations indicating strengths or weaknesses of those sources. Ideally, the team should have retrieval and search capability on the database to enable periodic reviews of the data.

(2) For the information review to be fully effective, the team will need as much background information on sources as is feasible. Knowing the circumstances in which reporting was obtained is often critical to understanding its validity.

(3) Use the data to:

(a) Systematically review all sources for accuracy.

(b) Identify information sources that appear most critical or compelling.

(c) Check for sufficient and strong support of critical reporting.

(d) Re-examine previously dismissed information in light of new facts or circumstances that cast it in a different light.

(e) Consider whether ambiguous information has been interpreted and caveated properly.

(f) Indicate a level of confidence in sources, which are likely to figure in future assessments.

12. **Indicators/Signposts of Change.** Periodically review a list of observable events or trends to track events, monitor targets, spot emerging trends, and warn of unanticipated change.

a. When to Use

(1) If a postulated situation is developing, for example economic reform, military modernisation, political instability, or democratisation, this technique can be used to create a list of indicators or signposts of observable events that one would expect to see. Constructing the list might require only a few hours or as much as several days to identify the critical variables associated with a targeted issue.

(2) The technique can be used when the Problem Owner needs to track an event over time to monitor and evaluate changes. However, it can also be a very powerful aid in supporting other structured methods. In those instances, the user would be watching for mounting evidence to support a particular hypothesis or low probability event.

(3) If there are sharply divided views on an issue, an indicators or signposts list can also depersonalise an argument (by shifting attention to a more objective set of criteria) and provide clarity.

b. Benefits

(1) By providing an objective baseline for tracking events or targets, indicators enforce rigour into the process and enhance the credibility of judgements. An indicators list included in a finished product also allows the commander to track developments and builds a more concrete case for decision-making. By laying out a list of critical variables, AltA will be generating hypotheses containing why they expect to see particular factors, hence their arguments will be much more transparent to scrutiny by others.

c. Application

(1) Whether used alone, or in combination with other structured analysis, the process is the same:

(a) Identify a set of competing hypotheses or scenarios.

(b) Create separate lists of potential activities, statements, or events expected for each hypothesis or scenario.

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(c) Identify the most likely or most correct hypotheses or scenarios, based on the number of changed indicators that are observed.

(2) Developing 2 lists of indicators for each hypothesis or scenario may prove useful to distinguish between indicators that a development is or is not emerging. This is particularly useful in a “What If?” analysis, when it is important to make a case that a certain event is unlikely to happen.

(3) Regularly review and update the indicators lists to see which are changing.

Illustration: Indicators/Signposts of Change

Tracking the Potential for Political Instability in an Indicators Matrix.
Analysts tracked the potential for regime change in 2000 and identified a list of indicators for this event to happen, to which they posed the question, “is this occurring or not?

Topics	Indicators of Potential Regime Change	1999	2000
Government Capacity	Quality of leadership	xx	x
	Responsiveness to popular demands	x	xxx
	Ability to deliver basic goods and services		x
	Effectiveness of civil/ criminal justice systems	xx	xx
Legitimacy of Regime	Breadth and depth of political participation	x	x
	Perceived level of corruption	xx	xxx
	Human rights violation	x	xx
Economic Factors	Weakness of domestic economy/ unemployment/inflation	xxx	xx
	Degree of income disparity	x	x
	Reduced trade openness	xx	xxx

With x = little concern, xx = low concern, xxx = moderate concern, xxxx = substantial concern, xxxxx = serious concern

Such a matrix can be further refined by adding more factors or introduce a quarterly instead of a yearly assessment.

A valuable analysis is the addition of “presence of trigger mechanisms”, i.e. events that might trigger political instability such as contested elections, unpopular changes in food/energy prices, coup plotting or death of a key figure.

Figure A.9: Indicators/Signposts of Change Illustration

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13. **Deception Detection.** Systematic use of checklists can determine when deception may be present and how to avoid being deceived by an adversary

a. When to Use

(1) The Problem Owner needs to check for the possibility of deception, especially when there is a well-known history of its use. The search for clues that deception is being conducted is often time consuming and requires extensive fact checking and hypothesis testing. The Problem Owner should be most concerned about deception when the adversary would have a lot to gain through his efforts and has strong capabilities to deny or manipulate intelligence collection assets.

b. Benefits

(1) Deception Detection can add rigour to analysis and reinforce the effectiveness of other techniques covered in this guide.

(2) There may be times when users place too much confidence in the effectiveness of other techniques covered in this guide, if they have not considered the possibility that deception may be present as well. For example, a well-developed set of indicators might actively mislead, if they were partly developed from information purposely designed or fabricated by an adversary to mislead opponents.

(3) Posing the hypothesis of deception places a considerable cognitive burden on staff members. Once accepting this possibility, it places in question all the evidence and makes it difficult to draw any inferences from the evidence with high confidence. A checklist of questions to detect possible deception can prevent paralysis of thinking.

c. Application

(1) If there is any possibility that deception could be present, users should assess the situation based on 4 sets of criteria:

(a) Does a foreign actor have the Motive, Opportunity and Means to deceive?

(b) Would this potential deception be consistent with Past Opposition Practices?

(c) Do we have cause for concern regarding the Manipulability of Sources?

(d) What can be learned from the Evaluation of Evidence?

(2) In addition to using this Deception Detection technique, AltA can also use the technique of Analysis of Competing Hypotheses (ACH – technique 14). This should explicitly pose deception as one of the multiple explanations for the presence or absence of information.

AltA

14. **Analysis of Competing Hypotheses (ACH).** Identification of alternative explanations (hypotheses) and evaluation of all evidence that will disprove rather than confirm hypotheses.

a. When to Use

(1) ACH is a highly effective technique when there is a large amount of data to absorb and evaluate. It is most effective when there is a need to actively challenge evaluation of the evidence. ACH is particularly appropriate for controversial issues when the Problem Owner wants to develop a clear record that shows the theories they have considered and how they arrived at their judgements.

(2) The user should develop a matrix of hypotheses and input the supporting evidence for each hypothesis to examine where the weight of evidence lies. The ACH matrix allows others to review the analysis and identify areas of agreement and disagreement. Evidence can be examined systematically, making the technique ideal for considering the possibility of deception and denial.

b. Benefits

(1) ACH helps overcome 3 common mistakes that can lead to inaccurate forecasts:

(a) Unjustified influence of a first impression, based on incomplete data, an existing line of thinking/reasoning, or a single explanation that seems to fit well enough.

(b) Planning teams seldom generate a full set of explanations or hypotheses at the outset of a project.

(c) Evidence may support different explanations and not only the preferred hypothesis.

(2) In essence, ACH enables the user to assist the commander to avoid picking the first solution that seems satisfactory instead of going through all the possibilities to arrive at the best solution.

c. Application

(1) Explicitly identify all the reasonable alternative hypotheses, then array the evidence against each hypothesis, rather than evaluating the plausibility of each hypothesis one at a time. To create a level playing field, the process must:

(a) Ensure that all information and arguments are evaluated and given equal treatment or weight when considering each hypothesis.

(b) Prevent premature closure on a particular explanation or hypothesis.

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(c) Protect against inherent tendencies to ignore or discount information that does not fit comfortably with the preferred explanation at the time.

(2) To accomplish this, the process should follow these steps:

(a) Brainstorming among with different perspectives to identify all possible hypotheses.

(b) List all significant evidence and arguments relevant to all the hypotheses.

(c) Prepare a matrix with hypotheses across the top and each piece of evidence on the side. Determine whether each piece of evidence is supportive, unsupportive, or not applicable to each hypothesis.

(d) Refine the matrix and reconsider the hypotheses – in some cases, there will be a need to add new hypotheses and re-examine the information available.

(e) Focus on disproving all hypotheses rather than proving one. Identify and weigh the evidence that is consistent with each hypothesis to see which explanations are strongest.

(f) Analyse how sensitive the ACH results are to a few critical items of evidence; should those pieces prove to be wrong, misleading, or subject to deception, how would it impact an explanation’s validity?

(g) Ask what evidence is not being seen but would be expected for a given hypothesis to be true. Is denial and deception a possibility?

(h) Establish the relative likelihood for the hypotheses and report all the conclusions, including the weaker hypotheses that should still be monitored as new information becomes available.

(i) Identify and monitor indicators that would be both consistent and inconsistent with the full set of hypotheses. In the latter case, explore what could account for inconsistent data.

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Illustration: Analysis of Competing Hypotheses

In March 1995, a largely unknown group attacked the Tokyo subways by using a highly lethal nerve agent known as sarin.

ACH provides a mechanism to carefully examine all the evidence and possible explanations for understanding what type of group could have been responsible. In simplified form, the matrix lists each piece of evidence and then evaluates each in terms of the item's consistency with four possible explanations for the terrorist attack in Tokyo.

Analysts rate a piece of evidence as consistent (C); inconsistent (I); or neutral (N). This process allows analysts to see that some evidence will be consistent with more than one hypothesis and be less valuable in disproving hypotheses.

Evidence	**Weight of Evidence**	**Hypotheses**			
		H1: Kooky Cult	H2: Terrorist Group	H3: Political Movement	H4: Criminal Group
Attacks on Journalists	Medium	Inconsistent	Neutral	Inconsistent	Inconsistent
Religious Affiliation	Medium	Consistent	Inconsistent	Inconsistent	Inconsistent
Established Party	Medium	Neutral	Neutral	Consistent	Inconsistent
Blind Leader Mastsumoto	Medium	Consistent	Consistent	Consistent	Consistent
		In-consistency Score: -1.0	In-consistency Score: -1.0	In-consistency Score: -2.0	In-consistency Score: -3.0

The ranking of the hypotheses shows that H1 and H2 are equally likely as they are both consistent with two evidences, inconsistent and neutral towards one while H3 and H4 are less likely to be an explanation for the incident.

In this example all evidence is of equal importance. Weighting the evidence differently might change the inconsistency score assigned to each hypothesis.

Figure A.10: Analysis of Competing Hypothesis Illustration

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15. **Six Thinking Hats.** Six Thinking Hats is an important and powerful technique. It is used to look at decisions from a number of important perspectives. This forces you to move outside your habitual thinking style, and helps you to get a more rounded view of a situation.

a. When to Use

(1) Six Thinking Hats is a good technique for looking at the effects of a decision from a number of different points of view. It allows necessary emotion and scepticism to be brought into what would otherwise be purely rational decisions. It opens up the opportunity for creativity within decision making.

b. Benefits

(1) Many people think from a very rational, positive viewpoint. Often, though, they fail to look at a problem from an emotional, intuitive, creative or negative viewpoint. This can mean that they underestimate resistance to plans, fail to make creative leaps and do not make essential contingency plans. On the contrary, pessimists may be excessively defensive, and more emotional people may fail to look at decisions calmly and rationally.

(2) Looking at a problem with the Six Thinking Hats technique, will help solve it using all approaches. Decisions and plans will mix ambition, skill in execution, public sensitivity, creativity and good contingency planning.

c. Application

(1) Six Thinking Hats can be used in meetings or by an individual. In meetings it has the benefit of blocking the confrontations that happen when people with different thinking styles discuss the same problem.

(2) Each 'Thinking Hat' is a different style of thinking:

(a) White Hat: With the White Hat, you focus on the data available. Look at the information you have, and see what you can learn from it. Look for gaps in your knowledge, and either try to fill them or take account of them. This is where you analyse past trends, and try to extrapolate from historical data.

(b) Red Hat: Wearing the Red Hat, you look at problems using intuition, gut reaction, and emotion. Also try to think how other people will react emotionally. Try to understand the responses of people who do not fully know your reasoning.

(c) Black Hat: Wearing the Black Hat, look at all the bad points of the decision. Look at it cautiously and defensively. Try to see why it might not work. This is important because it highlights the weak points in a plan. It allows you to eliminate them, alter them, or prepare contingency plans to counter them. Black Hat thinking helps to make your plans 'tougher' and more resilient. It can also help you to spot

fatal flaws and risks before you embark on a course of action. Black Hat thinking resembles a Key Assumptions Check and ACH (techniques 10 and 14).

(d) Yellow Hat: The Yellow Hat helps you to think positively. It is the optimistic viewpoint that helps you to see all the benefits of the decision and the value in it. Yellow Hat thinking helps you to keep going when everything looks gloomy and difficult.

(e) Green Hat: The Green Hat stands for creativity. This is where you can develop creative solutions to a problem. It is a freewheeling way of thinking, in which there is little criticism of ideas. A whole range of creativity tools can help you here.

(f) Blue Hat: The Blue Hat stands for process control. This is the hat worn by people chairing meetings. When running into difficulties because ideas are running dry, they may direct activity into Green Hat thinking. When contingency plans are needed, they will ask for Black Hat thinking, etc.

(3) A variant of this technique is to look at problems from the point of view of different professionals (e.g. doctors, architects, sales directors, etc.) or different customers.

Illustration: Six Thinking Hats

The directors of a property company are looking at whether they should construct a new office building. The economy is doing well, and the amount of vacant office space is reducing sharply. As part of their decision they decide to use the 6 Thinking Hats technique during a planning meeting.

Looking at the problem with the **White Hat**, they analyze the data they have. They examine the trend in vacant office space, which shows a sharp reduction. They anticipate that by the time the office block would be completed, that there will be a severe shortage of office space. Current government projections show steady economic growth for at least the construction period.

With **Red Hat** thinking, some of the directors think the proposed building looks quite ugly. While it would be highly cost-effective, they worry that people would not like to work in it.

When they think with the **Black Hat**, they worry that government projections may be wrong. The economy may be about to enter a 'cyclical downturn', in which case the office building may be empty for a long time. If the building is not attractive, then companies will choose to work in another better-looking building at the same rent.

With the **Yellow Hat**, however, if the economy holds up and their projections are correct, the company stands to make a great deal of money. If they are lucky, maybe they could sell the building before the next downturn, or rent to tenants on long-term leases that will last through any recession.

With **Green Hat** thinking they consider whether they should change the design to make the building more pleasant. Perhaps they could build prestige offices that people would want to rent in any economic climate. Alternatively, maybe they should invest the money in the short term to buy up property at a low cost when a recession comes.

The **Blue Hat** has been used by the meeting's Chair to move between the different thinking styles. He or she may have needed to keep other members of the team from switching styles, or from criticizing other peoples' points.

Figure A.11: Six Thinking Hats Illustration

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16. **Morphological Analysis.** Morphological Analysis (MA) is a method for exploring all possible solutions to a multi-dimensional, non-quantified problem complex. It is an automatic method of bringing parameters into new combinations for the later review of the problem solver. A selection of parameters or attributes is chosen and combinations explored.

a. When to Use

(1) Consider a complex, real-world problem, like those of marketing or making policies for a nation, where there are many governing factors, and most of them cannot be expressed as numerical time series data, as one would like to have for building mathematical models.

(2) The conventional approach here would be to break the system down into parts, isolate the vital parts (dropping the “trivial” components) for their contributions to the output and solve the simplified system for creating desired models or scenarios. The disadvantage of this method is that real-world scenarios do not behave rationally: more often than not, a simplified model will break down when the contribution of the “trivial” components becomes significant. Also, importantly, the behaviour of many components will be governed by the states of, and their relations with, other components – ones that may be seen to be minor before the analysis.

(3) Morphological Analysis, on the other hand, does not drop any of the components from the system itself, but works backwards from the output towards the system internals. Again, the interactions and relations get to play their parts in MA and their effects are accounted for in the analysis. Morphological Analysis can be used in problem definition to reach agreement on the problem dimensions and in the creation of solutions that need to satisfy certain properties.

b. Benefits

(1) Morphological Analysis has several advantages over less structured approaches:

(a) It may help to discover new relationships or configurations, which may not be so evident, or which we might have overlooked by other – less structured – methods.

(b) It encourages the identification and investigation of boundary conditions, i.e. the limits and extremes of different contexts and factors.

(c) It allows finding possible solutions to complex problems characterised by several parameters.

(d) Richness of data – it can provide a multitude of combinations permutations not yet explored.

AltA

(e) Systematic analysis – this technique allows for a systematic analysis of future structure of an industry (or system) and identification of key gaps.

c. Application

(1) Morphological Analysis follows five iterative steps:

(a) Very concisely formulate the problem to be solved.

(b) Localise and analyse all of the parameters that might be of importance for the solution of the given problem.

(c) Construct the morphological box or multidimensional matrix, which contains all of the potential solutions of the given problem.

(d) Closely scrutinise and evaluate all solutions contained in the morphological box with respect to the purposes that are to be achieved.

(e) Select and apply the optimally suitable solutions, provided the necessary means are available.

(2) Steps 2 and 3 form the heart of morphological analysis. Step 2, identification of parameters, involves studying the problem and present solutions to develop a framework. This step is useful to develop a relevance tree to help define a given topic. Once parameters are identified, a morphological box can be constructed that lists parameters along one dimension (step 3).

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Illustration: Morphological Analysis

Below is an example for the morphological box for the **creation of a new lamp**.

The headlines are the properties of the lamp that are being considered and the rows present the different options for each of these properties.

Power Supply	Bulb Type	Light Intensity	Size	Style	Material
Battery	Halogen	Low	Very large	Modern	Metal
Solar	Bulb	Medium	Large	Antique	Ceramic
Generator	Daylight	High	Medium	Art Nouveau	Concrete
Gas	Coloured	Variable	Small	Industrial	Bone
Oil			Handheld		Glass
					Wood

A new lamp can now be thought of as any combination of characteristics of these properties, e.g.:

Battery – Daylight – Low – Handheld – Modern – Wood

Gas – Coloured – High – Medium – Industrial – Concrete

Figure A.12 : Morphological Analysis Illustration

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SECTION 4 – CONTRARIAN TECHNIQUES

17. **Devil's Advocacy.** Devil's Advocacy is challenging a single, strongly held view or consensus by building the best possible case for an alternative explanation.

a. When to Use

(1) This technique is most effective when used to challenge a consensus or a key assumption regarding a critically important issue. On those issues that one cannot afford to get wrong, Devil's Advocacy can provide further confidence that the line of thinking will hold up to close scrutiny.

(2) An individual can often assume the role of the Devil's Advocate if he or she has some doubts about a widely held view, or a commander might designate a critical thinker to challenge the prevailing wisdom in order to reaffirm the group's confidence in those judgements.

b. Benefits

(1) The Devil's Advocacy process can highlight weaknesses in thinking or alternatively help to reaffirm confidence in prevailing judgements by:

(a) Explicitly challenging key assumptions to see if they will not hold up under some circumstances.

(b) Identifying any faulty logic or information that would undermine the key judgements.

(c) Presenting alternative hypotheses that could explain the information available.

(2) Its primary value is to serve as a check on a dominant mind-set that can develop over time when following an issue and forming a consensus view. This mind-set phenomenon makes it more likely that contradictory evidence is dismissed or not given proper weight or consideration.

(3) The technique should result in one of three outcomes:

(a) the current thinking is sound.

(b) the argument is strong but there are areas where further analysis is needed.

(c) or there are flaws in logic or supporting evidence suggesting that a different line of thinking is required or heavy caveats are needed.

AltA

c. Application

(1) To challenge the prevailing thinking the Devil's Advocate must:

(a) Consider the main line of thinking/reasoning and the key underpinning assumptions, and then identify the supporting evidence.

(b) Select one or more assumptions – stated or not – that appear the most susceptible to challenge.

(c) Review the evidence to determine whether any is of questionable validity, whether deception is possibly indicated, or whether major gaps exist.

(d) Highlight any evidence that could support an alternative hypothesis or contradicts the current thinking.

(e) Present to the group the findings that demonstrate there are flawed assumptions, poor quality evidence, or possible deception at work.

(f) If the review uncovers major flaws, consider drafting a separate contrarian paper that lays out the arguments for a different conclusion.

(g) Be sure that any products generated, clearly lay out the conventional wisdom and are identified as an explicitly Devil's Advocate project; otherwise, the reader can become confused as to the current official view on the issue.

18. **Team A/Team B.** Use of separate teams that contrast 2 (or more) strongly held views or competing hypotheses.

a. When to Use

(1) If there are at least 2 competing views within an organisation or competing opinions on a key issue, then Team A/Team B analysis can be used to help resolve those differences.

(2) Developing a full-blown Team A/Team B exercise requires a significant time and resource commitment time so it is worthwhile considering if the issue merits this kind of attention. A longstanding strategic issue, a critical decision that has far-reaching implications, or a dispute within a community that has obstructed effective cross-agency cooperation would be grounds for using Team A/Team B.

b. Benefits

(1) Team A/Team B approach can help opposing experts see the merit in the other group's perspective. The process of conducting such an exercise can reduce the friction

and even narrow the differences. At a minimum, it allows those holding opposing views to feel that their views have been given equal attention.

(2) For the commander, this technique helps to surface and explain important differences within the expert community. Often senior officials can learn more by weighting well-argued conflicting views than from reading an assessment that masks substantive differences or drives analysis to the lowest common denominator. By making the key assumptions and information used for each argument more transparent, a commander can judge the merits of each case, pose questions back to the analysts, and reach an independent judgement on which argument is the strongest.

(3) If opposing positions are well established, it can be useful to place staff on teams that will advocate positions they normally do not support; forcing a member of staff to argue for the other side can often make them more aware of their own mind-set.

c. Application

(1) Analysis Phase:

(a) Identify the 2 (or more) competing hypotheses or points of view.

(b) Form teams or designate individuals to develop the best case that can be made for each hypothesis.

(c) Review all pertinent information that supports their respective positions.

(d) Identify missing information that would support their hypotheses.

(e) Structure each argument with an explicit presentation of key assumptions, key pieces of evidence, and careful articulation of the logic behind the argument.

(2) Debate Phase: Presentation of the alternative arguments and denials in parallel fashion for the benefit of other staff:

(a) Set aside time for a presentation of the alternative team findings; this can be an informal discussion or a more formal debate.

(b) Have an independent jury of peers to listen to the presentation and be prepared to question the teams regarding their assumptions, evidence, or logic.

(c) Allow each team to present their case, challenge the other team’s arguments, and defend themselves against the opponent’s critique.

(d) Let the jury consider the strength of each presentation and recommend possible next steps for further research.

AltA

19. **High Impact/Low Probability Analysis.** Highlights a seemingly unlikely event that would have major policy consequences if it happened.

a. When to Use

(1) This is a contrarian technique that enables AltA to explore and demonstrate the potential impact of seemingly low probability events that would have major repercussions on NATO interests, operations or plans. Using this technique is advisable when commanders are convinced that an event is unlikely but have not given much thought to the consequences of its occurrence. In essence, this can be a warning that the intelligence and policy communities must be alert to an unexpected but not impossible event.

b. Benefits

(1) Mapping out the course of an unlikely, yet plausible, event can uncover hidden relationships between key factors and assumptions; it also can alert commanders and staffs to oversights. In addition, an examination of the unthinkable allows development of signposts that may provide early warning of a shift in the situation (see technique 12, Indicators/Signposts of Change).

c. Application

(1) If there is a strongly held view that an event is unlikely, then postulating precisely the opposite should not be difficult.

(a) Define the high-impact outcome clearly. This process is what will justify examining very unlikely developments.

(b) Devise one or more plausible explanations for or pathways to the low probability outcome. This should be as precise as possible, as it can help identify possible indicators for later monitoring.

(c) Insert possible triggers or changes in momentum if appropriate. These can be natural disasters, threats to key leaders, or plausible economic or political shocks. Brainstorming may be necessary to identify these unpredictable triggers of sudden change.

(d) Identify for each pathway a set of indicators or observable events that would help to recognise these situations developing.

(e) Identify factors that would prevent a bad outcome or encourage a positive outcome.

AltA

Illustration: High Impact/Low Probability

High impact/low probability events are also known as Black Swan events. The theory of black swan events is a metaphor that encapsulates the concept that an event is a surprise (to the observer) and has a major impact. After the fact, the event is rationalised by hindsight.

The name derives from a Latin expression that was coined because swans are commonly thought to be white with black being the rare exception.

The theory was developed by Nassim Nicholas Taleb to explain:

- The disproportionate role of high-impact, hard-to-predict, and rare events that are beyond the realm of normal expectations in history, science, finance and technology
- The non-computability of the probability of the consequential rare events using scientific methods (owing to the very nature of small probabilities)
- The psychological biases that make people individually and collectively blind to uncertainty and unaware of the massive role of the rare event in historical affairs

An example Taleb utilised to explain his theory was the events of September 11th 2001. 9/11 was a shock to all common observers; and its ramifications are to this day felt in the increased level of security and the adoption of "preventive" strikes or wars by Western governments. Such a coordinated, successful attack on the World Trade Centre and Pentagon using commercial airliners was virtually unthinkable at the time. However, with the benefit of hindsight, it has come to be seen as a predictable incident in the context of the changes in terrorist tactics.

Also the 2008-2012 Financial Crisis has been perceived widely as Black Swan event.

The main idea in Taleb's book is to not attempt to predict black swan events, but to build robustness against negative ones that occur and be able to exploit positive ones. Taleb states that a black swan event depends on the observer. For example, what may be a black swan surprise for a turkey is not a black swan surprise to its butcher; hence the objective should be to "avoid being the turkey" by identifying areas of vulnerability in order to "turn the Black Swans white".

Figure A.13: High Impact/Low Probablility Illustration

AltA

20. **What-If Analysis.** Assumes that an event has occurred with potential (negative or positive) impact and explains how it might come about.

a. When to Use

(1) A technique for challenging a strong mind-set by hypothesising that events may not happen as planned or that a confidently made forecast may not be entirely justified. It is similar to a High-Impact/Low-Probability analysis, but it does not dwell on the consequences of the event as much as it accepts the significance and moves directly to explaining how it might come about. This helps identifying key players, events and issues that need to be taken into consideration during decision making and problem solving.

(2) A Problem Owner might employ this technique and repeat the exercise whenever a critical judgement is made.

b. Benefits

(1) What-If Analysis shifts the focus from whether an event could occur to how it may happen. This suspends judgement about the likelihood of the event and focuses more on the important question of what developments – even unlikely ones – might enable such an outcome.

(2) Using this technique is particularly important when a judgement rests on limited information or unproven assumptions. Moreover, it can free staffs from arguing about the probability of an event to considering its consequences and developing some indicators or signposts for its possible emergence. It will help understand the impact of an event, the factors that could cause or alter it, and likely signposts that an event is imminent, and thus provide relevant input to the planning process. A What If -Analysis can complement a difficult judgement and caution the commander against accepting the conventional wisdom without considering the costs and risks of being wrong. This can help commanders consider options including the unlikely.

c. Application

(1) A What-If Analysis must begin by stating clearly the accepted line of thinking/reasoning and then stepping back to consider what alternative outcomes are too important to dismiss, even if unlikely. Brainstorming can develop one or more plausible scenarios by which the unlikely event occurs:

(a) Assume the event has happened.

(b) Select some triggering events that permitted the scenario to unfold to help make the “what if” more plausible; for example, the user might postulate the death of a leader, a natural disaster, or some economic event that would start a chain of other events.

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(c) Develop a line of argument based as much on logic as evidence to explain how this outcome could have come about.

(d) Working backwards from the event in concrete ways - specifying what must actually occur at each stage of the scenario - is often very useful.

(e) Identify one or more plausible pathways or scenarios to the unlikely event; very often more than one will appear possible

(f) Generate a list of indicators or observables events for each scenario that would help to detect the beginnings of the event.

(g) Consider the scope of the positive and negative consequences of each scenario and their relative impacts.

(h) Monitor the indicators developed on a periodic basis.

Illustration: What-If Analysis

This example highlights the What If-Analysis in the light of Yugoslavia 1990 and examines what a “muddling through” what look like.

Memories of the internecine civil war during World War II and fear of another destructive conflict would lead the two most numerous South Slav people (Serbs and Croats) to reach some political accommodation. A compromise that preserves Yugoslavia would include:

Basic principles:

- No change in existing Republic borders.
- No change in Yugoslavia’s existing international status.
- Mutually recognised sovereignty of each republic

Confederal institutions:

- A single foreign ministry, to which diplomatic representatives would be accredited.
- A central military organisation with a joint General Staff responsible for planning.
- A central bank, determining macroeconomic policy, a common currency,

Powers reserved to republics.

- Veto over actions of the Confederal Authority.
- Control of internal security, including guarantee of minority rights.
- Operational control over some or all military units stationed on the republic’s territory.
- Raising taxes and allocating funds to discharge mutually agreed confederal responsibilities.

Only the Serbs can open the door to a confederal Yugoslavia, and Serbia’s leader, Slobodan Milosevic, holds the key. Some observers felt there are pressures on him to try. If he does not, he would give his opponents the leverage to remove him. The potential penalties of failure to compromise would be too great, in this view, for the peoples and leaders of Yugoslavia to forgo every effort to find a compromise.

Excerpts from the declassified NIE: Prospects for Yugoslavia*, October 1990.*

Figure A.14: What-If Analysis Illustration

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ANNEX B TO
AltA
DATED DEC 12

ALTERNATIVE ANALYSIS IN SUPPORT OF THE OPERATIONS PLANNING PROCESS

SECTION 1 – GENERAL REMARKS

1. **AltA Contribution.** AltA can support the NATO Operations Planning Process (OPP) at all levels by allowing presentation of alternative perspectives and insights.

2. **Principles**

a. AltA should operate within and be responsible to the respective command.

b. In order to prevent confusion and resistance to AltA input, the AltA participants should only interact with the planning entity at the same level, e.g. strategic level AltA participants communicate with the EOG-RDG and operational level AltA participants with the JOPG.

c. The Planning Group Lead decides on the application of AltA.

d. The Planning Group Lead is responsible for the initiation of the AltA process and its application, taking into account resource and time restrictions. A flexible application and adaption of the outlined process in this handbook is therefore necessary. In all instances the AltA process needs to be adapted to the planning timeline set by the Planning Group Lead.

3. **Personnel Involved with AltA in the OPP**

a. Planning Group Lead. The Planning Group Lead can request AltA support in the planning process. The Planning Group Lead consults with the command's AltA Facilitator in order to setup the appropriate AltA Team, as needed.

b. AltA Facilitator. The AltA Facilitator is the senior AltA representative whose role is to coach the Planning Group Members on AltA techniques and ensure its appropriate application.

c. Planning Group Members. The Planning Group Members can use AltA techniques throughout the planning process. Members may ask the AltA Facilitator for support.

4. **AltA – Planning Group Interaction and Lines of Communication.** The usefulness of AltA in the Operations Planning Process is highly dependent on the interaction with the EOG-RDG/JOPG and the information available through supporting

functions of the EOG-RDG/JOPG (e.g. intelligence). Their choice may have an impact on the flexibility, pace of interaction and the oversight by the respective leads.

a. **AltA users and EOG-RDG/JOPG.** A clear line of communication between the Problem Owner (EOG-RDG/JOPG Lead) and the designated AltA representative is needed with the aim of preventing misunderstanding and resistance to new perspectives.

b. **AltA Team and Support Functions.** AltA techniques often require outreach to supporting functions to gather additional information. Again, this can be organised such that only the AltA Facilitator is permitted to reach out of the core Planning Team or that any AltA user has permission to contact support functions when needed to perform AltA.

SECTION 2 – OPERATIONAL LEVEL

1. This section provides an illustration of the six phases of the OPP at the operational level and the possible areas in which AltA can provide support to the planning group. Not all phases or tasks and subtasks lend themselves to the use of AltA and where they don't, no techniques are listed. Indeed, AltA fully supports the first four of which these, while support to the final two phases is yet to be defined.

2. The tables below depict the first four phases of NATO's Operations Planning Process. The phases are denoted in column 1 and the respective tasks in column 2. Column 3 indicates what techniques might best support that task or subtask (key areas of AltA support are marked in bold text).

3. These tables are designed to offer some recommendations on which techniques might be best applied, but they are not meant to be prescriptive or in any way limiting in selecting one technique over another.

4. The phases of the OPP at the operational level are:

   a. Situation Awareness.

   b. Operational Appreciation of SACEUR's Strategic Assessment and Assessment of Military Response Options.

   c. Operational Orientation.

   d. Operational CONOPS Development (4a) and Operational Plan Development 4b).

   e. Execution, Campaign Assessment/OPLAN Review.

   f. Transition.

1. Situation Awareness

"Developing and maintaining a level of understanding to support operational assessments and decision-making in the provision of operational level advice to SACEUR during the planning for and conduct of operations."

JOPG's Task	Description	Techniques
Develop a systems perspective of the designated area	Assume Responsibility for an Area of Interest	Brainstorming Key Assumptions Check
	Appreciate the Nature of Threats and Risks	Brainstorming Brainwriting Key Assumptions Check
	Identify the Main Actors in the Area	Brainstorming Reverse Brainstorming Brainwriting Starbursting
	Gather Further Encyclopaedic Information about Actors and Domains in the Area	Quality of Information Check
	Conduct an Initial Analysis of the Systems in the Area in Consultation with SOPG	Key Assumptions Check String of Pearls
Develop information/ knowledge requirements	Determine Knowledge Requirement	Key Assumptions Check Brainstorming Brainwriting
	Determine the Commander's Critical Information Requirements	
	Develop Priority Intelligence Requirements	Key Assumptions Check Starbursting
	Develop Other Operational Information Sources	
	Coordinate Requirements with SHAPE	

2. Operational Appreciation of SACEUR's Strategic Assessment and Assessment of Military Response Options

"First, to understand the strategic situation, the nature of the problem and NATO's desired end state, and NATO strategic and military strategic objectives, through SACEUR's Strategic Assessment (SSA) […]"

JOPG's Task	Description	Techniques
Initiate an operational level appreciation of the crisis	Activate Operational Crisis Response Organisations	
	Initiate the Estimate Process	Key Assumptions Check What If-Analysis
	Provide Action on Potential Requirement for Fast Track Decision Making	Key Assumptions Check What If-Analysis Brainstorming
	Develop the Commander's Initial Guidance	Key Assumptions Check What If-Analysis
	Develop Comprehensive Preparation of the Operational Environment	
Appreciation of the strategic context of the crisis	Understand the Need to Develop a Strategic Appreciation of the Crisis	
	Review Available Knowledge and Assessments	Key Assumptions Check
	Understand the Nature, Scale and Scope of the Problem	Brainstorming Reverse Brainstorming Brainwriting String of Pearls Outside-In Thinking Key Assumptions Check Six Thinking Hats High Impact/Low Probability Analysis Analysis of Competing Hypotheses

2. Operational Appreciation of SACEUR's Strategic Assessment and Assessment of Military Response Options – cont'd

JOPG's Task	Description	Techniques
Appreciation of the strategic context of the crisis	Understand the Key Strategic Factors Contributing to the Crisis	String of Pearls Outside-In Thinking Key Assumptions Check Six Thinking Hats High Impact/Low Probability Analysis
	Understand the Main Actors and their Roles in the Crisis	Outside-In Thinking Key Assumptions Check Deception Detection Six Thinking Hats High Impact/Low Probability Analysis Pre-mortem Analysis
	Assess the Potential Risks and Threats	Brainstorming Reverse Brainstorming Key Assumptions Check What If-Analysis High Impact/Low Probability Analysis Pre-mortem Analysis
Appreciate the level and scope of international engagement	Review International Legal Aspects	
	Review International Commitments	
	Review the International Media and Public Opinion	
	Understand the Desired End State	
	Understand NATO Strategic and Military Strategic Objectives	

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2. Operational Appreciation of SACEUR's Strategic Assessment and Assessment of Military Response Options – cont'd

"[…] and second, to provide operational advice to SACEUR on his Military Response Options (MROs)."

JOPG's Task	Description	Techniques
Understand the desired NATO end state, strategic and military strategic objectives	Understand the NATO Strategic/Military Strategic Context	Brainstorming Reverse Brainstorming Key Assumptions Check Brainstorming
	Understand the Desired End State	
	Understand NATO Strategic and Military Strategic Objectives	
	Understand Military Strategic Effects	What If-Analysis High Impact/Low Probability Analysis
Analyse the Military Response Options	Analyse the Military Response within a Comprehensive Approach	Brainstorming Reverse Brainstorming Starbursting Key Assumptions Check Pre-mortem Analysis Outside-In Thinking Alternative Futures High-Impact/Low Probability Analysis What If-Analysis
	Assess the End State	
	Assess the Mission	
	Assess the Military Strategic Objectives	
	Assess the Effects to be Achieved by Military Means	
	Assess the Military Actions	
	Assess Force Capability Requirements	Key Assumptions Check What If-Analysis Pre-mortem Analysis
	Assess the ROE Requirements	
	Assess the Use of Complementary non-Military Means	Brainstorming Reverse Brainstorming Starbursting Key Assumptions Check Pre-mortem Analysis Outside-In Thinking What If-Analysis Analysis of Competing Hypotheses

2. Operational Appreciation of SACEUR's Strategic Assessment and Assessment of Military Response Options – cont'd

JOPG's Task	Description	Techniques
Analyse the Military Response Options	Assess the Main Resource Requirements	Key Assumptions Check What If-Analysis Pre-mortem Analysis
	Assess the Provisional Theatre of Operations and Joint Operations Area	
	Assess Preliminary Command and Control Arrangements	
	Review Strategic Risks and Assess Operational Risks	Brainstorming Reverse Brainstorming Starbursting Key Assumptions Check Pre-mortem Analysis Outside-In Thinking High-Impact/Low Probability Analysis What If-Analysis
	Assess CRMs Requirements	Key Assumptions Check What If-Analysis Pre-mortem Analysis
	Assess Strategic Communication/ Information Strategy Requirements	
	Assess Requirements for Interaction with Relevant National and International Actors	
	Assess the Possible Partner and Non-NATO Nations Participation	Brainstorming Reverse Brainstorming Starbursting
	Assess Preconditions for Success	Key Assumptions Check What If-Analysis Pre-mortem Analysis

2. Operational Appreciation of SACEUR's Strategic Assessment and Assessment of Military Response Options – cont'd

JOPG's Task	Description	Techniques
Provide operational advice	Develop Conclusions	Key Assumptions Check String of Pearls Analysis of Competing Hypotheses Six Thinking Hats
	Identify Critical Operational Requirements	Brainstorming Reverse Brainstorming Starbursting Key Assumptions Check String of Pearls Analysis of Competing Hypotheses
	Consider Lessons Learned from Previous Similar Operations	Key Assumptions Check What If-Analysis Pre-mortem Analysis
	Determine Key Issues for SACEUR	

3. Operational Orientation

"Determine the operational problem that must be solved, the specific operational conditions that must be created, the key operational factors that will influence the achievement of those conditions, and any limitations on the Commander's freedom of action for the development of the overall operational design."

JOPG's Task	Description	Techniques
Initiate operational orientation	Determine Planning Requirements Milestones	Brainstorming Brainwriting
	Develop and Issue the Commander's Initial Guidance	Brainstorming Reverse Brainstorming Starbursting Key Assumptions Check String of Pearls Analysis of Competing Hypotheses Six Thinking Hats
	Establish Liaison/Co-Ordination	
	Issue Warning Orders to Subordinates	
	Direct the Preparation and Deployment of OLRT	
Review the strategic context	Framing the Problem	Brainstorming Brainwriting String of Pearls Outside-In Thinking Key Assumptions Check Analysis of Competing Hypotheses What If-Analysis
	Review the Current Situation	
	Review Strategic Direction for Solving the Problem	
	Collect and Review Historical Analysis and Lessons Learned	

3. Operational Orientation – cont'd

JOPG's Task	Description	Techniques
Understand the operational environment and the main actors	Update Estimates and Comprehensive Preparation of Operational Environment	Key Assumptions Check Analysis of Competing Hypotheses
	Definition and Analysis of Operational Environment	Brainstorming Reverse Brainstorming Brainwriting Outside-In Thinking Six Thinking Hats String of Pearls Key Assumptions Check Analysis of Competing Hypotheses What If-Analysis
	Evaluation of Adversaries, Friends and Neutrals	
Analyse the mission	Plan the Conduct of the Mission Analysis	Brainstorming Starbursting String of Pearls Outside-In Thinking Key Assumptions Check Analysis of Competing Hypotheses What If-Analysis
	Analyse the Assigned Mission	
	Analyse the Assigned Operational Objectives	
	Determine the Actor Systems to be Influenced	

3. Operational Orientation – cont'd

JOPG's Task	Description	Techniques
Analyse the mission	Determine the Mission Essential Actions	Brainstorming Pre-mortem Analysis Starbursting String of Pearls Outside-In Thinking Key Assumptions Check Analysis of Competing Hypotheses What If-Analysis
	Assess the Impact of Time, Space and Information	
	Develop Assumptions	Brainstorming Starbursting Key Assumptions Check
	Determine the Critical Operational Requirements	Key Assumptions Check What If-Analysis String of Pearls
	Determine Requirements for Interaction with Relevant International and National Actors	
	Limitations on Operational Freedom of Action	Brainstorming Brainwriting Starbursting
	Operational Risks	Key Assumptions Check What If-Analysis High Impact/Low Probability Analysis Pre-mortem Analysis String of Pearls

3. Operational Orientation – cont'd

JOPG's Task	Description	Techniques
Analyse Centres of Gravity	Conduct Centres of Gravity Analysis	Brainstorming Outside-in Thinking What-If Analysis Analysis of Competing Hypotheses High Impact/Low Probability Analysis
Analyse operational objectives and determine criteria for success and operational effects	Analyse operational objectives and determine criteria for success and operational effects	Brainstorming Pre-mortem Analysis Outside-In Thinking String of Pearls Key Assumptions Check What If-Analysis Alternative Futures
Develop the operational design	Determine Decisive Points/Decisive Conditions	Starbursting Pre-mortem Analysis What If-Analysis Alternative Futures String of Pearls Key Assumptions Check Analysis of Competing Hypotheses Six Thinking Hats
	Determine Lines of the Operation	
Develop the operational design	Determine Branches and Sequels	Starbursting What If-Analysis
	Develop Requirements for Strategic Communication	Brainstorming Starbursting Key Assumptions Check

3. Operational Orientation – cont'd

JOPG's Task	Description	Techniques
Develop the operational design	Evaluate Alternatives and Develop the Operational Design	Starbursting What If-Analysis String of Pearls Key Assumptions Check Analysis of Competing Hypotheses Six Thinking Hats
	Develop Tentative Missions for Subordinate Commands	
Estimate initial force/capability and C2 requirements	Estimate Initial Force/ Capability Requirements	Key Assumptions Check What If-Analysis
	Estimate C2 Requirements	
Conduct theatre reconnaissance and coordination	Direct Coordination and Collection by the Operational Liaison and Reconnaissance Team (OLRT)	Brainstorming Brainwriting Starbursting Outside-In Thinking
	Plan and Conduct the Commander's Theatre Reconnaissance	
Conduct mission analysis brief	Validate the Mission Analysis and the Operational Design	Key Assumptions Check Reverse Brainstorming Pre-mortem Analysis Quality of Information Check What If-Analysis Alternative Futures High Impact/Low Probability Analysis
	Confirm the Commander's Initial Intent	Key Assumptions Check
	Issue Guidance for COA Development	
	Issue Operational Planning Directive	
Conduct mission analysis brief	Develop and Submit Requests to SHAPE	Brainstorming Brainwriting Starbursting Key Assumptions Check

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4a. Operational CONOPS Development

"Determine how best to carry out operations that will accomplish the mission effectively and efficiently in accordance with the Commander's intent. This is a collaborative planning effort between the SOPG and JOPG to produce a coherent strategic level CONOPS for submission to the NAC and subsequent approval of the Operational CONOPS by SACEUR."

JOPG's Task	Description	Techniques
Prepare for operational CONOPS development	Review of the Commander's Planning Guidance	Quality of Information Check Key Assumptions Check
	Review the Results from Theatre Reconnaissance and Coordination	
	Gather Planning Information	
	Develop Opposing COAs	Team A/Team B Surrogate Adversary/Role Play What If-Analysis Analysis of Competing Hypotheses Key Assumptions Check Brainstorming Reverse Brainstorming Alternative Futures
	Arrange for Wargaming of the COAs	
	Review and Update Estimates	Quality of Information Check Key Assumptions Check
Analyse opposing COAs and factors influencing COA development	Assess Opposing Forces COAs	Key Assumptions Check Surrogate Adversary/Role Play What If-Analysis
	Assess/Confirm the Actions of Others in the Theatre	String of Pearls Analysis of Competing Hypotheses Deception Detection Six Thinking Hats Outside-In Thinking

4a. Operational CONOPS Development – cont'd

JOPG's Task	Description	Techniques
Analyse opposing COAs and factors influencing COA development	Assess Other Factors Influencing COA Development	Key Assumptions Check What If-Analysis Analysis of Competing Hypotheses Six Thinking Hats Brainstorming Starbursting Outside-In Thinking
Develop own COAs	Develop Tentative COAs	String of Pearls Pre-mortem Analysis What If-Analysis High Impact/Low Probability Analysis Alternative Futures
	Consolidate and Synthesise Related COAs	
	Analyse and Test Tentative COAs for Viability	Devil's Advocacy Team A/Team B
	Update the Commander on Potential COAs	
	Review the Commander's COA Selection Criteria	Key Assumptions Check Analysis of Competing Hypotheses
	Further Develop COAs for Wargaming and Evaluation	

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4a. Operational CONOPS Development – cont'd

JOPG's Task	Description	Techniques
Analyse COAs	Analyse COAs	Key Assumptions Check Analysis of Competing Hypotheses String of Pearls Pre-mortem Analysis What If-Analysis Alternative Futures
	Conduct Troops-To-Tasks Analysis	What If-Analysis
	Assess Force Availability	What If-Analysis
	Prepare a Transportation Feasibility Estimate	
	Wargame COAs	
	Synchronise COAs	
Compare COAs and select a COA for concept development	Compare COAs	Analysis of Competing Hypotheses What If-Analysis Team A/Team B Devils' Advocacy Alternative Futures
	Commander's COA Decision Brief	
Produce the CONOPS	Refine the Commander's Intent	Key Assumptions Check String of Pearls
	Describe the Conduct of Operations	String of Pearls
	Assign Missions to Subordinate Commands	
	Develop Coordinating Instructions	Key Assumptions Check What If-Analysis
	Describe the Concept for Service Support	
	Describe Command and Control, and Communications Information Systems Support	
	Develop Required Annexes	

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4a. Operational CONOPS Development – cont'd

JOPG's Task	Description	Techniques
Develop force/capability requirements	Develop the Provisional CJSOR	Key Assumptions Check What If-Analysis
	Prepare a Proposed Theatre Capability Statement of Requirements (TCSOR)	
	Prepare Manpower Requirements/Crisis Establishment List	
	Develop Recommendations for Implementation of Additional Crisis Response Measures	Key Assumptions Check What If-Analysis High Impact/Low Probability Analysis Brainstorming Starbursting
Forward CONOPS and requirements to SACEUR		

4b.Operational Plan Development

"Develop the arrangements and further specify the required activities to implement the concept of operations; to specify the conduct of operations, including the deployment, employment and sustainment of forces; and to provide a basis for planning by subordinate/supporting commands and subsequent adaptation, as required, to meet changes in the operational environment."

JOPG's Task	Description	Techniques
Initiate plan development	Provide Guidance and Direction	Brainstorming Starbursting Key Assumptions Check
	Review the Status of Strategic Planning	Key Assumptions Check What-If Analysis
	Review the Status of Planning by Subordinate and Supporting Commands	
	Review the Planning with Relevant National and International Actors	
	Arrange for Plan Handover	
Plan for employment of Joint Forces	Review the Planning Requirements for the Employment of Joint Forces	Key Assumptions Check What-If Analysis
	Confirm the Task Organisations	
	Synchronise Forces and Functions for Each Operational Phase	
	Plan for the Build Up and Use of Reserves	Key Assumptions Check What If-Analysis High Impact/Low Probability Analysis Brainstorming Starbursting
	Plan for the Implementation of Information/ Communications Strategy	Key Assumptions Check What-If Analysis
	Plan for Cooperation with Relevant National and International Actors	

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4b.Operational Plan Development – cont'd

JOPG's Task	Description	Techniques
Plan for Command and Control	Review C2 Planning Requirements	Key Assumptions Check What-If Analysis
	Further Specify Authorities and Responsibilities	
	Refine and Coordinate Areas of Operations	
	Confirm C2 Locations and Communications Connectivity	
	Plan for Transfer of Authority	
	Plan for Exchange of Liaison Elements	
	Plan for Knowledge Development, Intelligence and the Application of Lessons Learned	
	Plan for Campaign Review	
Plan for force preparation and sustainment	Review Planning Requirements for Force Preparation and Sustainment	Starbursting Key Assumptions Check What If-Analysis
	Plan for Mission Training and Certification of HQs, Personnel and Forces	
	Plan Logistical Support to the Force in Theatre	
	Plan for Theatre Medical Support	
	Plan for Financial Support	
	Plan for the Rotation of HQs, Personnel and Forces	

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4b.Operational Plan Development – cont'd

JOPG's Task	Description	Techniques
Plan for force deployment	Review the Requirements for Planning the Deployment of Forces	Starbursting Key Assumptions Check What If-Analysis
	Design and Develop the Theatre Movements Architecture	
	Finalise the Force Flow	
	Establish Command Authority and Responsibilities for Deployment Operations	
	Coordinate Detailed Deployment Plans with Nations	
Plan for protection of force	Review Requirements for Force Protection Planning	Starbursting Key Assumptions Check What If-Analysis
	Protective Security	
	Active Defence	
	Passive Defence	
	Recuperation	
Coordinate plan for approval and handover	Complete Operational Coordination	What If-Analysis Alternative Futures High Impact/Low Probability Analysis Devil's Advocacy Key Assumptions Check
	Conduct Final Operational Risk Assessment	
	Complete Strategic Coordination	
	Forward Plan for Approval	
	Handover the Plan	

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ANNEX C TO
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TRAINING

1. This annex provides information regarding the training and education to support the establishment and conduct of AltA. It contains two sections; Section 1 outlines the basic training and education requirements and Section 2 provides a set of charts and slides available for use by the AltA Facilitator or other staff members as they see fit.

2. In general, commanders, senior leaders and staff do not require formal training. Formal training is designed for the AltA Facilitator.

3. AltA requires different levels of training and understanding by various personnel in any NATO command or agency, therefore training must be tailored depending on the individual's role in AltA.

4. A training course is being developed focusing on the application of critical thinking and the tools and techniques used in AltA.

5. In addition, courses that teach processes which could benefit from AltA (such as the Operations Planning Process and NATO Defence Planning Process) should incorporate a short familiarisation of the capability.

6. Training requirements within organisations:

a. **Commander.** The Commander should have a general understanding of the use and benefits of AltA. This does not require a separate training course, but early and regular educational and status update briefings; the AltA Facilitator is well placed to provide this training/instruction. Additionally, AltA should be incorporated into existing senior staff and executive level courses. Nevertheless, interested commanders are encouraged to attend formal AltA training.

b. **AltA Facilitator.** The AltA Facilitator should be the subject matter expert within his organisation regarding the AltA Process (as described in Chapter 3) and the Techniques (found in Appendix B) and is the primary trainer for leadership and staff in his organisation. He requires thorough training that includes the soon-to-be developed AltA course, in addition to using Lessons Learned or Identified through his or others' experiences. Any additional training for the AltA Facilitator should focus on the aspects of managing and supporting AltA and the Problem Owner + Techniques. The AltA Facilitator should participate in an "AltA Community of Interest" to help maintain currency in the discipline.

c. **AltA Focal Point.** The AltA Focal Point has the same training requirements as the AltA Facilitator.

7. **Staff Member.** The organisation's staff members will benefit from local training conducted by the AltA Facilitator, primarily focused on the Techniques found in Appendix B. AltA training needs to raise awareness of the areas of application and the benefits of using AltA during various decision-making and other staff processes. Training on techniques should follow a "hands-on" approach using case studies in order to achieve familiarity with the AltA approach.

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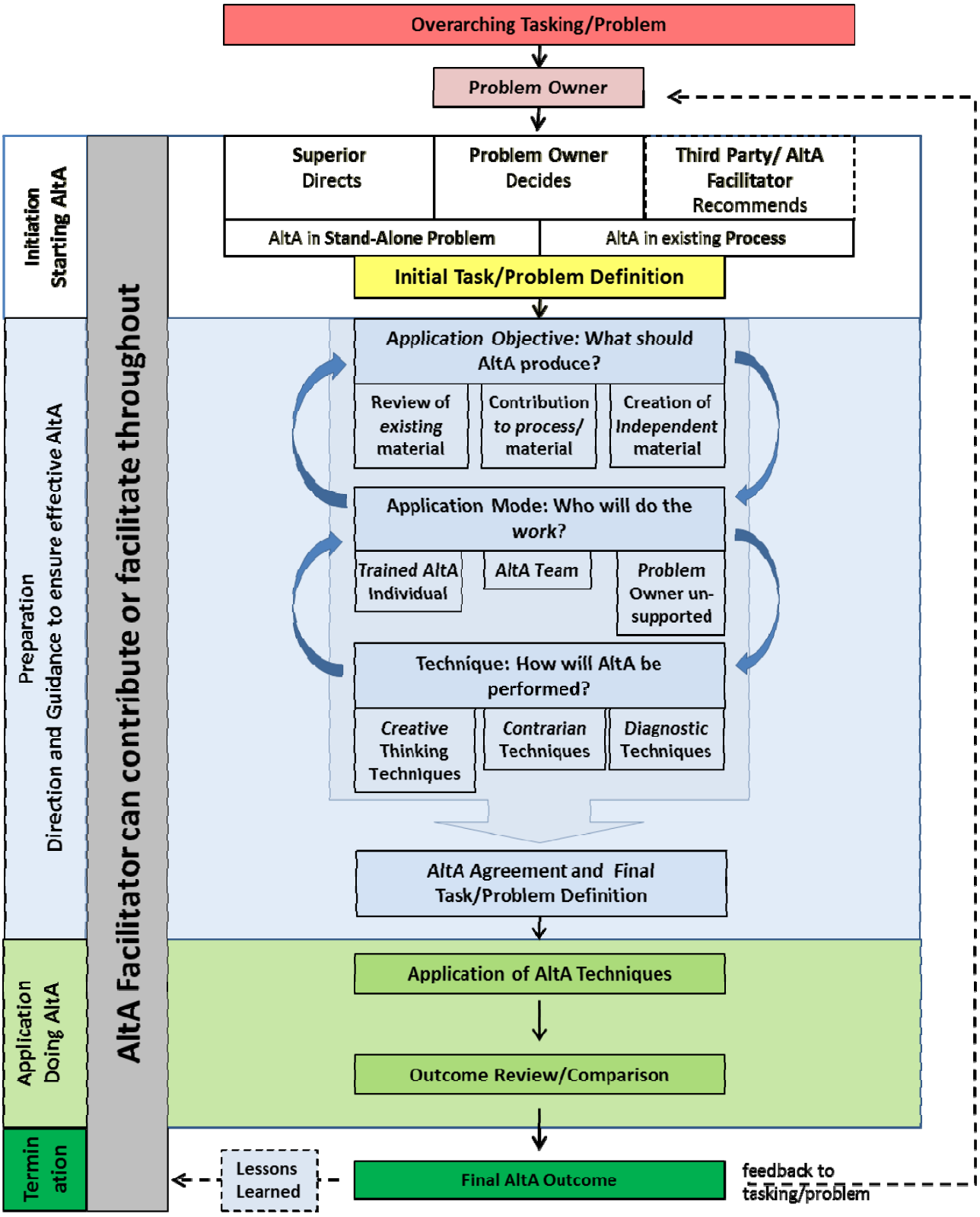

Figure C.1: Overview of the Training Process

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GLOSSARY

1. **Alternative Analysis:** The deliberate application of independent, critical thought and alternative perspective to improve decision-making

2. **AltA Facilitator:** While most AltA techniques are suitable for application by staff members aided by the AltA Handbook, the more complex techniques will require the support of an AltA Facilitator. The AltA Facilitator may work with problem owners directly in executing AltA or may simply advise and guide its use while other staff members perform the analysis.

3. **AltA Focal Point:** In addition to the responsibilities of an AltA Facilitator, the AltA FP is the manager of the AltA capability within his command when there are two or more AltA Facilitators assigned. The purpose of an AltA FP is to synchronise and share information with all AltA trained personnel within his headquarters; additionally, the AltA FP serves as the primary point of contact for AltA for his command.

4. **Application Objective:** What is the purpose of AltA application? The Problem Owner must decide on the objective of AltA Application as it relates to his task/problem. The Problem Owner options are to provide a review of existing material or products, contribute to an ongoing process or creation of other staff material, or create new and/or independent material or products.

5. **Problem Owner:** A Problem Owner is the person responsible for a task to be completed. It may be the commander/senior leader, or responsibility for the task/problem may be delegated to a staff member or other responsible person. A Problem Owner can use AltA to support a problem-solving process. The Problem Owner can apply AltA techniques independently (without support from others) or consult with the AltA Facilitator to define the framework of AltA use.

6. **Technique**

   a. **Creative Thinking** is critical in the beginning of most tasks. Creative thinking techniques help in understanding the complete problem environment, defining the problem, and in developing new solutions to problems.

   b. **Contrarian Techniques** serve to understand the problem from a different, often opposing, view. This helps in the problem definition process, and is valuable during the development of solutions and in the evaluation of courses of action during the decision-making process.

   c. **Diagnostic Techniques** support problem definition and problem analysis through the inclusion of the wider problem space and surrounding variables. Further, Diagnostic Techniques are used to develop alternative perspectives in order to evaluate multiple courses of action.

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ANNEX E TO
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