NATO
ALTERNATIVE ANALYSIS (AltA)
HANDBOOK

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Forward

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, AltA's goal is reduced risk and expanded opportunities through better decision-making.

AltA offers a set of techniques, which build on and enhance various processes NATO already has in place that aim at improving decision-making and supporting problem solving. These techniques are complemented by a training course held at the NATO School, and a collaboration portal hosted on NATO's Transnet page[1].

As a comprehensive guide to AltA, this NATO Handbook provides a critical building block supporting implementation and use of AltA 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.

**To be Signed by SHAPE and HQ SACT COS**

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1 https://portal.transnet.act.nato.int and register for "Operations Research, Analysis and Assessment"

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PART 1: APPLICATION OF ALTA

Alternative Analysis Explained

> **AltA is the deliberate application of independent, critical thought and alternative perspective to improve decision-making**

The key words in this definition are: *independent*, *critical thought* and *alternative perspective*. "Independent" refers to being free from influence or control by others in matters of belief or thinking. "Critical thought" or thinking is the intellectually disciplined process of conceptualizing, applying, analysing, synthesising, and evaluating information as a guide to belief and action. Critical thinking is necessary for valid reasoning when drawing conclusions about goals, problems, assumptions, concepts, evidence, implications, and consequences. "Alternative perspective" is the *result* of looking at a situation, problem, or fact, through a different value and belief structure, cultural frame, or mind-set.

AltA is the synthesis of independent, critical thinking and alternative views in a set of easy-to-use techniques that enrich existing processes. The techniques have been taken from industry and academic best practices. AltA offers the opportunity for NATO staff to inject new knowledge, or perceptions, in a different way into a decision-making process alongside more traditional problem-solving processes. AltA aims to improve creativity and broaden understanding within the staff by providing a vehicle for enriching understanding of the problem-space within which staff officers are seeking to solve problems. AltA is intended to supplement rather than duplicate functions performed by existing analysts or other staff, and can help produce enhanced output, in a more efficient manner, than the output achieved by staff officers working alone or in an unstructured staff meeting or process. AltA consists of techniques that support the intellectual process of problem exploration and problem solving, by 'externalising' thought processes, making them readily apparent to others and thus able to be reviewed and critiques.

Recognizing Cognitive Biases

> **The way we work, the way we think, and the way we make decisions as individuals can be fundamentally altered by individual, group, and organisational "biases."**
>
> **A bias is an inclination—either consciously realised or completely unknown to a person—to present or hold a partial perspective, often accompanied by an intentional or unintentional refusal to consider the possible merits of alternative points of view.**

AltA seeks to combat cognitive biases. There are three main areas where bias can be experienced when making a decision:

- **Cognitive (Individual) Bias.** This is where there is a mistake in reasoning, evaluating, remembering or other cognitive process, often occurring as a result of holding onto one's preferences and beliefs regardless of contrary information[2]. Individuals create their own subjective social reality from their perception of the input. An individual's construction of social realty, not the objective input, may dictate their behaviour in the social world[3].

- **Group Bias.** This is a psychological phenomenon that occurs within a group of people, in which the desire for harmony or conformity in the group, or lack of exposure to new ideas results in poor decision-making outcome. Groupthink occurs when "a group makes faulty decisions because group pressures lead to a deterioration of mental efficiency, reality testing, and moral judgement"[4].

- **Organisational Bias.** Decision processes that take place in organisations are subject to wider social, cultural and institutional contexts, which may produce unintentional constraints and inertias leading to poor outcomes. Organisational structures, behaviours and hierarchies, when coupled with unclear organisational goals and responsibilities, often produce outcomes that while efficient in some ways, are not "rational" from the perspective of an individual.

Biases can become prevalent in a large organisation, especially when there is a lot of pressure to deliver output. It can often be easier to just simply agree rather than upset existing group norms or fight against established organisational procedures. 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. Working Groups on exercises, operations, or day-to-day office life can easily fall foul of group think, especially when the same team has worked together for several months. Looking at problems from an alternative perspective can help. AltA is designed to assist overcoming biases that may exist in NATO decision-making processes.

Figure 1 depicts common perceptual and cognitive biases.

Perceptual Bias	**Expectations:** We tend to perceive what we expect to perc___ ___ (___iguous) information is needed to reco___ ___ phenomenon. **Resi___** ___ resist change even in the face of new ___ **Amb___** ___ sure to ambiguous or blurred stimuli inter___ ___ rception, even after more and bette___ ___s available.

2 https://www.chegg.com.
3 Bless, H., Fiedler, K., & Strack, F. (2004). *Social cognition: How individuals construct social reality*. Hove and New York: Psychology Press. Pg2.
4 http://www.psysr.org/about/pubs_resources/groupthinkpresentation.ppt.pdf. Definition adapted from Janis, Irving L. (1982). *Groupthink: Psychological Studies of Policy Decisions and Fiascoes*. (2nd Ed). New York: Houghton Mifflin.

Biases in estimating probabilities	**Availability:** Probability estimates are influenced by how easily one can imagine an event or recall similar instances. **An** ... ... timates are adjusted only incr ... to new information or further ana ... **Ove** ... ating feelings of certainty into a prob ... are often over confident, esp ... siderable expertise.
Biases in Evaluating Evidence	**Consistency:** Conclusions drawn from a small body of consistent data engenders more confidence than one 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 Perceiving Causality	**Rationality:** Events are seen as part of an orderly, causal patte ... ccident and error tend to be rejected as ex ... ved events. **Attri** ... f others is attributed to some fixed natur ... ountry, while our own behaviour is attrib ... in which we find ourselves.
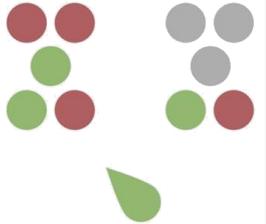
Figure 1: Common Perceptual and Cognitive Biases

AltA Capability 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:

(1) **AltA supports problem solving.** AltA is performed to support a "Problem Owner" with creative problem solving resources, rather than provide a standalone solution to a problem. AltA enhances thinking and creativity with a set of practical and easy to apply techniques.

(2) **AltA provides an independent perspective**. 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 or organisational pressures.

(3) **AltA is best applied throughout a process.** Early engagement of AltA is ideal to allow presentation of alternative perspectives and insights to better inform the supported process.

(4) **AltA compliments 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. AltA is not a new organisational structure.

(5) **AltA can support a wide range of problems at any level of staff.** AltA has broad applicability from supporting a single staff officer faced with a problem to supporting the complex decisions faced by a large staff organisation. The capability was developed for NATO but the techniques have successfully been used in National Defence Organizations, Industry and Academia. Learning AltA techniques gives a life-long career skill set.

(6) **Mutual understanding is the key to realising the full benefits of AltA.** Problem owners must be willing to accept that AltA might be controversial. Simultaneously, AltA must respect the supported/supporting nature of the relationship and be sensitive to the potential impact of its product.

(7) **AltA benefits from formal direction and guidance.** Direction and guidance must be tailored to the organisation's needs while balancing the necessity of defining intent and use without constraining independence and flexibility.

(8) **AltA is a capability.** AltA is a capability consisting of techniques, training and education, and personnel. 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

Alternative Analysis Process

The AltA process consists of four broad phases, focusing on the problem, issue or task to provide a useful outcome to take forward. The phases are: Initiation, Preparation, Application, and Termination. This chapter provides a step-by-step guide to the AltA process, offering advice and areas for careful consideration to support the successful application of AltA techniques. Figure 2 provides an overview of the AltA process by the four broad phases.
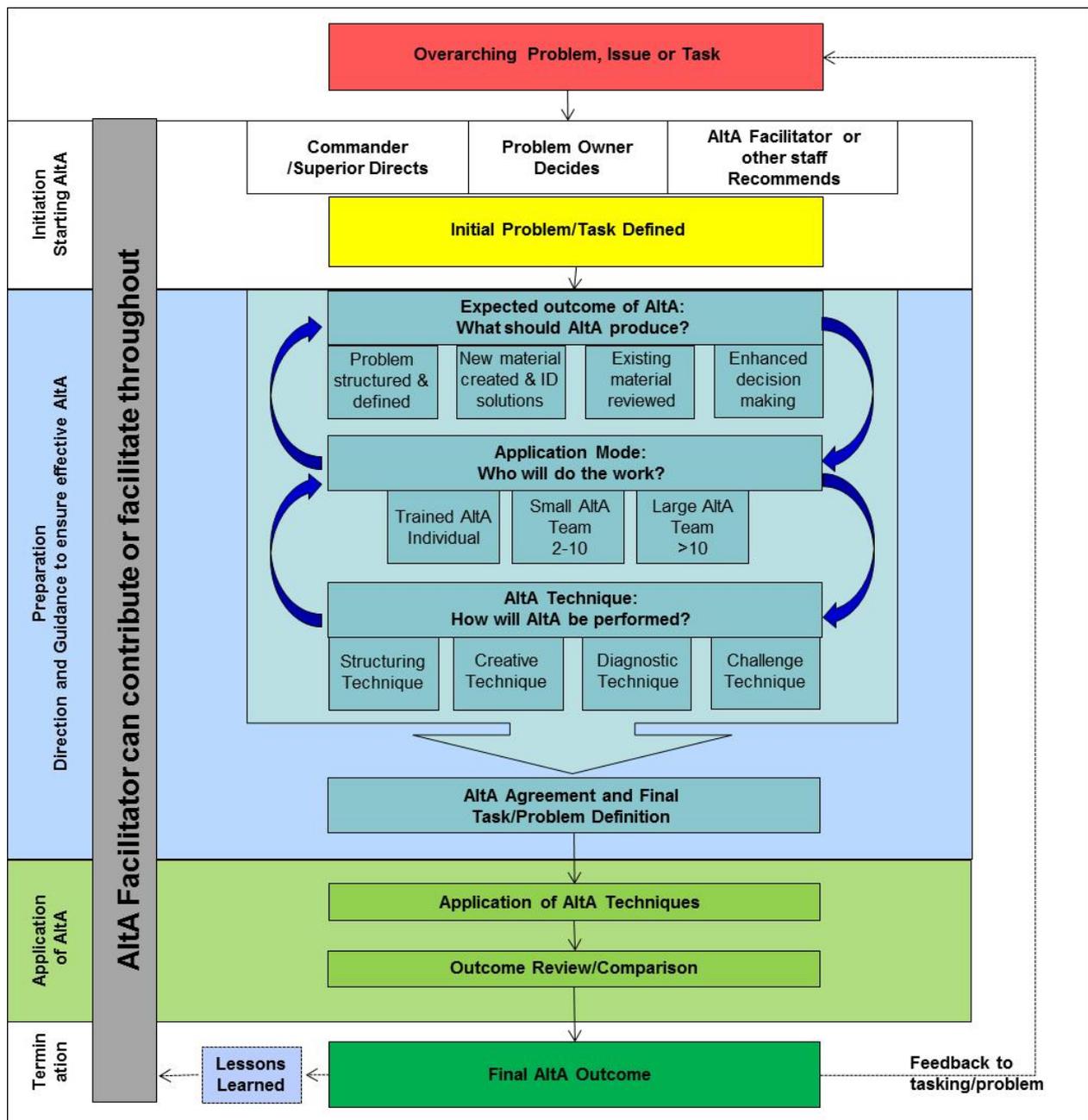
Figure 2: The Four Phase AltA Process

AltA can be applied to any task where it is believed to improve the outcome. For simple application (e.g. where a staff officer applies AltA alone at their desk) the steps can be done quickly. The process should always be followed carefully however when preparing for an AltA workshop with a group of people.

Phase 1 – Initiation

During this phase the requirement for AltA is considered, the task better understood, and potential resources identified.

Identifying the requirement to apply AltA

AltA can be initiated in three ways:

    (1) A commander or superior directs the use of AltA in a mission or task.

    (2) The problem owner (i.e. any member of staff) suggests the need for AltA.

    (3) The AltA Facilitator or any other staff member recognises the opportunity or recommends the requirement for the application of AltA.

During this initiation phase, it is worth spending time to ensure that the problem, issue or task can be better defined through discussion with any key stakeholders.

AltA can be also applied in three ways, as shown in Figure 3. It can be applied by an individual working at their desk, informally in a team meeting, or at a formal workshop with the aid of an AltA facilitator.
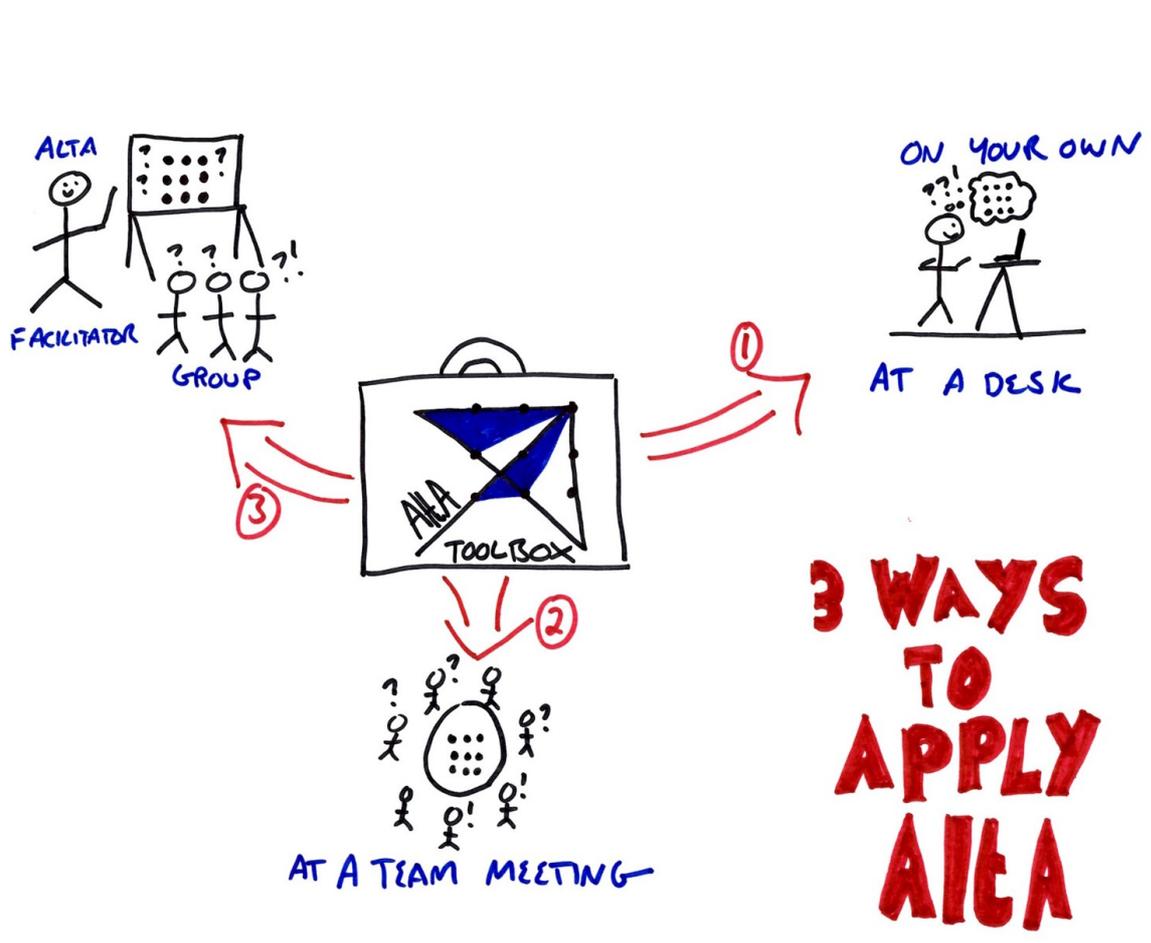
Figure 3: 3 Ways to Apply AltA

Consideration of potential resources available to apply AltA is also determined in this phase – e.g. is an experienced AltA facilitator required or not.

Phase 2 – Preparation

The preparation phase confirms and refines the problem, issue or task in order to identify and agree the AltA technique(s) to be applied. The result of the preparation phase may be a

formal/informal statement of work to be undertaken, with the expected outcome stated and resources allocated.

These ten questions can help with the preparation phase of AltA. These questions are directed to the problem owner.

1) What is the overall topic under discussion?

2) What questions are you trying to answer with the application of AltA?

3) Are you doing one of the following:

   - Structuring or defining a problem
   - Creating new ideas (e.g. new solutions)
   - Reviewing a document
   - Evaluating different options
   - Something else?

4) What are you trying to achieve from the application of AltA? What would an ideal outcome look like?

5) What work will this work inform? (e.g. a report)

6) What related work has been done so far?

7) How many people do you expect to be involved? Will AltA be applied in a workshop setting, a team meeting, or by an individual?

8) Will the likely participants in the AltA session be experienced in the subject being discussed?

9) How much time have you allocated for the AltA process?

10) Do you have any concerns? (e.g. strong personalities in a workshop, pre-existing views, limited time)

Once these questions (and others) have been answered, the AltA Facilitator can prepare for the AltA session using Five P's:

   - **Purpose** (what is the purpose of the AltA meeting)
   - **Product** (what will be produced at the end of the meeting)
   - **Participants** (who should be invited to participate?)
   - **Probable Issues** (what probable issues are likely to occur)
   - **Process** (which AltA technique will be used? What are the exact steps required?)

What is the expected outcome from the AltA application?

Some AltA techniques are more suited for particular objectives and outcomes of the task or problem at hand. The problem owner must decide what the expected outcome from the application of AltA is, which may include the following:

- **Problem structured and defined.** A wider view of a problem or a common understanding amongst a group or community about a problem is required.

- **New material created.** Potential solutions identified. There may be a requirement to take a look at a problem or issue from a different perspective in order to create new material. There may be a requirement to invigorate new ideas where past ideas have failed. There may be a requirement to identify more than one option or solution to a problem.

- **Existing Material reviewed.** Material already developed may require fresh perspectives or assumptions; a plan or a proposed way ahead needs to be stressed and tested.

- **Evaluation of options.** When faced with different options, ensuring all options have been given equal consideration, a consensus may be required. There could be a requirement to improve understanding of all possible future implications of a decision or chosen course of action.

Who will do the work?

It is important to assess 'who' is conducting the AltA technique: the problem owner by himself or leading a small or large team; or the AltA facilitator leading a small or large team. This assessment is as important as the problem definition and the identification of the expected outcome because the number of people available to participate in a team can also limit the choice of AltA technique. Some practical considerations are suggested to help answer this question:

- **Personnel Requirements**. While most of the AltA techniques are highly flexible can be adapted to many situations and numbers of participants, some techniques work better in smaller groups. The table of techniques (in Part 2 of this handbook) categorises each technique by whether they can be performed by an individual, a small group of 2 to 10 people, or a larger group of more than 10. Typically, the greater the number of people participating, the greater the facilitation effort required.

- **Problem Area Subject Matter Expertise.** AltA facilitators or participants in AltA do not have to be experts in the problem area, although some domain knowledge can be helpful. A balance is required: too little subject knowledge amongst participants means that critical issues could be missed: conversely, a group composed of subject matter experts may not be able to see the problem from a fresh perspective.

- **Technique Subject Matter Expertise.** The table of techniques (in Part 2) categorises the techniques by their "ease of applicability." The ease of applicability depends on the intrinsic difficulty of the technique, the time required to execute it, and the resources or cognitive effort required on behalf of the participants. Some techniques can be performed with very little experience; whereas others require greater expertise. Increased practice of the techniques and group facilitation will lead to better outcomes.

Which AltA technique(s) is suitable to apply?

The technique(s) to be applied must be selected during the preparation phase. The appropriate choice depends on the expected outcome and who will do the work. Conversely, a technique may be particularly well suited to address a particular problem and may drive the selection of who will do the work, or even impact the expected outcome. Part 2 of this handbook provides a step by step guide for each technique in detail, and provides worked examples of the techniques in action. Experienced facilitators will develop skills to combine and sequence techniques.

Choosing a technique is often the most important step in the AltA process. Different techniques are better suited to certain expected outcomes of AltA, listed here:

- **Problem structured and defined.** A holistic view of a problem or a common understanding amongst a group or community about a problem is required.

- **New material created.** Potential solutions identified. There may be a requirement to take a look at a problem or issue from a different perspective in order to create new material. There may be a requirement to invigorate new ideas where past ideas have failed. There may be a requirement to identify more than one option or solution to a problem.

- **Existing Material reviewed.** Material already developed may require a fresh perspective and assumptions, a plan or a proposed way ahead needs to be stressed and tested.

- **Evaluation of options.** When faced with different options, ensuring all options have been given equal consideration, a consensus may be required. There could be a requirement to improve understanding of all possible future implications of a decision or chosen course of action.

Practical considerations for choosing a technique include:

- **Personnel Requirements.** While most of the AltA techniques are highly flexible and can be adapted to many situations and numbers of participants, some techniques work better than others for particular sized groups. Typically, the greater the number of people participating, the greater the facilitation effort required. Simple techniques can be described easily to a large audience; More complicated techniques should be reserved for groups of no more than 10 people.

- **Problem Area Subject Matter Expertise.** AltA Facilitators or participants do not have to be experts in the problem area, although some domain knowledge can be helpful. A balance is required: too little subject knowledge amongst participants means that critical issues may be missed; conversely, a group composed of subject matter experts may not be able to see the problem from a fresh perspective.

- **AltA experience.** Each technique lists its "ease of applicability." This depends on the intrinsic difficulty of the technique, the time required to execute it, and the resources or cognitive effort required on behalf of the participants. Some techniques such as Mind Mapping or Starbursting can be performed with very little experience, whereas specialised techniques such as Alternative Futures require more training and experience. In practice, all AltA techniques are designed to be used with minimal training, however an inexperienced facilitator may wish to start with an easier technique before moving onto the more difficult ones.

- **Time Required.** Part of the "ease of applicability" depends on the amount of time the techniques require when applied, and the amount of time available. 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. With practice, most of the techniques can be effectively conducted with an hour, however some are much quicker if less time is available. The AltA Facilitator must judge how much time to set for a technique.

- **Facilities available.** In all cases, a white board or other large writing space is all that is needed. Facilitators can employ different tools to gather input from a group including sticky notes, flash cards, electronic voting tools, or computer software tools. See part 3 for more practical information concerning facilitation and facilities.

Output of Preparation Phase

The output of the preparation phase is a clear idea for how AltA will be applied. This may be written down in an **AltA Task Agreement**. This agreement identifies 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 as follows:

AltA Task Agreement Contents

- Problem/task statement

- Who is leading the AltA application

- Staff resources to be used

- Additional physical resources required

- AltA technique or series of AltA techniques to be applied

- Timelines

Phase 3 – Application

During this phase, the chosen AltA techniques are applied to the defined problem in order to achieve the desired outcome. The numbers of techniques applied are only limited by time constraints and the participants' willingness to continue the process.

During the process, the AltA techniques applied can range from creative thinking techniques at the beginning, to diagnostic techniques at the end. Applying different AltA techniques to a problem may yield different or complementing outcomes to achieve an AltA outcome.

The Application phase should result in a satisfied set of stakeholders who feel that either a solution has been reached, or that they have more useful information on which to base a decision.

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.

Phase 4 – Termination

The process ends when the selected techniques have) been executed and when it appears the AltA process can add no further value.

The final step in this process is to gather feedback regarding the process and outcomes. This helps a number of things; it increases the learning and experience of the AltA facilitator, it helps the command to understand the impact of AltA in particular NATO processes, and allows the formulation and dissemination of lessons learned to the wider AltA community. Staff can use the collected data to update the NATO Commander on the utility of AltA in the organisation in order to institutionalize AltA in that command.

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PART 2: ALTA TECHNIQUES
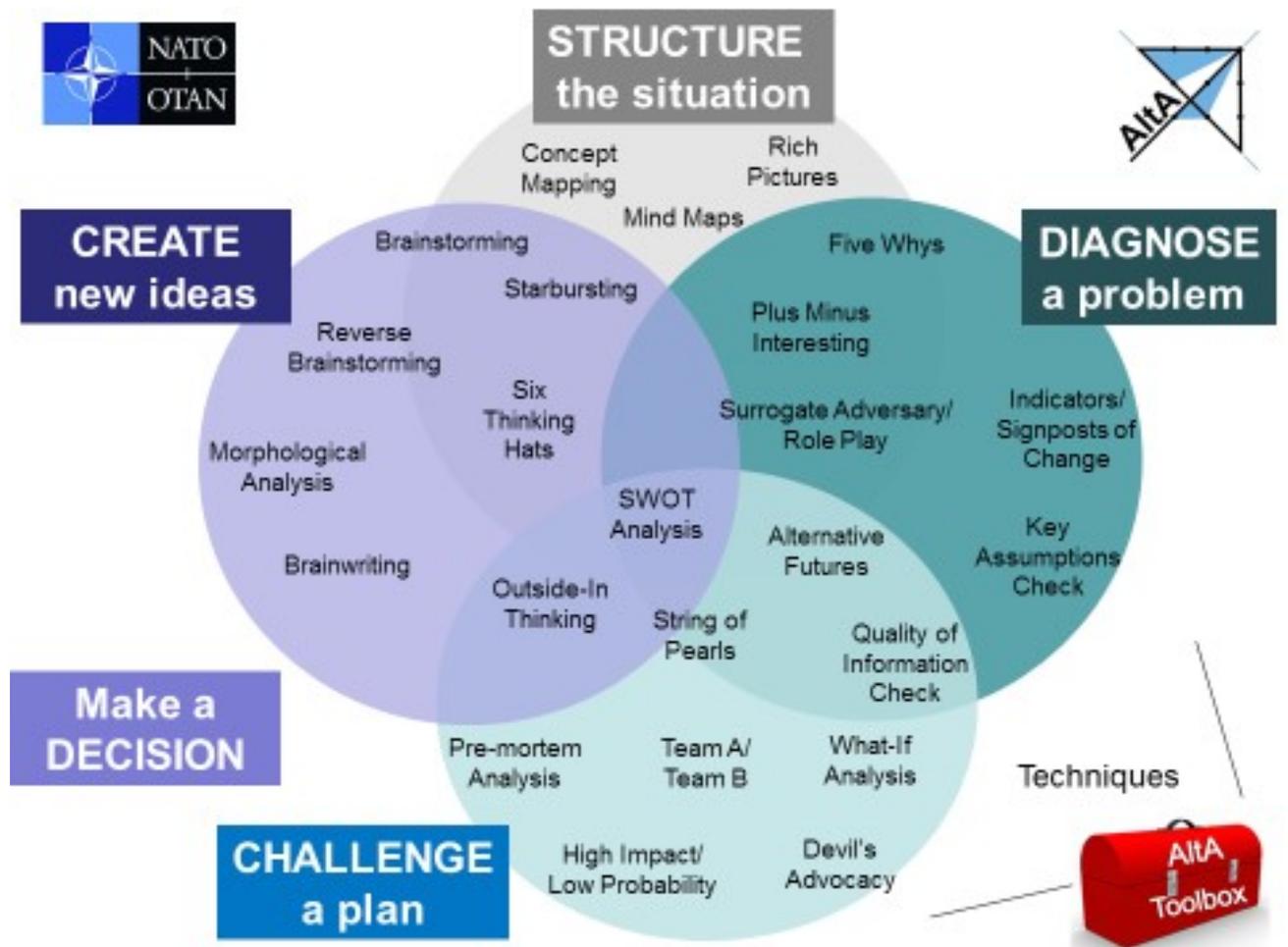
Categories of AltA Techniques

The AltA techniques described in this handbook can be categorised into one or more of the following general categories:

(1) **Structuring Techniques**. Many AltA techniques involve identifying and organising facts, issues, and ideas. Structuring techniques involve decomposition, visualisation, organisation, and grouping as a way to break down an issue, problem or system into its component parts.

(2) **Creative Thinking Techniques.** Creative thinking is the ability to see problems from a fresh perspective and break out of your frame of reference, thus allowing new and imaginative ideas or novel combinations of ideas to be generated. Creative thinking techniques help in understanding the complete problem environment, defining the problem, and in developing new solutions to problems.

(3) **Diagnostic Techniques.** Diagnostic techniques support problem analysis or development of alternative perspective by testing hypotheses, examining lines of reasoning, assessing evidence, and evaluating multiple course of action.

(4) **Challenge Techniques.** Challenge or 'Contrarian' techniques serve to challenge and critique existing mental models, beliefs or conventions, by understanding the problem from a different, often opposing, view. This helps broaden the range of explanations that are considered, exposes flaws in reasoning, or generates new ideas.

Figure 4 lists all the techniques, as well as a simple guide to the expected benefits of the technique, when they can be applied (as an individual, in a small team, in a large group), and the ease of application. Readers should understand the practical considerations listed in part 1 of this handbook before choosing a technique.

Type of Technique	AltA Technique	Outcome of AltA Application				Number of Participants			Ease of Application
		Problem structured and defined	New material created & potential solutions identified	Existing material reviewed	Enhanced Decision Making	Individual	Small Group (2 - 10)	Large Group (>10 people)	Easy ■ Medium ■■ Hard ■■■
Structuring	**Mind Mapping**	✓	✓			✓	✓		■
	Conceptual Mapping	✓	✓			✓	✓		■
	Rich Pictures	✓	✓			✓	✓		■ ■
Creative	**Brainstorming**	✓	✓	✓		✓	✓		■
	Brainwriting	✓	✓				✓	✓	■
	Starbursting	✓	✓	✓	✓	✓	✓	✓	■
	Reverse Brainstorming	✓	✓	✓		✓	✓		■ ■
	Six Thinking Hats	✓	✓	✓	✓	✓	✓		■ ■
	Creative Combinations	✓	✓			✓	✓		■ ■ ■
Diagnostic	**Strengths, Weaknesses, Opportunities, Threats**	✓	✓			✓	✓	✓	■
	Plusses, Minuses, Interesting	✓		✓	✓	✓	✓	✓	■
	Five Whys	✓				✓	✓	✓	■
	Key Assumptions Check	✓		✓	✓	✓	✓		■
	Quality of Information Check			✓	✓	✓	✓		■
	Outside-In Thinking	✓	✓			✓	✓		■ ■
	Indicators / Signposts of Change		✓	✓	✓	✓	✓		■ ■
	Surrogate Adversary / Role Play		✓	✓	✓	✓	✓		■ ■
	Alternative Futures Analysis	✓	✓		✓	✓	✓		■ ■ ■
Challenge	**Devils Advocacy**			✓	✓		✓	✓	■
	Team A / Team B			✓	✓		✓	✓	■ ■
	Pre-Mortem Analysis	✓	✓		✓	✓	✓		■ ■
	What If Analysis	✓	✓			✓	✓		■ ■ ■

Figure 4: AltA Techniques and Application

Structuring Techniques

Mind Mapping

A technique that visually organises information into a "mind map." A mind map is created around a single concept drawn in the centre of a blank page, to which associated ideas such as images or words are linked to it, usually with some structure or organizing scheme. A mind map literally 'maps out' ideas by forming associations between them. Mind maps can be drawn by hand or using software. Mind mapping focuses around a single central key concept.

When to Use

- Any situation where ideas need to be organized or structured.

- When a complicated idea needs to be captured in one page.

- Exploring new ideas about a topic.

- Creating exhaustive checklists.

Application

- **Step 1: Choose your central topic and draw a picture of it.** Start in the centre of a blank piece of paper or white board with a simple word or image of the key topic. By starting in the centre the brain has the freedom to spread out in all directions and to express itself more freely.

- **Step 2: Identify sub-themes and draw relationships**. Identify themes to radiate from the central word or image: these are branches. Use only one or two words to capture your theme onto a branch. Connect the main branches to the central image. Make your branches curved rather than straight lined (straight lines and boxes are boring and the opposite of creative!)

- **Step 3: Break down sub themes even further.** Breakdown the branches into first and second level themes (these are called twigs).

Examples

This example shows how mind-mapping can be used to develop a checklist for planning a new project. An AltA facilitator may create a mind-map like this during a group brainstorming.
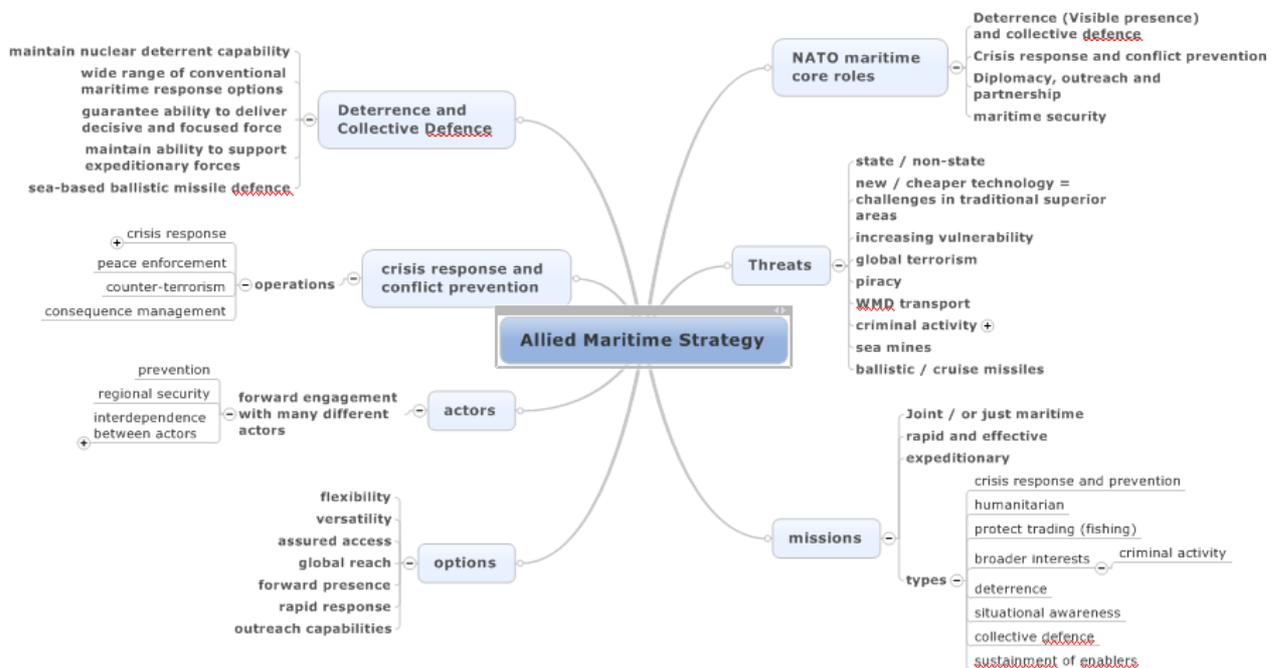
This example shows a complicated document (NATO's Alliance Maritime Strategy[5]) expressed as a mind-map. The map efficiently presents an overview of the contents.

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5 http://www.nato.int/cps/en/natohq/official_texts_75615.htm

Benefits

- Good for note making and exploring ideas. The flexibility of mind maps helps us to think divergently, convergently, and visualise our thinking. Mind maps can be used by an AltA Facilitator *after* a creative brainstorming session to capture and organize the results.

- Mind maps are a useful tool for understanding inter-relationships between different aspects of a situation. By focusing on meaning rather than worrying about grammar and semantics, a mind map help to rapidly build up enhanced understanding of any problem, challenge or situation.

- Many people use MindMaps individually to capture thoughts at their desk, or to take notes in meetings.

- Mind maps allow an easy way to summarise a large amount of information, such as a book or journal paper, efficiently and in such a way as to make it usable and accessible. In addition when it used for summarising written material, it can be used as a cross check to ensure a document covers all the main points that were originally planned.

Challenges

- Mind maps are hierarchical tree structures, which may constrain thinking in highly interconnected situations or in ambiguous cases where discrete branches are hard to identify.

Hints & Tips

- Use different colour pens when drawing your mind map.

- Include pictures or drawings along with words.

- Use one of the many software tools available (MindJet MindManger[6] is on the NATO approved software list). FreeMind and SimpleMind are free or inexpensive examples.

- Do an internet search for 'Mind Maps' to provide many different examples.

Further Reading

- www.mindmapping.com

- http://mindmappingsoftwareblog.com

- *Modern Mind Mapping For Smarter Thinking*, Tony Buzan with Chris Griffiths and James Harrison.

Potential Outcome

- An organisation of your thoughts, or a comprehensive checklist for planning.

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6 http://www.mindjet.com/

Concept Mapping

A structuring technique that produces a diagram depicting suggested relationships between concepts. A concept map typically represents ideas and information as boxes or circles, known as concepts, which are connected together with labelled arrows. Concept maps can be hand drawn or developed using software. Concept maps are more free form than mind maps and allow multiple hubs and clusters, whereas mind maps centre on a single concept.

When to Use

- To stimulate the generation of ideas or framing of problems and issues.

- To communicate complex ideas and arguments in a visual manner.

- To understand the dependencies and linkages between concepts.

- Can be developed by a group or an individual.

Application

- **Step 1: Construct a focus issue**. Develop a statement or question that clearly specifies the problem or issue the concept map is trying to resolve or analyse. A good focus statement or question aids the development of a richer concept map.

- **Step 2: Identify key concepts that apply to the focus issue.** Identify the key concepts that apply to the issue: usually 15 to 25 concepts will suffice (you can put these on post its).

- **Step 3: Construct the preliminary map drawing concepts and relationships**. If post-it notes have been used, start to cluster concepts together and link them together with arrows.

- **Step 4: Revise the map.** A concept map can be continually revised, after a preliminary map has been constructed, seek to add and delete concepts to revise the thinking. Seek out cross-links; these are links drawn between concepts between different clusters. Add descriptive words to the lines drawing relationships between two concepts. It is likely that all concepts are in some way related to one another; therefore, it is necessary to be selective in identifying cross links, and to be as precise as possible in identifying linking words.

- **Step 5: Interpret and utilise the map.** The value of this technique often comes from the process of constructing the map, and not necessarily the final outcome. However, this step requires a step back from the map development to interpret the map. This may involve identifying the key concepts of importance (perhaps ones where there are a lot of linkages), are these the concepts that were expected to be of most importance? Are there are any surprising concepts that have evolved from the map development? Are there any new questions that have been derived from the process of concept mapping? Finally, the map can be used to carry a message or tell a story for use in other AltA techniques.

Example

This example of a concept map is from the NATO RTO Study SAS-074:
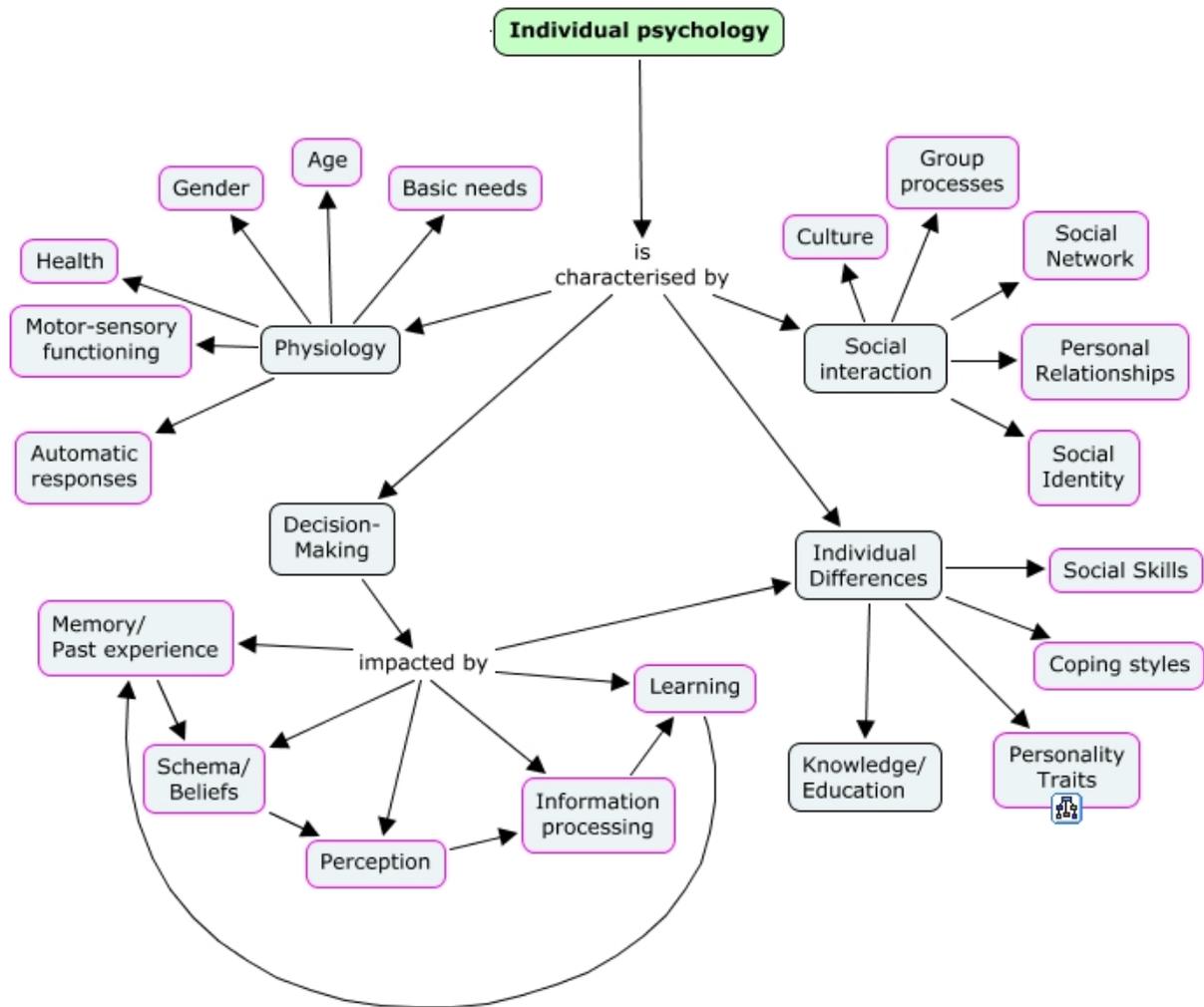
Benefits

- A picture paints a thousand words: graphics and pictures are more easily understand and better remembered than plain text.

- Allows a group to collectively develop understanding about the problem area and conceptual relationships.

- Concept mapping encourages high levels of cognitive performance if the process is done well. Identifying and describing cross-links forces in depth thinking about a subject or problem and requires evaluation and synthesis of knowledge. This is one reason concept mapping can be a powerful evaluation tool.

Challenges

- Concept mapping requires high levels of cognitive performance

- Certain applications may require high levels of factual information about the concept; otherwise links based on assumptions should be recorded

Hints & Tips

- Avoid writing sentences in the boxes or circles, use one or two words only.

- The map should be continually revised, concepts re-positioned in ways that lend to clarity and better over-all structure and a final map prepared. Using computer software can aid this process.

Further Reading

- Novak, J. D. & A. J. Cañas, The Theory Underlying Concept Maps and How to Construct Them, Technical Report IHMC CmapTools 2006-01 Rev 01-2008, Florida Institute for Human and Machine Cognition, 2008", available at:http://cmap.ihmc.us/Publications/ResearchPapers/TheoryUnderlyingConceptMaps.pdf.

- http://www.schrockguide.net/concept-mapping.html

Rich Pictures

A technique to help explore, acknowledge and define a situation and express it through diagrams, creating a "mental model." A situation is depicted as a picture using diagrams, symbols, cartoons and words. It can be drawn by hand or electronically. A rich picture must not be a flow diagram or logic model, but rather a reflection of a current situation or idea. The idea of using drawings or pictures to think about issues is a foundation to other creative AltA techniques, as we often communicate more easily in impressions and symbols than words.

When to Use

- If a situation appears to be complicated, then a rich picture can be used to attempt to encapsulate the issues through a no holds barred visual representation. A rich picture helps to open discussion and come to a broad, shared understanding of a situation.

- Can be used in group or as an individual.

Application

- **Step 1. Choose your canvas and materials**. Rich Pictures work best on white-boards (where they can be quickly revised) or using pencil and paper. Consider the amount of space you have and have ready a variety of coloured pens available.

- **Step 2. Identify all the main entities.** Consider all the main entities involved, such as the critical stakeholders, organisations or equipment. Use cartoons, quick sketches or diagrams to represent the entity.

- **Step 3. Describe the linkages between entities.** Think about the linkages between the entities and draw them out. Use words sparingly to describe the linkage or draw a diagram or cartoon that explains the relationship simply.

- **Step 4. Repeat steps 2 and 3.** Consider adding more entities and relationships as they come up in discussion. Repeat until the rich picture is rich enough to pass to someone who knows nothing about the issue and can easily understand it without verbal explanation.

Benefits

- Rich pictures help to open a discussion and come to a shared understanding of a situation when you have seemingly different points of view. It does not tell you what to change or how to improve a situation, but this may come up in the discussion when drawing the picture.

- Is an unconstrained and very flexible technique with few rules or structural constraints; can be done very quickly.

Challenges

- If you get too bogged down in drawing minute detail in the pictures then the challenge is lost in finding quick ways to pictorially represent entities, reducing the chance to create spontaneity and developing creative ideas.

- Some people may believe they are not good at drawing or are generally not 'visual'.

Example

This is an example rich picture that shows the situation for education and awareness on Alternative Analysis for staff in HQ SACT. This rich picture could be used to explain what areas needed improving or what areas need reinforcing to quickly visualise how change can affect the situation
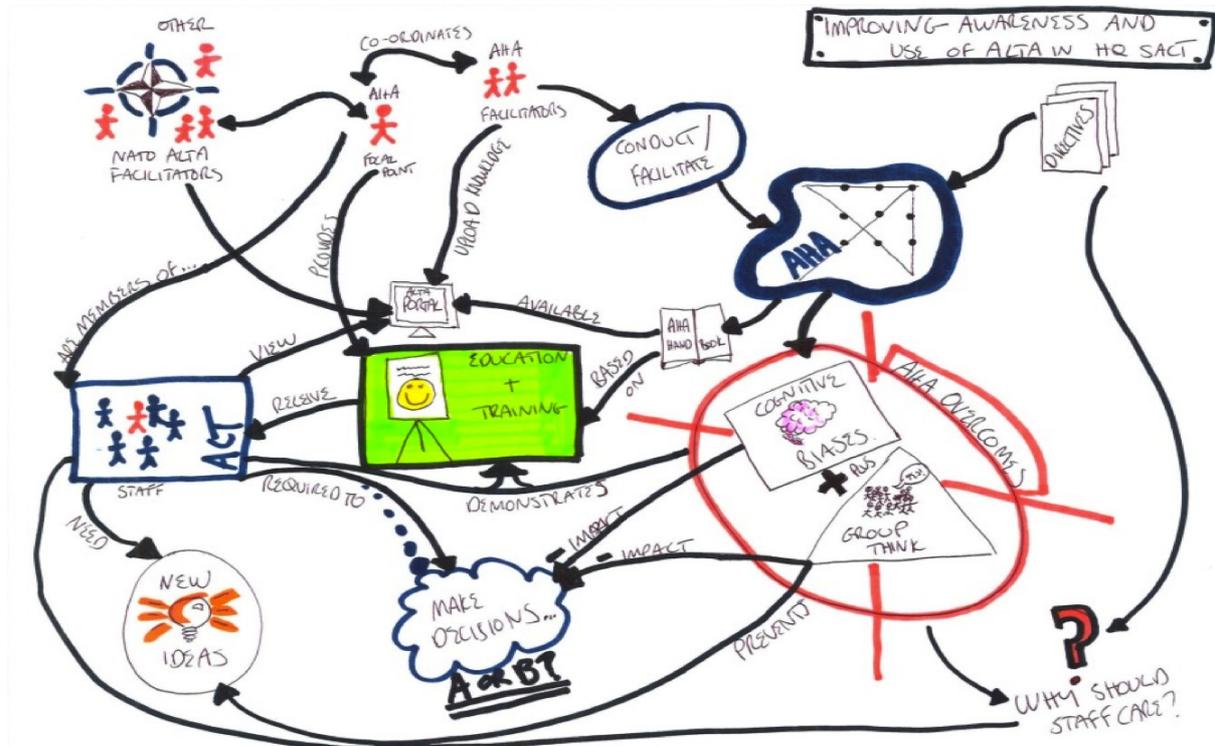
Hints & Tips:

- Start by drawing a rough sketch to help layout the content of your rich picture. Don't try to complete your rich picture straight away.

- Try to be creative and use your imagination to draw diagrams and cartoons of your entities. By doing this the brain is being forced to think within its more creative side and can better formulate new ideas for the situation being drawn.

- To help interpret a situation, choose symbols, scenes or images that represent the situation. Use as many colours as necessary. Limiting writing or commentary, which can be distracting.

- Ensure the picture includes not just factual data, but subjective opinions too.

Further Reading

- The Back of the Napkin: Solving Problems and Selling Ideas with Picture, Dan Roam

- Checkland P (2000) Soft Systems Methodology: A Thirty Year Retrospective, in Systems Research and Behavioral Science Syst. Res. 17, S11–S58

- http://betterevaluation.org/evaluation-options/richpictures

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Creative Techniques

Brainstorming

Brainstorming is a process designed to harness creative perspectives and generate new ideas about a subject new solutions to a problem.

When to Use

- This technique underpins most of the other AltA techniques, so it is used often and in conjunction with other techniques. It can be used quickly with very little preparation if the group are already in place and the question or issue is clear.

- Use it to stimulate new thinking and ideas about a subject, project, problem, or decision.

- Use when a project is in an early stage, when problems are ambiguous, or when a team is stuck at a dead end

- It can be used to stop one or two strong individuals from dominating the group by asking everyone to participate equally.

Application

Brainstorming can be used in a group or by an individual; the process is the same for either. It can also be conducted on-line. Brainstorming is a simple three-step process, with a number of sub-steps

- **Step 1: Prepare for the brainstorm session.**

  o <u>Prepare the location</u>: Ensure there is a comfortable location for the brainstorm, and that it is of an appropriate size. An uncomfortable or unsuitable location can inhibit discussions. Ensure there are enough materials (flip charts, white boards, markers, sticky notes) for the session. For an individual brainstorm, find a quiet, comfortable space with no distractions.

  o <u>Prepare the group:</u> Consider who should be invited to the brainstorming session. People with knowledge of the subject can bring their expertise, but having 'outsiders' can bring diversity and new ideas. Consider how much background knowledge is required, and send out read-ahead material if necessary. Normally a group of 6-8 people is most productive; if you have more people than this, consider breaking them up into two or more groups.

  o <u>Prepare the question:</u> The key to effective brainstorming is to ask the right question in order to generate ideas. Therefore taking time to develop a good question is important. This may require some negotiation between the AltA facilitator and the problem owner if the question is complex. If it is a simple question this step may take less than a few minutes. It may be that there will be more than one question, and more than one brainstorm is required.

  o <u>Prepare a structure (or no structure):</u> A simple brainstorm can simply consist of a single question and a quantity of ideas. For more complex topics, the AltA facilitator may choose to use a structure. For example, he may ask the participants to use PMI categories; plus (positive) points, minus (negative)

points, and interesting points about a subject. The ideas are then generated using these three categories. Another example is a framework such as PMESII (political, military, economic, social, infrastructure, information) to encourage comprehensive thinking.

- **Step 2: Execute the brainstorm session**

    o <u>Set Up:</u> Start the meeting by telling the participants the purpose of the activity, and write the main question on a white-board or flip-chart.

    o <u>Ground Rules:</u> Set the ground rules for the session. Typically the most important ground rule is "no initial criticism of ideas". Crazy and impractical ideas are to be encouraged at first. This is because the crazy idea may later spark a more practical one; initial judgement of ideas may inhibit the thinking process. Unconventional thoughts may contain the seeds of an important connection between the topic and an unstated assumption. Other useful ground rules include "one idea per sticky note" and "write legibly so others can read it".

- **Step 2a: Divergent phase:** During this phase, the AltA facilitator encourages the participants to generate as many ideas as possible, with no initial judgement on their quality or practical implications.

    o Distribute sticky notes and pens to each participant. They write down their ideas, one idea per sticky note. This can either be done in silence, or each person can call out their idea as they write it down. The silent approach often yields a higher number of ideas, but calling out ideas can stimulate discussion. There are advantages and disadvantages to either approach.

    o Stick the sticky notes on a wall for all to see. At this stage, treat all the ideas equally.

    o 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. Encourage them to review the ideas already on the wall, to see if they can come up with something different. Do not move on too quickly; sometimes pauses are necessary in order for people to reflect and to start thinking outside of the box.

    o End the divergent phase of the brainstorming after two or three pauses. At this point, there should be a large number of sticky notes on the wall. This may be a good time to encourage discussion about particular ideas of interest.

    o For an individual brainstorm, this phase may consist of simply writing down as many ideas as possible on paper, or using a mindmap to help structure the ideas.

- **Step 2b: Convergent Phase.** This phase can be simply described as: Categorize and Prioritize.

    o <u>Categorize:</u> First the ideas (sticky notes) should be rearranged into categories. This can be done by the participants themselves (maybe in silence), or by the facilitator with the group's agreement. Choose a simple word or phase for each category. If the problem owner simply wants a

quantity of ideas, then the brainstorm can end at this point. Often however, the problem owner wants to receive a few important ideas to work on further. This can be done through prioritization.

o Prioritize: The simplest way of prioritizing is to ask the group which ideas they view as high priority. Another simple way, is to distribute a number (say three) 'gold stars' to each participant, and ask them to stick the stars on which ideas they think are most important. A third way is to ask the group to rate each idea as high, medium or low importance. The most suitable technique will depend on the nature of the group, the time available and the number of ideas generated. What is important is that the group uses the same priority criteria. For example someone may vote for the idea that is most likely to succeed, whereas another person may vote for the most innovative idea. Agree on the criteria before starting to prioritize.

- **Step 2c: Ending the Brainstorming session.** At the end of the session, the facilitator should summarize what has been achieved, and what will be done with the ideas that were generated.

- **Step 3: After the brainstorm session**. After the brainstorm ends, the results may be presented to the problem owner in an appropriate manner. Some problem owners will be happy to receive the raw data; others may benefit from some post-brainstorm analysis. The key is to understand the problem owner, and how best to communicate to them.

Example

Brainstorming was used in a Strategic Foresight Analysis (SFA) workshop in order to identify new strategic trends for further analysis. First, the facilitator asked each person to write down on Post-Its any ideas for new strategic trends, and to stick them on a white-board.

Limitations on women in armed forces

Weakening United Nations international system

Increased sexual violence in conflict

Devolution & decentralisation in certain nations

Increasing influence of private and nonprofit sectors on governments

Increasing authoritarianism in certain governments

Increasing corporatization of security

Multipolar powers in international system

Growth of non-state armed groups (cartels, terror groups)

Over-reliance on defence contractors

Gender inequality in society

Private military security firms on the battlefield

Growth of online movements

Secondly, the facilitator grouped similar ideas together to form categories of ideas. Then the group reviewed and discussed each new strategic trend, sometimes changing the words on the post-it in order to clarify them.

Limitations on women in armed forces

Increased sexual violence in conflict

Gender inequality in society

Gender Theme

Devolution & decentralisation in certain nations

Weakening United Nations international system

Increasing influence of private and nonprofit sectors on governments

Increasing authoritarianism in certain governments

Multipolar powers in international system

Global Leadership Theme

Increasing corporatization of security

Private military security firms on the battlefield

Over-reliance on defence contractors

Privatization Theme

Growth of non-state armed groups (cartels, terror groups)

Growth of online movements

Linked orphans

Thirdly, the group 'voted' on the most important ideas by allocating a limited number of 'sticky dots' to each set of ideas. The ideas were then prioritized into high, medium or low

priority. This allowed the better ideas of strategic trends to rise to the top. The end result was high-priority strategic trends that were taken by the SFA team for further analysis.

Increased sexual violence in conflict

Limitations on women in armed forces

Gender inequality in society

Gender Theme

Devolution & decentralisation in certain nations

Weakening United Nations international system

Increasing influence of private and nonprofit sectors on governments

Increasing authoritarianism in certain governments

Multipolar powers in international system

Global Leadership Theme

Increasing corporatization of security

Private military security firms on the battlefield

Over-reliance on defence contractors

Privatization Theme

Growth of non-state armed groups (cartels, terror groups)

Growth of online movements

Linked orphans

Benefits of Brainstorming

- By generating a quantity of ideas, suspending judgement, and involving people with diverse experiences, creative and quality ideas are produced that can be taken forward for further research.

- Creativity and knowledge sharing is maximised in the thinking process, ensuring a wide range of factors are considered.

- Brainstorming also ensures that everyone can participate, regardless of background or expertise. The process is a good step for creating cohesive teams and encouraging collaboration.

Challenges of Brainstorming

- Brainstorming is a simple technique, which is only constrained by the participant's ability to generate ideas.

- The challenge for the AltA facilitator is to force participants to defer judgement on initial ideas, and to encourage out of the box thinking.

Hints and Tips

- Consider using the same colour sticky notes, and same colour pens, especially if anonymity is important.

- Combine with other AltA techniques to get the most out of a brainstorming session.

Further Reading

- The website http://www.mindtools.com/brainstm.html has a good summary of brainstorming.

- http://blog.ted.com/how-to-run-a-brainstorm-for-introverts-and-extroverts-too

Reverse Brainstorming

Reverse brainstorming follows a similar process as regular brainstorming; only the question that is asked is the opposite of the question you want to ask. So for example, if you want to ask "how do we make delicious food that everyone likes?" you ask "how do we make disgusting food that no one likes?" By reversing the question, participants are forced to think in a different way.

When to Use

- It can be used after regular brainstorming has been tried and no new ideas were generated;

- When the problem owner is particularly interested in radical or out-of-the-box ideas;

- When it is difficult to address the problem directly;

- When you have a clear question or problem statement that can be reversed.

Application

- The process for reverse brainstorming is the same as for regular brainstorming, with two key differences.

    1. Identify the problem to solve or question you want to answer, and then reverse it in order to achieve the opposite effect.

    2. Once the answers to the (reversed) question have been generated, reverse them again.

- Generating (bad) answers and reversing them occurs in the brainstorming divergent phase. Then, during the convergent phase the reversed (good) answers are categorised and prioritized as per the regular brainstorm process

Examples

Question you want to answer	Reversal of question	Answers generated	Reversal of answers
How do I keep my customers satisfied?	How do I increase customer complaints?	- Employ rude and unhelpful staff - Build low quality products	- Train staff in how to be polite and helpful - Implement quality control standards

Another example:

Question you want to answer	Reversal of question	Answers generated	Reversal of answers
How do I motivate my staff?	How do I de-motivate staff?	- Keep them in isolation - Give them basic work that a monkey could do	- Encourage interaction and teamwork - Give them work that challenges them

Benefits

- By forcing participants to think the opposite of what they believe, more radical ideas can be generated.

- It challenges the status quo of an existing process and give a different perspective.

- Many people find it easier to be critical and judgemental than to generate positive ideas, and this process allows them to do this.

Challenges

- Similar to brainstorming; often quite challenging to think about negative things.

Hints & Tips

- It may be difficult to use reverse brainstorming immediately after regular brainstorming as the freedom of thought may be hampered.

- It is vital to set up the initial question as best as possible.

Further Reading

- www.mindtools.com/pages/article/newCT_96.htm

- http://creatingminds.org/tools/reverse_brainstorming.htm

Brainwriting

Brainwriting is based on the concept of brainstorming. Similar to brainstorming, it is not the quality of ideas that matters at first but the quantity. The technique involves a group where each participant generates ideas individually. Ideas are passed around the group in order for participants to draw on other people's thoughts. The main advantages that Brainwriting has over Brainstorming are that it can be executed very quickly and there is no limit to the size of the group

When to Use

- When a group is large and where forming them into small syndicates would be too disruptive to the overall meeting.

- The majority of the technique is conducted in silence, therefore it is useful in order to stop one or two people dominating the group discussions, when a sensitive subject is to be discussed, or when the group has conflicting opinions.

Application

- **Step 1. Prepare.** Prepare a suitable question you wish to ask the group for ideas about. Hand out a sheet of paper to each participant.

- **Step 2: Execute.** Pose the question to the group. Ask for questions of clarification to make sure they have understood the question.

    o   Ask each participant to write down ideas on their sheet of paper, in silence (no talking allowed). Allow a short amount of time (2-5 mins) for this.

    o   After the time is up (say after 2 minutes), ask everyone to stop writing and then to pass their paper to the person sitting next to them. They can (silently) read the ideas on the new paper they have just received, or more ideas to the list.

    o   Repeat the previous sub-step as many times as necessary; each time the paper is passed on to a neighbour and they review and add to the new list they just received. Ensure the papers are passed on in the same direction each time, so that a participant does not receive his own ideas back again.

- **Step 3: Ending the session**. After the pieces of paper have been passed around a few times, there are two options. One is to gather the papers in, and review the contents later. Another option is to generate a discussion, using the pieces of paper as stimulation.

This example shows how the ideas are generated, with different fonts representing different people's ideas, comments and questions:

Round 1:

HOW TO TRAVEL FROM PARIS TO TIMBUKTU?	
IDEAS	COMMENTS AND QUESTIONS
Take the train	
Take the bus	

Rent a private jet	

Round 2:

HOW TO TRAVEL FROM PARIS TO TIMBUKTU?	
IDEAS	COMMENTS AND QUESTIONS
Take the train	*- what is the timetable?*
Take the bus	*- takes too long*
rent a private jet	
use a helicopter service	
Cycle	

Round 3:

HOW TO TRAVEL FROM PARIS TO TIMBUKTU?	
IDEAS	COMMENTS AND QUESTIONS
Take the train	*- what is the timetable?*
Take the bus	*- takes too long*
rent a private jet	- too expensive
use a helicopter service	
Cycle	
Hitch-hike	
INVENT AN INSTANT TRANSPORTER	
	WHY DO WE NEED TO GO?

Example

Brainwriting was used in a workshop to generate ideas for the contents of a *Policy Guidance for Autonomous Systems* document. Participants were given three very specific questions, focused on the target audience for the policy guidance and the key messages it should contain. Every 3 or 5 minutes they passed the paper on in rotation, and either commented on the ideas already written or added new ideas of their own. In each case, there were 3 or 4 iterations. Over 100 pages of text were gathered in 45 minutes. The facilitator analysed it overnight and reported a summary back to the group the next day.

Brainwriting

1. **Task:** Present a subject for the session – a task, question or problem;
2. **Write:** Write down your thoughts about the subject on a piece of paper (time = 5min);
3. **Pass:** Pass paper to person to your right;
4. **Repeat:** Review the thoughts on the paper now in front of you, comment on them, add to them or add new thoughts. Repeat until moderator stops or introduces a new subject

Task 1 (15 min)

Identify <u>specific</u> offices or persons who would benefit from reading the AxS Policy Guidance. How they would use it?

Example:

Headquarters Strategic Management Branch – shaping the 5 year program of work for NATO Allied Command Transformation

Task 2 (9 min)

What <u>one</u> policy or subject area needs to be influenced and why?

Example

Frameworks used for defence planning (e.g. US QDR; NATO DPP) need revision – mission-task decompositions are created with a "system bias" and framework created in the 80's and 90's

Task 3 (15 min)

What are your top three concerns, issues, findings or messages that should be captured in the policy guidance?

What, if anything, should be <u>excluded</u> from the policy guidance

Example
1. Warning over the use of the term "autonomous"
2. Emphasize greater understanding of human-machine interface – thus more research funding needed here
3. Emphasize that weaponised systems are just one small part of the capability area

Benefits

- Brainwriting does not require an experienced facilitator.
- This technique can generate many ideas, often more than in a regular brainstorming session, as the ideas are generated simultaneously.
- Sharing of ideas can spark new ideas in other people.
- It can be completed quickly
- It can be done with any size group.
- It can be made anonymous so can be useful when a sensitive subject is under discussion.
- Quiet or shy people can contribute equally with loud dominating people.
- Ideas are generated individually so it reduces the risk of group think.
- More extreme ideas can be generated because there is no risk of judgement.

Challenges

- This can generate a large number of ideas very quickly; this may cause difficulties for subsequent discussion, analysis or prioritization.
- Ideas are likely to be repeated several times, as each individual may think of the same idea.

- By limiting the discussion, this raises the risk of participants not fully understanding the question. It is not so useful for complex questions or subjects.

- It is possible that, if a participant receives a paper with ideas that he does not like, he is able to 'accidentally' forget to hand the paper over to the AltA facilitator.

Hints & Tips

- If anonymity is important, then the AltA facilitator can gather all the papers together and then hand them back out randomly each time, rather than asking people to pass the paper onto their neighbour.

- Use a bell (or a timer) to signal the time to pass on the paper.

- On the second or third round, participants can be asked to provide action points or comments on the ideas captured during the first rounds.

Further Reading

- http://www.managetrainlearn.com/page/brainwriting

Starbursting

Starbursting is a way of generating questions to ask about a problem rather than immediately jumping to answers, ideas or solutions.

When to Use

- In the early stages of a project, when it is too early to develop a solution;

- To generate a 'checklist' to ensure all aspects of a project or a document have been covered comprehensively;

- It can be used by an individual or as a group activity.

Application

- **Step 1:** Draw a star with six points, and write the words; Who, What, Why, When, Where, How at each point. Write a statement in the middle of the star to provide the topic of discussion. An example is below.

- **Step 2:** Brainstorm possible questions around the topic, systematically going through each of the six points before moving on to the next. Do not move on too quickly to the next starpoint, as more out-of-the-box questions usually only come after all obvious questions have been asked. An example is below.

Organizing a Training Course
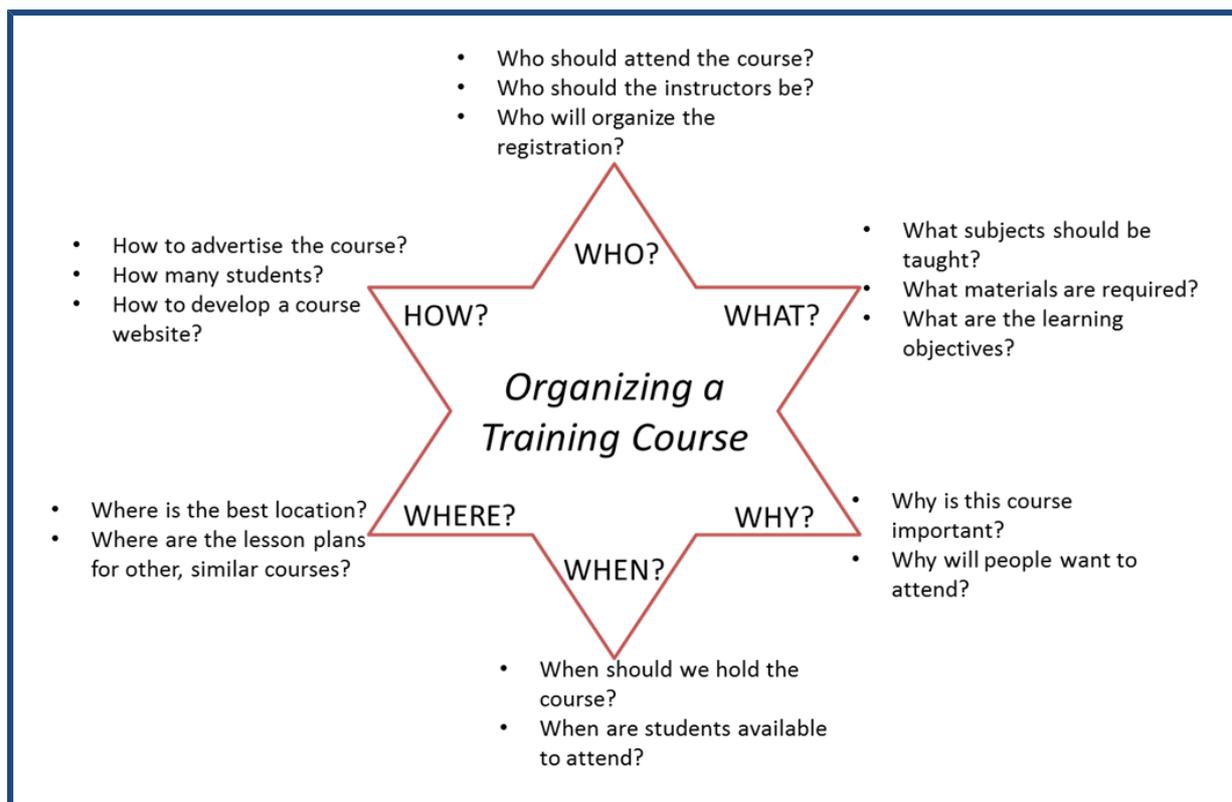
- **Step 3:** Once all the questions have been generated, discuss or answer any questions that can be easily or quickly answered. For the other questions, go through each one and develop an action plan for each. Some questions will be easily answered through a little research (e.g. internet search, or talking to the right expert). Other questions may take time to answer, but these can be used to guide a project plan or document structure. For example:

Question	Answer	Action
Who should attend the course?	?	Discuss at next meeting
Who should the instructors be?	Only Joe and Bob are currently capable	Plan to train more instructors
Who will organize the registration?	?	Ask NATO School if they can do this
What subjects should be taught?	?	Discuss at next meeting
What materials are required?	just flip charts and marker pens	ensure materials are available
What are the learning objectives?	?	Lucy to develop these before August
When should we hold the course?	It has to be in October	no further action
When are students available to attend?	?	send out calling notice 3 months in advance
Where is the best location?	NSO will host the course	no further action
Where are the lesson plans for other, similar courses?	?	Look on sharepoint

Benefits

- Provides useful structure to be used for a brainstorming session.

- It can be useful to critically examine a document such as a point paper or handbook; brainstorm the questions the document should answer, and then examine the document to see if they are covered.

- It is often easier to generate questions rather than answers, especially at the start of a project.

Challenges

- This technique can generate many questions. It may be important for the AltA facilitator to further categorize them and / or prioritize them before developing an action plan for each.

- It can be a challenge to keep the group focused on asking questions, rather than immediately answering them and creating a discussion.

Hints & Tips

- It is often best to lead the group through one 'star point' at a time, and if this is the case, the AltA facilitator should think carefully about which sequence will yield the best results.

Further Reading

- Here you can download a free starbursting worksheet: http://www.mindtools.com/pages/article/newCT_91.htm

Six Thinking Hats

Six thinking hats is a powerful parallel, constructive thinking technique that encourages a group to look at situations, issues or decisions from a number of perspectives, which involves "unbundling" and separating rational, factual, positive, negative and emotional views. This forces participants to move outside habitual thinking styles, and be more mindfully involved. The technique doesn't necessarily generate a specific conclusion or solution (although it can), but by being involved in the structured process, participants gain a more rounded and enlightened view of a situation.

When to Use:

- When situations or decisions are affected by strong emotions, personal commitments to previous decisions, or different viewpoints about a problem.

- Even when the above conditions are not present, a group can still benefit from looking at situations or the potential effects of a decision from a number of different points of view.

- When there is opportunity for creativity in decision making – stress the "what can be" and not the "what is."

- Six Hats can be used in a general sense to add creativity to brainstorming. In this case, the technique is applied much like a brainstorming session, except structured in terms of 'hats'.

- As a decision evaluation tool, in which the order of the hats matters considerable, as yellow and black hats can be used to evaluate strengths and weakness of options generated by a green hat session].

Application:

While Six Thinking Hats can be used individually or in large groups, the optimal application is small groups of 2 – 10 people.

- **Step 1: Define the topic of discussion and approach to be used.** The problem statement and goal of the group must be written down before starting.

- **Step 2. Divergent thinking.** The designated facilitator for the application of this technique will "wear" the blue hat to control the session. All other participants will wear the remaining hats (all wearing the same colour hat at the same time) in sequence to think about the problem from each perspective. The different hats are described below:

    o <u>White (Factual) Hat:</u> With the White Hat, you are neutral and 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.

    o <u>Red (Feeling) Hat:</u> 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.

o   Black (Negative) 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.

o   Yellow (Positive) 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.

o   Green (Creative) Hat: The Green Hat helps you to develop creative solutions to a problem. It is a freewheeling way of thinking, in which there is little or no criticism of ideas. A whole range of creativity tools can help you here.

o   Blue (Control) Hat: The Blue Hat stands for process control. This is the hat worn by the AltA Facilitator, with a focus on controlling the process and time management. It can also be used to focus participants on the big picture, or the issue in hand. It has also been used as a way of summarizing the discussions in order to conclude the process.
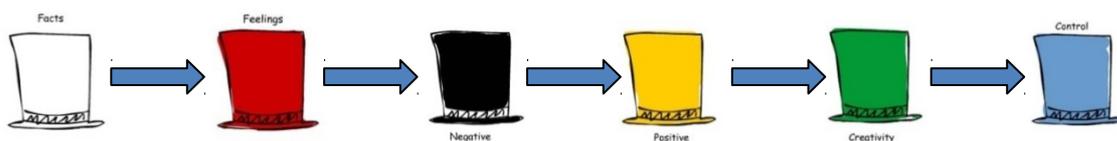
- **Step 3. Convergent thinking.** Once Step 2 is complete, the ideas generated will likely need to be organised to meet the requirements as laid out in the problem statement. This may take the form of a list of recommendations, considerations, etc.

Example

During an AltA session, participants were asked to review paragraphs from NATO's Security Force Assistance Doctrine using the Six Thinking Hats. The table below shows a summary of the comments for the paragraph titled 'Generate'

	Red: First impressions / Gut Reaction: - Three people said they like the paragraph - Two said they don't like it - One had mixed feelings.
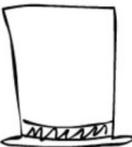
	White: These are the facts / this is information that is missing:
	- The paragraph says Generate creates a manpower pool, this is correct but there is more to it than this.
	- These are some questions the group want answered:
	  o What is the definition of manpower?
	  o What is a sharing agreement
	  o What are administrative reprocesses?

	Yellow: Positive points - It gives a general framework and covers the most important points. - It's good that it covers supporting infrastructure and associated systems
	Black: Negative / What could go wrong - One sentence reads "It would be wrong to assume that generate action is a first stage". This is technically correct, but may be misread as "generate is not the first stage". - The Generate paragraph implies that NATO will be in the lead when generating the Security Force. It is not explicit that at some point Generate may be transitioned over to the Host Nation. Also NATO may not be in the lead, but merely providing advice.
	Green: Things to improve - Include the fact the NATO Commander needs to take into account the political situation when working out how to generate the force - Make clear that other skill sets are required, related to capability building
	Blue: Summary / Big Picture The paragraph is useful as it gives guidance, however we would need some context e.g. a scenario in order to assess its full utility.

Benefits

- Brings out the "unnatural" optimism or pessimism in people, depending on their normal disposition

- Comprehensive in ensuring all perspectives are considered

- Parallel Thinking, not confrontation and argumentation

- Helps solve a problem using all approaches; decisions and plans will mix ambition, skill in execution, public sensitivity, creativity and good contingency planning

Challenges

- You will need to have a strategy to deal with thoughts that are not consistent with the "current" hat. A good solution is to use a parking board for the thought, then (re)visit the appropriate hat later. It is important that everyone wears the same 'hat' at the same time.

- Often under the Red hat, people want to justify their opinions *("I think this way because of …")*. Stop them giving reasons for their feelings, as these reasons will fall under one of the other hats.

- Difficulty between red and black hat (people get emotional about negative issues)

Hints & Tips

- The hats are listed in the suggested order of use (White, Red, Black, Yellow, Green, Blue). This may be adjusted depending on the composition of the group or character of the problem.

- A variant of this technique is to look at problems from the point of view of different organisations (e.g. HQs or divisions/branches), professionals (e.g. doctors, architects, sales directors, etc.) or other stakeholders

- This technique is sometimes employed by assigning different hats to individuals. This risks losing one of the main benefits of the technique (i.e., the discussion may become confrontational) and limits the brainpower applied to each hat.

- The Red hat is often described as the 'feelings' hat. Often military officers are uncomfortable about expressing emotions in a professional setting. In this case, it is often better to describe the Red hat as 'your opinion' or 'your gut reaction'.

- Prepare the space for six hats in advance; divide the white-board into six segments, or use six flip charts placed side-by-side.

Further Reading

- De Bono, E. (1970) *Lateral Thinking: Creativity step by step.* New York, NY: Harper Collins

- De Bono, E. (1985) *Six Thinking Hats*, New York, NY: Little, Brown and Company

Creative Combinations

Creative Combinations breaks down a problem into its key dimensions, restructures it and provides a framework in which people can consider various solutions. It offers a method of presenting a multi-dimensional problem in a two-dimensional space in order to facilitate understanding.

When to use

Creative Combinations is particularly useful for scenario planning, where a group can envisage many different types of future scenarios. It is also useful to provide a holistic view of a situation, where all possible problems can be displayed.

Application

Step 1: Identify the main dimensions, or categories of the problem during a facilitated session. Create a table with these listed along the top.

Dimension 1	Dimension 2	Dimension 3	Dimension 4	Dimension 5

Step 2: For each dimension, identify a number of distinct states that fall under it, for example for the dimension of 'Region' the states may be 'Africa', 'South America', 'North America' etc. Each dimension does not have to have the same number of states. List these in the table.

Dimension 1	Dimension 2	Dimension 3	Dimension 4	Dimension 5
D1: State 1	D2: State 1	D3: State 1	D4: State 1	D5: State 1
D1: State 2	D2: State 2	D3: State 2	D4: State 2	D5: State 2
D1: State 3		D3: State 3	D4: State 3	D5: State 3
		D3: State 4		

Step 3:

Consider different combinations of states, by highlighting one from each category. Ensure there are no logical contradictions (e.g. do not choose a combination of 'Africa' and 'NATO country'). Each combination represents a different scenario. Discuss relevant scenarios in the group.

Dimension 1	Dimension 2	Dimension 3	Dimension 4	Dimension 5
D1: State 1	D2: State 1	D3: State 1	D4: State 1	D5: State 1
D1: State 2	D2: State 2	D3: State 2	D4: State 2	D5: State 2
D1: State 3		D3: State 3	D4: State 3	D5: State 3
		D3: State 4		

Step by Step Example

Step 1: The group wishes to discuss a range of possible future scenarios that NATO may be involved in. First, they discuss the criteria that define a scenario, which they turn into the main dimensions:

Type of Operation	Relationship with NATO	Geographical Area	Environment	Threat	NATO Response

Step 2:

The group go on to determine the different states within each dimension, and fill out the table. For example:

Type of Operation	Relationship with NATO	Geographical Area	Environment	Threat	NATO Response
Humanitarian Relief	NATO Member	City	Rural	Permissive	Lead
Peace Keeping	NATO Partner	Regional	Urban	Non-Permissive	Support
Evacuation	Non-NATO	Country-wide	Mountainous		Enabling
Deterrence			Littoral		

Step 3: The group select a single combination, and go on to discuss this particular situation. In the example below, the group can go on to discuss military options for a Humanitarian Relief operation in a NATO-Partner city.

Type of	Relationshi	Geographical	Environmen	Threat	NATO

Operation	p with NATO	Area	t		Response
Humanitarian Relief	NATO Member	City	Rural	**Permissive**	Lead
Peace Keeping	**NATO Partner**	**Regional**	Urban	Non-Permissive	**Support**
Evacuation	Non-NATO	Country-wide	**Mountainous**		Enabling
Deterrence			Littoral		

Step 4: The group explore different combinations. In the example below, the combination is not valid because it has a logical contradiction - a city, by its nature cannot be rural. It is also unlikely to be a non-permissive environment if the country is a NATO member. By discounting the logical contradictions, the number of valid combinations is drastically reduced.

Type of Operation	Relationship with NATO	Geographical Area	Environment	Threat	NATO Response
Humanitarian Relief	**NATO Member**	**City**	**Rural**	Permissive	**Lead**
Peace Keeping	NATO Partner	Regional	Urban	**Non-Permissive**	Support
Evacuation	Non-NATO	Country-wide	Mountainous		Enabling
Deterrence			Littoral		

Benefits

- Can describe the entire problem space in a single table. By asking the group to consider different combinations, different scenarios or problems can be explored.

- It can stretch people's thinking in a number of directions.

Challenges:

- Getting the table to a point where it accurately describes the situation or problem can take time. It is often done over a series of 1-2 day workshops, with each workshop refining the table.

- The method works best when the problem space can be described in seven or fewer dimensions.

- It may be important to recognize different types of contradictions. For example, some scenarios may not be valid due to a logical contradiction (e.g. a city cannot be rural),

but equally a combination may have a normative constraint which means it is not likely due to NATO policy (e.g. a non-permissive Humanitarian operation).

Hints and tips

- Creative Combinations is derived from Morphological Analysis. For details of the more advanced technique, see www.swemorph.com

Diagnostic Techniques

Strengths, Weaknesses, Opportunities, Threats (SWOT) Analysis

A technique that helps to reduce ambiguity through the deeper understanding of the Strengths, Weaknesses, Opportunities and Threats that may be faced in the future. The technique is versatile in that it can be applied to large or small problems.

Figure xxx describes the meaning of Strengths, Weaknesses, Opportunities and Threats.

	Helpful	Harmful
Internal	**Strengths** Characteristics of a project/team/CoA that give it an **advantage** over others	**Weaknesses** Characteristics that place the project/ team/CoA at a **disadvantage** relative to others
External	**Opportunities** Elements that the project/team/CoA could **exploit** to its advantage	**Threats** Elements in the environment that could cause **trouble** for the project/team/CoA

When to Use

A SWOT analysis is widely applicable in decision-making situations. It is often used in strategic and operational planning, but can be applied to provide a different perspective on different courses of action, examine a chosen strategy or to help understand a problem. It can also be used to evaluate a team or a capability.

Application

Phase A: Detect the Key Issues

- **Step 1. Identify factors using SWOT model**. Use the brainstorming technique in a single session or use several sessions per S-W-O-T to identify the factors. Remember that Strengths and Opportunities are helpful factors, opposed to Weaknesses and Threats which are harmful factors. Strengths and Weaknesses are usually internal factors, which mean that the resources and experience are readily available, whereas Opportunities and Threats are typically external forces, which may be hard to control directly.

- **Step 2. Score and prioritise the factors**. After identifying the factors for SWOT using brainstorming, each factor should be scored, where possible, and prioritised.

Opportunities and Threats can be plotted onto a Risk probability-impact matrix in order to identify the most important factors. Each factor is assessed for a level of probability that the opportunity or threat occurs, and an associated assessment of the level of impact if it did occur. The most important factors will most likely reside in the top right hand quadrant of the matrix, these will have a high probability of occurring and a high level of impact if it did occur

Opportunities & Threats

(In the figure below, considered the top matrix).
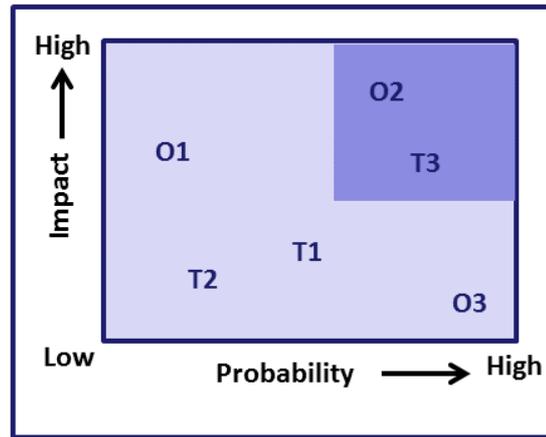
O2 and T3 could be two factors using this

High

Impact

O2

O1

T3

T1

T2

O3

Low   Probability ⟶ High

Strengths and objectively by using each factor is, or the group to gain the strengths and

Priority

1. S3
2. W2
3. W1
4. S1
5. S2
6. W3
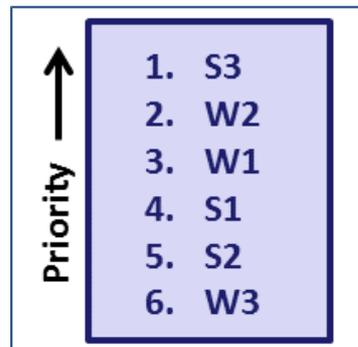
Weaknesses can be prioritised metrics to assess how important subjectively, by simply facilitating consensus on the priority order of weaknesses.

Phase B: Determine the plan or strategy

- **Step 3: Identify the primary factors using the confrontation matrix**. Develop a confrontation matrix template by listing in prioritized order: the strengths and weaknesses on the left hand side of the matrix, and the opportunities and threats along the top of the matrix. The confrontation matrix is a tool the help combine the internal factors with the external factors. Conduct a confrontation exercise with a group by asking the following questions:

- For each opportunity – which strengths help us to take advantage of the opportunity? And which weaknesses inhibit us from doing so?

- For each threat – which strength helps us to fight the threat and which weaknesses inhibit us from doing so?

The matrix can then be populated using a '+' (positive) where there are positives that can be exploited, or a '-' (negative) where an issue requires addressing. The more + or – in a cell

demonstrates a stronger positive or negative issue for addressing. If there are columns or rows that do not have a + or -, then it is likely that the Strength, Weakness, Opportunity or Threat is not being addressed and will require some further brainstorming to identify how to address it.

		Opportunities			Threats		
		O1	O2	O3	T1	T2	T3
Strengths	S1						
	S2						
	S3						
Weaknesses	W1						
	W2						
	W3						

		Opportunities			Threats		
		O1	O2	O3	T1	T2	T3
Strengths	S1		+				
	S2	+					
	S3				++		
Weaknesses	W1						
	W2	-					
	W3					---	

- • **Step 4: Evaluate the actions to be taken.** Using the confrontation matrix, develop an action plan to help address the positive and negative issues that require attention. Highlight the factors that are the most important identified from Step 2. Evaluate your actions against where the issues have been identified in the matrix (see example below).

Phase C: Implement and Monitor

- **Step 5: Initiate plan, monitor progress and re-evaluate**. Initiate the action plan, monitor progress using appropriate metrics and when appropriate re-conduct a SWOT analysis to examine the changes since initiation.

Examples

NATO held an AltA session to identify NATO Concept Development and Experimentation's (CD&E) Strengths, Weaknesses, Opportunities and Threats (SWOT). CD&E is an activity conducted through NATO that aims to identify solution-orientated transformation concepts that address capability gaps, and refine or evaluate them through experiments. The outcome of this session was used to inform further analysis to identify interventions as part of a wider programme of improvements to NATO CD&E**.**

The goals of the session were to: 1) Objectively understand the strengths and weaknesses inherent to NATO CD&E; 2) identify the threats and opportunities with which NATO CD&E is confronted, and 3) understand what makes CD&E a unique and indispensable tool in the transformational arena.

Step 1. Identify factors using SWOT model. The first step involved forming a cross-functional team of customers and implementers of CD&E in NATO, and brainstorming to identify SWOTs. To stimulate thinking, a future scenario was posed to the group—*imagine a future with no NATO CD&E*.

Step 2. Score and prioritise factors. Two methods were used to score and prioritise the factors. First, strengths (S) and weaknesses (W) were scored against two criteria: the level of importance to delivering successful CD&E, and the overall implications for NATO. Second, the opportunities (O) and threats (T) were assessed using a risk probability-impact matrix. The group employed a voting method to determine the scores for each factor. Once the process was complete, the five highest scores—or the five factors closest to the top right-hand corner of matrices—were identified as the top priority SWOTs.

Example prioritisation and scoring process:
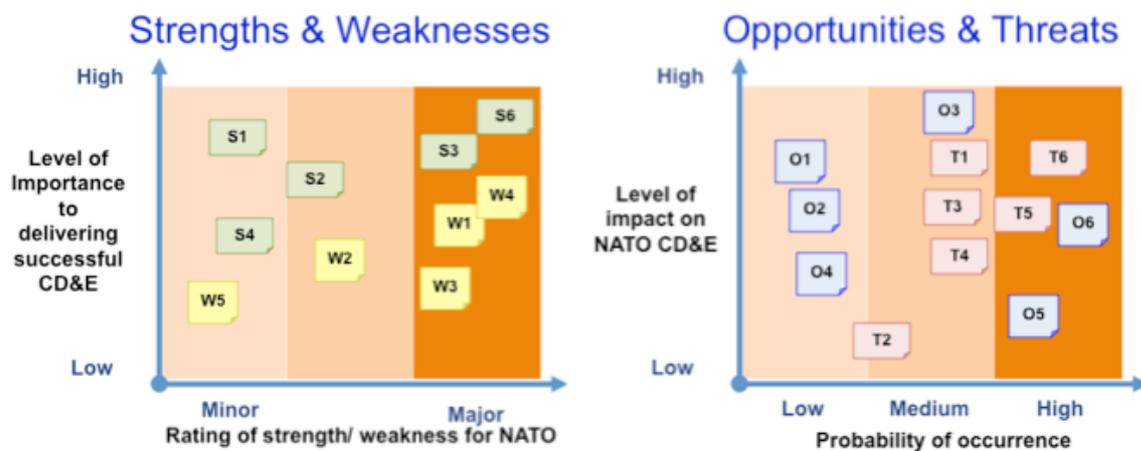
NATO CD&E's top five identified strengths, weaknesses, opportunities and threats:

Strengths	Weaknesses

NATO CD&E enhances interoperability	There is a perception that NATO CD&E does not deliver worthwhile products
NATO has dedicated and trained CD&E staff	When initiating NATO CD&E there is a lack of shared understanding of the problem
NATO CD&E delivers unbiased results	NATO CD&E has a limited relationship with NATO HQ
NATO CD&E enables burden sharing	When initiating NATO CD&E stakeholder analysis is insufficient
NATO CD&E enables capability development to think far into the future	NATO CD&E has no formal method of evaluating CD&E impact and success
Opportunities	**Threats**
Exploitation with Academia and Industry	Manpower reductions in NATO
Increased threat to NATO members – increased need for innovation	Technology innovations happen too fast for NATO CD&E to keep up
Rapidly changing operating environments	NATO CD&E is too dependent on 'political policy' climate
SMEs from Centres of Excellence	Nations stop doing CD&E and rely on NATO CD&E
Developments in modelling and simulation	Defence cuts and downsizing savings

Step 3. Identify the primary factors using the confrontation matrix. After developing a confrontation matrix template using the factors identified in Steps 1 and 2, the team complete the matrix to examine the primary and pertinent factors for consideration. For conciseness, only the top 2 SWOTs in each category are show in this example, however, in practice all SWOTs would be included in the confrontation matrix.

CONFRONTATION MATRIX		Opportunities		Threats	
		Exploitation with Academia and Industry	Increased threat to NATO members	Manpower reductions in NATO	Technology innovations happen too fast for NATO CD&E to keep up
Strengths	NATO CD&E enhanes interoperability	+	+ +	+ +	+ +
Strengths	NATO has dedicated and trained CD&E staff	+ +	+		+ + +
Weaknesses	There is a perception that NATO CD&E does not deliver worthwhile products	-		- -	
Weaknesses	When initiating NATO CD&E there is a lack of shared understanding of the problem		- -		-

Step 4: Evaluate the actions to be taken. The AltA team used the confrontation matrix to identify the key actions required. The matrix shows that in order to exploit relationships with academia and industry (opportunity) the core cadre of NATO CD&E staff should be leveraged (strength). A danger is that this opportunity will be prevented by the negative perception of products (weakness). Thus a strategy recommendation was made to task the NATO CD&E staff to identify how the utilization of academic products is improved, and how reports are marketed in general. This is an example of transforming a weakness into a strength.

Step 5: Initiate plan, monitor progress and re-evaluate. Once the NATO CD&E team have implemented their campaign, they develop metrics to monitor the effectiveness of the campaign. One year later another SWOT analysis is conducted to determine if the same weaknesses or threats are still present, and if the strategy is working.

Benefits:

- Helps to develop a full awareness of all the factors that may affect a decision or a plan.

- Can be applied to almost any decision making process to help identify new perspectives.

- Useful for organising information and clearly presenting solutions, identifying roadblocks and emphasizing opportunities.

- Helps to identify priorities in tasks and activities

- Easy to help identify how to transform weaknesses to strengths and threats to opportunities, match strengths to exploit opportunities and prevent threats from becoming a weakness.

Challenges

- If the SWOT model is used on its own without critical thought and analysis there is the possibility of misrepresentation of the Strengths, Weaknesses, Opportunities and Threats.

- If SWOT analysis is mis-used to simply defend previously decided objectives or CoAs then brainstorming the possibilities and real identification of barriers can become challenging.

Hints & Tips

- Only accept precise, verifiable statements when identifying factors in Step 1.

- As part of the brainstorming stage, do not stop at the divergence stage; ensure convergence is carried out by ruthlessly pruning long lists of factors. This will allow time to consider the most significant factors. Capture those factors that did not make it onto the final list for future use and/or trend analysis of the factors.

- When identifying factors for opportunities and threats use PESTLE-M add to glossary also. to help identify external factors across a broad spectrum.

Plusses, Minuses, Interesting (PMI)

Plusses, Minuses, Interesting, or just "PMI" was developed to encourage broader thinking about problems. Often, people tend to engage in "decision-based evidence making" rather than the reverse—evidence-based decision making. In other words, we tend to quickly form opinions or judgements about a situation then focus our attention on backing up or justifying this opinion. PMI is a very simple technique designed to open up thinking and encourage creativity.

When to Use

- When a group discussion is stuck on one particular idea, solution or perspective

- When no other solutions seem possible

- When there are strong disagreements about contending solutions or ways forward

- When a group has to quickly evaluate a completed activity or project to make critical go/no-go decisions

Application

- **Step 1: Problem Statement and PMI Framework**. Select a particular solution, problem, issue or experience that is the focus of the analysis. Define the problem. Be specific. Put the problem statement at the top of a page or whiteboard, then draw three columns with the headings "Plusses," "Minuses," and "Interesting".

- **Step 2a**: **Brainstorm each column.** Either in a group brainstorm or using brainwriting, write down possible positive effects under the "plusses" column of adopting the solution, or your experiences of the completed project. Write down all the possible negative consequences under "minuses". Finally think of the "interesting" broader implications and consequences. As the "interesting" column will be less relevant for evaluation of an already completed project, this can be used to capture "Good Ideas" instead.

- **Step 2b: Score each point (optional).** If the results are not clear, participants can rank each point made in the 3 columns on a scale of 1 to 5 (for plusses) and -1 to -5 (for negatives). While the scores are subjective, they will likely force participants to rethink their ideas and how much certain outcomes are valued.

Benefits

- Very quick to implement, but quite effective

- Forces participants to concentrate their thoughts into seeing two sides of an issue

Challenges

- Participants must be genuine in their efforts to think of negative consequences, especially if they are the ones advocating the solution

Example

A team member has found a consultant who could help solve a particularly difficult task related to designing a new process for the organisation. Others in the team want to

overcome the problem themselves to make sure they fully understand the issue, rather than have someone else do it. The team leader decides to conduct a PMI to help decide.

Problem: Should we hire a consultant to design the organisational process?		
Plusses	**Minuses**	**Interesting**
Would save us lots of time which could be spent on other things We would be confident that the job would get done We could learn from the consultant, even if we didn't do most work ourselves	We would spend lots of time preparing the contracts and getting approval There is a chance the consultant would do a bad job with a clear statement of work It would not be in the interest of a consultant to show us how to do the task We might become dependent on the consultant	What if we got a consultant to *train us* to do this task *and* future tasks? Maybe we could use this situation to justify getting additional resources for our team in general, or to explain to management why we might be late with our task

Based on this analysis, the team leader can make a more informed decision about hiring a consultant and develop a strategy to build on the 'plusses' and counter the 'minuses'. Some of the 'interesting' points can also be turned into opportunities.

Further Reading

- http://www.stickyminds.com/article/mind-changing-exercise
- http://www.mindtools.com/pages/article/newTED_05.htm

Five Whys

The 5 Whys technique helps to identify the root cause(s) of a problem. It may also be used to determine the relationship between different root causes of a problem. It is most effective when the answers come from people who have hands-on experience of the process being examined. It is remarkably simple to use: when a problem occurs, you uncover its nature and source by asking "why" no fewer than five times.

When to Use

- The 5 Whys is for focusing efforts on addressing the root causes of problems. This can help you prevent the problem from reoccurring, rather than just managing the symptoms. An example may be; if you have a headache, you can take a pill to alleviate the symptom, or you can visit the doctor to discover the root cause (which may be poor eyesight for example). A better solution than a pill would be to get new glasses.

- For simple problems, 5 Whys can be used in single-track to distinguish between symptoms and causes of a problem.

- For more complex or critical problems where there may be multiple causes, multi-tracks may be required, where for each of the initial causes, a new 5-whys track is generated.

Application

- **Step 1: Problem Statement**. Select a problem to focus on. Define the problem. Be specific. Keep the scope small and realistic.

- **Step 2: Identify key problem areas** In a single track problem, there will only be one problem area; the central statement. In a multiple-track problem, it may be necessary to identify 4-5 key areas before you start asking the question 'why'.

- **Step 3: Ask Why 5 Times**. Keep asking 'why is this a problem' until you have found the root cause. 5 is an arbitrary number – usually you need to ask why 5 times to get to the root cause, but sometimes it is 4, or 6, or 8 times.

- **Step 4: Discuss and select solutions focused on addressing the root causes of problems**. Addressing the root causes reduces the likelihood of the problem reoccurring.

This simple illustration demonstrates the single-track problem:
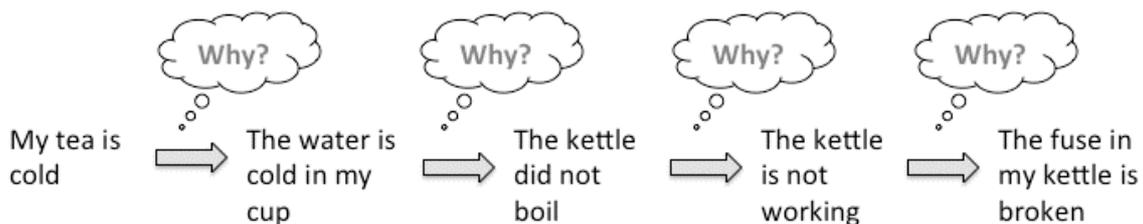
Example

- **Example Step 1: Problem Statement**

Five-Whys was used to explore why the analysis of human social networks (for intelligence) is a challenging problem. The problem area under discussion was written in the middle of a white-board.

- **Example Step 2: Identify key problem areas**

This was a multi-track problem, so first the AltA participants were asked to come up initial key problems areas. These were placed around the central statement in a circle as in the illustration below.
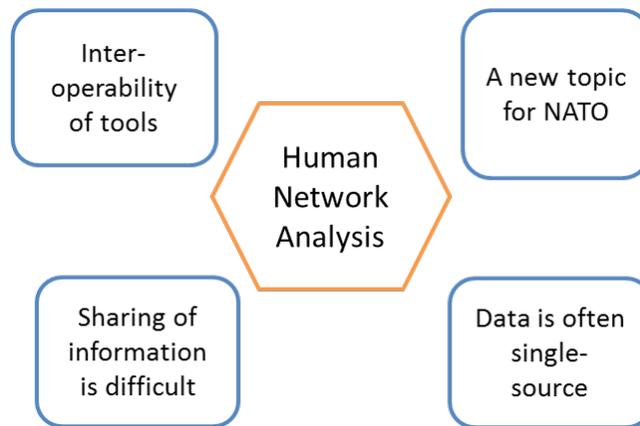
- **Example Step 3: Ask Why 5 Times**.

Then the AltA facilitator took each of these problems in turn, and expanded on them outwards, radiating away from the circle. He kept asking 'why is this a problem?' over and over until the root cause was found.
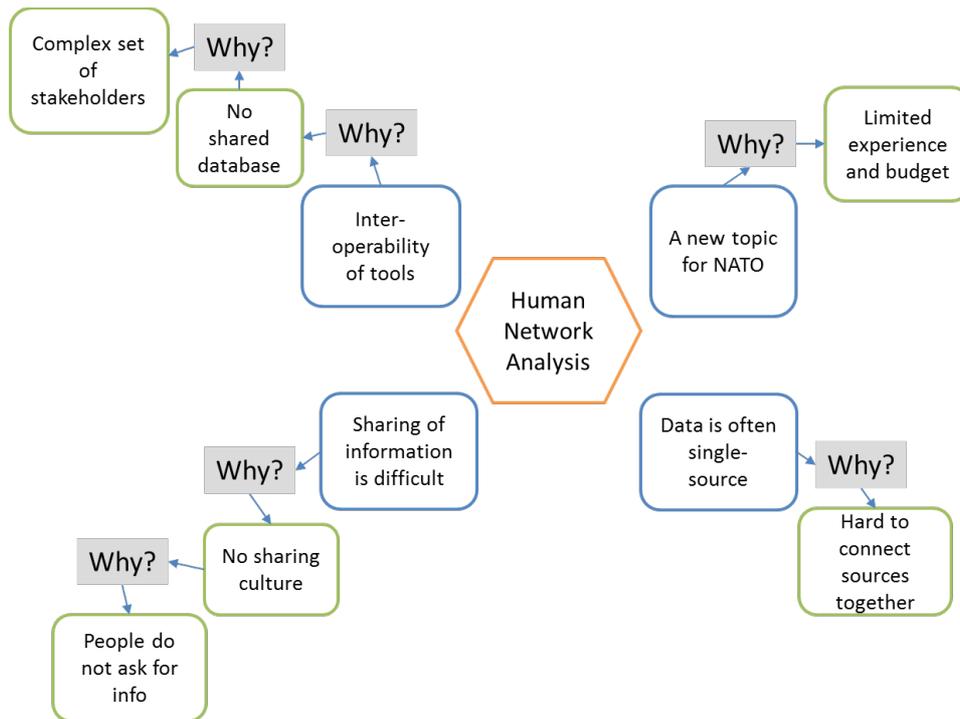
- **Example Step 4: Discuss and select solutions focused on addressing the root causes of problems**.

By the time the workshop had finished, the project leader has developed a greater understanding and was able to develop a more focused strategy to address particular problems.

Benefits

- This is a very simple method that can identify a root cause very quickly.

- It can easily be linked to more complex systems analysis methods, where linkages between the chains of whys are analysed.

- It is useful to diagnose problems with complex and bureaucratic organizational processes.

Challenges

- Getting the problem statement right is the key to this technique.

- Identifying the difference between a symptom and a cause can be difficult in complex problems.

Hints & Tips

- The number 5 is arbitrary. The point is not the number – it's the probing. The complexity of the problem will dictate how far you go.

- For the facilitator this can be quite difficult as you may be seen as questioning the norm and the competence of those who run the process.

- It is sometimes useful to ask the team to try and look at the problem from other people's perspectives e.g. from a customer's perspective, in order to understand better why the problem has to be fixed. If people from different perspecives can come to the session all the better.

- Try asking different 'why' questions. E.g. asking 'why is this an issue' may have a different answer to 'why is this important' or 'why do we need to fix this'.

- Do it more than once with different people, for different perspectives

Further Reading

- Lean for Dummies – Natalie J Sayer and Bruce Williams – Wiley Publishing Inc – ISBN 978-0-470-09931-5

- http://www.isixsigma.com/tools-templates/cause-effect/determine-root-cause-5-whys/

- https://hbr.org/2012/02/the-5-whys.html.

Key Assumptions Identification

Key Assumptions Identification is a systematic process to identify the assumptions that guide a decision maker's interpretation of evidence and reasoning about a particular problem, and then judge which ones are key.

When to Use

- Consider performing a Key Assumptions Check – at least at a cursory level – as a first step time you begin a new task. The technique is particularly useful at the beginning of a project, but can be very helpful whenever entering a new phase.

- Use this technique as soon as you become aware that you have to make large assumptions in order to make progress on your project.

- Use this to check the integrity of your plan, or course of action.

Application

- **Step 1.** Review the current line of thinking / reasoning on an issue – write it down

- **Step 2.** Identify and articulate all the premises and assumptions, stated and unstated, that are accepted as being true for the line of thinking to be valid

- **Step 3.** Challenge each premise and assumption, asking whether it "must" be true for the line of reasoning to be valid, and whether it remains true under all conditions. The assumptions that "must" be true become the Key Assumptions.

- **Step 4.** You can now focus your further research on this narrowed list of key assumptions in order to conserve resources. In addition, you will consider under what conditions or in the face of what information these might not hold, and analyse the implications for the line of thinking.

- **Step 5:** Once you have the refined list, you can consider the following questions:

    o How much confidence exists that the assumption is correct?

    o What explains the degree of confidence in the assumption?

    o What circumstances or information might undermine the assumption?

    o Is a key assumption more likely a key uncertainty or key factor?

    o Could the assumption have been true in the past but less to now?

    o If the assumption proves to be wrong, would it significantly alter the plan? How?

    o Has the process identified new factors that need further analysis?

Example

- **Example Step 1.** Review the current line of thinking/reasoning on an issue – write it down

Climate change will become a serious issue for NATO in the 20-30 year timeframe

- **Example Step 2.** Identify and articulate all the premises and assumptions, stated and unstated, that are accepted as being true for the line of thinking to be valid

Assumption	Assessment	Key Assumption?
Global warming will continue an upwards trend	*Likely. Scientific research indicates that this will be the case.*	
Extreme weather-related events will increase in frequency	*Likely. Assessment of weather patterns indicates that this will be the case.*	
Extreme events will cause security problems or require humanitarian assistance	*Possibly. Some previous disasters have been followed by security problems in the area. Humanitarian assistance has often been required.*	
NATO will have to respond in the aftermath of weather-related disasters	*Possibly. In most cases, the host nation or neighbouring nations have responded to the disaster. In extreme cases, NATO may be asked to contribute.*	

- **Example Step 3.** Challenge each premise and assumption, asking whether it "must" be true for the line of reasoning to be valid, and whether it remains true under all conditions. The assumptions that "must" be true become the Key Assumptions.

Assumption	Assessment	Key Assumption?
Global warming will continue an upwards trend	*Likely. Scientific research indicates that this will be the case.*	No. Even if this assumption is false, the fact that more people are living in low-lying coastal areas mean that more people will be affected by events if the trends stabilize. Therefore the credibility of this assumption is not important.
Extreme weather-related events will increase in frequency	*Likely. Assessment of weather patterns indicates that this will be the case.*	No. The frequency of occurrence is not as relevant as the ability for Nations to cope with such disasters.
Extreme events will cause security problems or require	*Possibly. Some previous disasters have been*	Yes. If this assumption turns out to be false, then

humanitarian assistance	followed by security problems in the area. Humanitarian assistance has often been required.	there is an issue.
NATO will have to respond in the aftermath of weather-related disasters	Possibly. In most cases, the host nation or neighbouring nations have responded to the disaster. In extreme cases, NATO may be asked to contribute.	Yes. This assumption may turn out to be false (NATO may not have to respond) and that affects NATO's emergency planning and capabilities.

- **Example Step 4.** Focus further research on the key assumptions

My project will focus on the requirements, if any, for NATO to respond to weather-related disasters, taking into account the possible security and humanitarian consequences of extreme events, as well as determining under what conditions NATO would be involved and when no involvement is required.

- **Example Step 5.** *My project will attempt to determine the likelihood of NATO involvement to challenge the assumption that NATO has to respond to these types of events.*

Benefits

- Stimulates thinking about an issue and expands perspectives and thinking
- Identifies specific assumptions in lines of reasoning
- Explains the logic of the argument, assesses the strength of the line of reasoning, and exposes faulty logic
- Allows focusing of resources on key assumptions
- Helps to avoid surprises when circumstances change
- Uncovers hidden relationships and links between key factors
- Identify developments that would cause you to abandon an assumption

Challenges

- When acting in very uncertain or fast developing situations it is challenging to define clear lines of reasoning.

Further Reading

- Center for the Study of Intelligence, A Tradecraft Primer: Structured Analytic Techniques for Improving Intelligence Analysis, U.S. Government, March 2009.
- Richards J. Heuer(Editor), Randolph H. Pherson, Structured Analytic Techniques for Intelligence Analysis, CQ Press, 2014

Quality of Information Check

Quality of information check evaluates the credibility, accuracy and reliability of available information sources. Judging the validity of sources is a key to critical thinking. The confidence level that decision makers can have in their judgements and decisions depends upon the accuracy and reliability of the information base.

Checking the quality of information used in analysis is an important and on-going process. Problem Owners should perform periodic checks on the quality of the information on which their projects and decisions rest in order to prevent erroneous or false assumptions and incorrect facts affecting decisions.

When to Use

- Periodically, especially when major documents are produced.

- Whenever plans rely on specific information, particularly intelligence information.

- Whenever key decisions rely on single sources of evidence

Application

- **Step 1: Develop a checklist.** An AltA review of quality information begins by developing a check list. The level of detail of the check list depends on the nature of the project or problem.

Attribution	Is the author or originating organisation clearly identified? Who is the publisher? Are they known or easily locatable on the internet?
Credentials	Does the author have appropriate credentials: degrees, particular experience, past writings, association with particular institutions?
Objectivity	Are the document's goals stated? Are they accomplished? Is there evidence of bias? Are conflicts of interest acknowledged?
Quality	Is the information well structured, organised, and appropriately cited and referenced? Are methods, constraints, limitations and caveats documented?
Currency	When was it published? How frequently has it been updated? Are changed identified?
Verifiability	Are similar conclusions reached by other sources?

- **Step 2: Develop a database.** Create a database of key information pertaining to the project or decision. This database can be developed for a specific project (e.g. developing a military operational plan or a new organisational strategy) or for a specific key decision (e.g. whether to create a new NATO Center of Excellence). The database can be organized by originating source, date, document title etc.

- **Step 3: Apply the checklist**. Depending on the nature, risk or urgency of the decision, information in the database should be ranked across the criteria in the checklist. The user should create a ranking scheme for each criteria. This could be a simple 'yes' or 'no,' or a rating or 1 to 5, for example. .

- **Step 4: Systematise the checklist.** Ideally, organisations and project teams should develop a good habit of monitoring quality of information. Steps 1 to 3 should be used regularly to:
    o Systematically review all sources for accuracy, reliability and credibility.
    o Identify information sources that are critical to decisions
    o Determine whether uncertain or problematic information has been interpreted and caveated properly.
    o Create a scheme to monitor the overall level of confidence in sources, whether document-based information, media or human sources.

Benefits
- Provides the Problem Owner with an assessment of what we know and what we do not know. It is also an opportunity to confirm that sources have been cited accurately.

- 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.

- In addition, a quality of information check can be valuable to:
    o Identify key information gaps and new requirements for collectors.
    o Assist commanders in understanding how much confidence to place in information and judgements derived from it.
    o Help detect possible deception and denial strategies by an adversary.

Challenges
- Sometimes evaluating source quality can be very time-consuming, especially if they are not publicly available documents.

Outside In Thinking

Outside-In Thinking focuses on a problem from an external perspective, rather than an internal one. Outside in thinkers, for example, focus on the best ways to solve problems for their customers, and can appreciate how external factors may influence their project. Inside-out thinkers focus on how to maximise organizational goals. Inside-out thinkers may benefit in the short-term but in the long-term outside-in thinkers will likely achieve more and be more innovative. Outside-in thinking identifies the full range of external factors that would directly or indirectly shape an issue.

When to Use

- Use in order 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.

- Try outside-in thinking when a more innovative approach is needed.

- Outside-In Thinking can provide structure to exploring the various factors influencing the problem.

Benefits

- Most people are naturally inside-out thinkers – focusing on what they can control. They start from the inside then move 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.

- 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.

Application

- **Step 1:** Develop a generic description of the problem or the phenomenon under study.

- **Step 2:** List the key factors, that could have an impact on the topic, but over which one can exert little or no influence. Consider using a framework such as the Political, Military, Economic, Social, Infrastructure and Information domains.

- **Step 3:** Consider which of the key factors you, or another actor can exert some influence.

- **Step 4:** For all the factors, assess how each of these could affect the topic, and what impact they might have

- **Example – Step 1**: Imagine you are on a planning staff developing contingency plans for military assistance to refugees

- **Example – Step 2** External factors that may affect your plan include the following (internal factors have been included in the table to show the converse example)

	Example of Inside-Out Thinking	Example of Outside-In Thinking
Political	NATO's agreement on conditions at NAC level	Political stance of neighbouring countries in area
Military	NATO Military forces allocated to operation	Ability for local security forces to provide support
Economic	Budget agreed by NATO for assistance	Economic status of refugees
Social	Ability to socialize plan and gain agreement amongst NATO Nations	Amount of local community support – willingness for people in area to volunteer aid
Infrastructure	Capability for NATO to build refugee camps	Existing structures that can provide camps for refugees
Information	Ability for NATO to push out information	Information requirements of refugees, and existing sources of information.

- **Example Step 3 and Step 4:**

Focusing on the third column in the table; assess ways that NATO can exert influence on the external factors, or how it may affect the problem.

	Outside-In Thinking	How to exert influence?	How factor affects the plan?
Political	Political stance of neighbouring countries in area	At the political level, countries can influence each other.	The political stance may affect which countries the refugees can be moved to.
Military	Ability for local security forces to provide support	Propose training up local security forces	Increase local security force capability = less requirements from NATO and a better long-term solution
Economic	Economic status of refugees	Cooperate with other aid organizations in order to increase refugee economic status.	Economic status affects refugee's ability to transport themselves.

Social	Amount of local community support – willingness for people in area to volunteer aid	Consider public information campaign to change local community's perception of NATO's involvement	Increased support from local community = less requirements for NATO.
Infrastructure	Existing structures that can provide camps for refugees	Conduct survey of potential existing structures.	If existing structures are identified, there is no need to build new ones.
Information	Information requirements of refugees, and existing sources of information.	Conduct survey on which information sources refugees use.	Understanding the information requirements makes for a better plan.

Surrogate Adversary/Role Play

Models the behaviour of an individual or group by trying to replicate how an adversary would think about an issue.

When to Use

- 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.

- 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).

- 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.

Benefits

Similar to Techniques Devil's Advocacy and 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.

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

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.

Application

- 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.

- The team members should:
  - Envision themselves in the adversary's circumstances and react to foreign stimuli as the target would.
  - Develop a set of first-person questions that the adversary would ask, such as an example:

- 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.

- 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.

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?"

Example Application

The USA Army has enlisted people to play the role of local population when training soldiers how to interact and talk to local people from another country or culture. For example they have recruited people who are first-generation immigrants, so they have a deep understanding of the culture and the likely way a local would react to a particular style of questioning.

Alternative Futures (AF)

This technique systematically explores multiple ways in which a situation can develop when there is high complexity and uncertainty.

When to Use

- This technique is most useful when a situation is viewed as too complex as to be able to predict a single outcome. AF assists the team in dealing with high levels of uncertainty, harnessing the abilities of the participants to imagine different future situations. It enables all team members to assume the role of both supporting and negatively influencing elements, avoiding adversarial roles between the participants.

- First, the problem owner 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 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.

- 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 it can be successfully employed in a time constrained manner similar to example detailed below, where a few hours over a 3 day period was used to complete the analysis.

- 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.

Application

- **Step1. Define focal issue.** Develop the focal issue by systematically interviewing experts and officials in co-operation with the problem owner.

- **Step 2: Convene expert group.** To the extent possible, convene a group of experts (both internal and external) to brainstorm the forces and factors that could affect the focal issue.

- **Step 3: Select Axis.** Select by consensus the pairs of the most critical and uncertain forces and convert these into axes or continua. Establish the most relevant endpoints for each factor and include these in the diagram to set bounds.

- **Step 4: Future matrix.** For each pair, form a futures matrix by crossing the 2 chosen axes. The 4 resulting quadrants provide the basis for characterising alternative future worlds. Ensure that you can describe in concrete terms the parameters of each future scenario as delimited by the axes, or revise them to make this possible.

- **Step 5: Narratives.** Generate narratives that describe these futures and how they could plausibly come about.

- **Step6: Evaluation.** In group, participants can then consider how current decisions or strategies would fare in each of the four worlds or hypothetical futures. Based on those insights they can then identify alternative plans that might work better either across all the futures or in specific ones.

Example

Stage 1 - Brainstorming

Problem owner wished to use Alternate Futures analysis in place of a procedural wargame, to consider the effectiveness and robustness of plans developed to protect NATO territory. It was agreed to try out AF as a way of allowing the planners to explore the impact of quantified unknowns on their developing plans, to enhance its ruggedness. The problem owner was specifically interested in actions which would trigger transition from a defence support operation to an article 5 counter aggression mission.

Brainstorming sessions with selected planning group team members were conducted to identify variables of interest, and to consider their pairing. Note that in addition to the factor considered an upper and lower bound condition are described. Some example identified possible unknowns are tabulated below:-

ID	Low value	Factor	High value
1	NATO first	Seizing of Islands(s)	BRD first
2	Denied	Access for MCC to Baltic sea	Free access
3	Small / Compact	Alliance Footprint	Large / Dispersed
4	Minor	BDR Casualties from NATO Ops	Major
5	After ACTORD	BRD capture of island	Prior to ACTORD
6	Neutralize	Level of damage to BDR Off Forces	Destroy
7	Low impact	Cyber attack on NATO systems	Severe disruption
8	Destroyed	Effect on BRD regime	Enhanced
9	Bad (impact on air ops)	Flying Weather conditions	Good (no impact on air)
10	Nil to Low	Level of environmental damage	Severe (High)
11	Few	Level of NATO casualties	Many
12	Destabilized	Political stability of BRD	Stable & effective

Stage 2 - Pairing of Variables

The next phase was to consider possible pairings of these unknowns, i.e. to consider the above variables as related pairs with which to conduct an alternate futures analysis. It would not be possible in the available time to consider all the possible combinations, so the brainstorming group then focussed on identifying suitable pairings. The outcome of this session was some axis pairs as depicted below. The first developed future AF1 was deleted as it was found to look only at changes to Alliance decisions which could be considered as "known factors".

Alternate Future 2

Very Bad – Fog , Icing, Cloud, Strong Winds, Modest Sea State

Quadrant

Flying Weather

"UL"
Upper
Left

"UR"
Upper
Right

Alliance
First

Seizing of Island(s)

Bothnia
First

"LL"
Lower
Left

"LR"
Lower
Right

Very Good – Clear Skies, Good Sea State, Unusually Warm

Alternate Future 3

Large / Dispersed

Alliance Footprint

Limited
/ Local

BDR Asymmetric Attacks

Massive
/ Wide

Small / Compact
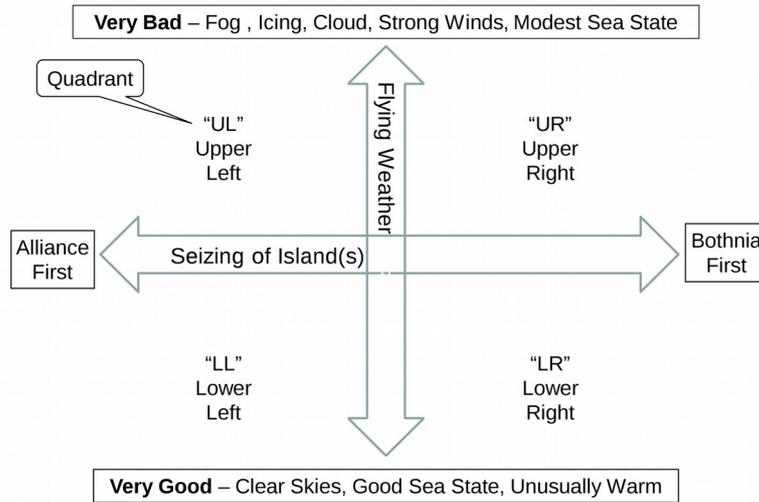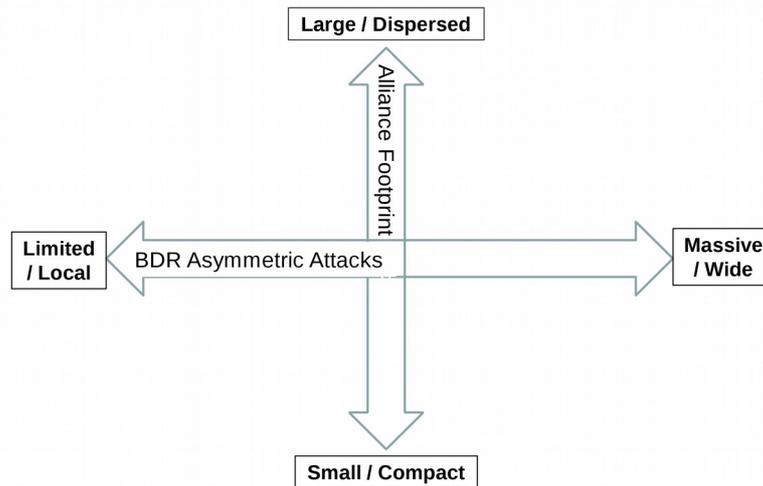
Stage 3 - Conduct of Alternate Futures Analysis

The next stage of the futures exercise was conducted with a wider group than was used during the brainstorming phase, encompassing more possible views. The group met for 1 hour led by the AltA facilitator, with the above axis on a white board and distributed to the group on paper. Two scribes recorded the inputs, which were also added onto the white board as the discussion proceeded. The facilitator described situation of the bottom right quadrant of AF2 (LR) to the participants e.g. BDR launched its invasion of the island prior to the arrival of NATO forces and was able to take control. Good weather permitted a rapid insertion of forces by both sea and helicopter born forces. BRD rapidly established SAM defences on the newly seized territory.

The session proceeded with various members contributing ideas on how the future could look. When necessary, the facilitator stimulated discussions e.g. suggesting that BDR is now conducting "ethnic cleansing", by rounding up EST civilians and shipping them to Bothnia

where they are released. This is affecting the demographic mix of the island to a point where a pro Bothnian majority will exist.

The outcomes of the consideration of AF2 are depicted in the figure below.

Example Alternate Future

Very Bad – Fog , Icing, Cloud, Strong Winds, Modest Sea State

Worse for OPFOR Air, Can't fly CAS
Reduced warning favors BDR
Reduced TAC ISR (UAV), No Helo Ops
Reduced sortie generation
Hard to hit their ships
No BDR Airdrop / RW insertion
Impact on Friendly Bed-Down
SEAD critical due to SAMs

No CAS, BDR initiative , worse for their Air
BDR GBAD (Island & Ships)
No RW / Airdrop insertion for BDR
Reduced TAC ISR (UAV), no Helo Ops
Landing not contested, Triggers ART V
SEAD critical due to SAMs
NATO Targeting Supplies (+ Airfield) GPS
Additional Challenge for Restore

Flying Weather

Alliance First ← Seizing of Island(s) → Bothnia First

Defense EST BN + GBAD + SoF
Short warning Amphibious Assault
Landing & Air Contested CAS avail 5 hrs
Need SEAD vs. BDR ships / SAM
BDR Airdrop denied (lack of AS)
BDR Target EST IAMDS

Triggers ART V, Air Contested
FROGFOOT can be used (+ Scud)
Airdrop / RW insertion for BDR
Landing not contested
NATO cut BDR SLOCs
NATO Targeting BDR Forces, CAS
Takes longer for Restore

Very Good – Clear Skies, Good Sea State, Unusually Warm

A quick review of the topics depicted in the example (AF2), identified the following themes that were common to most future views or were key issues, and required additional planning consideration by the planners.

- SEAD critical to all versions, need it early

- Re-examine bed-down to avoid single points of Failure

- Poor weather impact on force multipliers - UAV, AAR

Outcomes

The problem owner and participants were extremely satisfied with the replacement of a traditional procedural wargame with an AltA technique. Feedback comments received focussed on the reduction of time and staff resources required to wargame, and the enhanced situational awareness and understanding achieved.

Benefits

- AF creates a thinking structure with all the participants projected into the same scenario and issue set. The harnessing of all participants to a common problem, while avoiding groups taking sides and assuming ownership of a course of action is a key advantage. Accepting that each of the futures is "hypothetical" allows freer

thinking, avoiding entrenched individual positions and any full justification of feasibility.

- This technique is useful in highly ambiguous situations, when commanders confront a lot of unknowns, and are struggling to characterise the issues. As the outcomes are not known prior to the futures exercise, problem owners 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 can be resource and time intensive, although the example above was considered to be swifter than other techniques.

- Involving commanders in the futures process is the most effective way to communicate the results of this exploration of alternative outcomes, sensitising them to key uncertainties and issues. Most participants find the process of developing scenarios as useful as a final product that captures the results of the exercise. Commanders benefit from this technique in several ways:

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

  o It can help bound a problem by identifying plausible combinations of uncertain factors.

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

  o 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.

  o It generates indicators which can be used to monitor developments and assess trends.

Challenges

- The senior "problem owner" needs to accept and welcome the free thinking involved. They must also see the need to use a technique to explore wider options and justify the time and resources applied to the technique. Their vision regarding key time periods or conditions to explore during the future work can greatly assist the team in defining a revealing futures grid or grids to work on. However, when participating in the group such powerful individuals need to be sparing with their opinions to avoid the risk of the group consensus being biased toward that leader view.

- Obtaining a diverse group to conduct the futures work, encompassing many types of expertise and ensuring that they feel empowered to share their ideas in a freewheeling discussion.

- Facilitating the discussions to keep the group focussed on the problems, not wandering too far from the key topics or becoming entrenched in dogmatic positions. Stimulating the discussions without leading the group to conclusions originating from the facilitator.

Hints and Tips

- Check the pairs of variables and futures grids created to ensure that they reflect variables beyond the control of the planning team e.g. not looking at how much force

friendly forces should use or the influence of spending the available budget quickly or slowly. These are unknown because of a decision yet to be taken by our own leaders. Futures needs to focus on the effects of the environment, opponent or market place which we cannot control, not second guessing our leaders.

- Ensure that the facilitator is empowered to "Red Card" discussions that they feel are counterproductive, leading nowhere, are reiterations or overly time consuming or to silence a dominant speaker who is blocking others from contributing.

Challenge Techniques

Devil's Advocacy

Devil's advocacy is a technique where an individual or team is allowed to become the critic in a proposed approach, solution or decision. It allows the challenge of a single, strongly held view or consensus, by building the best possible case for an alternative explanation.

When to Use

The technique helps prevent groupthink and increases the chance of a high quality decision. This technique is most effective when used to challenge a consensus or a key assumption regarding a critically important issue.

- When you cannot afford to get it wrong

- When a decision needs to be help up to close scrutiny

- If there are doubts on a widely held view

- To challenge a consensus or key assumption

- When required to reaffirm a group's confidence in the judgments made in an important issue

Application

- **Step 1. Assign the devil's advocate (individual or team).** Assign the devil's advocate – provide a name tag/card that clearly identifies the person as the Devil. When assigning the devil's advocate, consider their personal attributes; this must be a person who is able to take the opposite point of view for the sake of argument.

- **Step 2. Evaluate the main line of thinking.** Using critical thinking skills, consider the main line of thinking and reasoning the group/individual has developed. Try to understand what the key underpinning assumptions are and the supporting evidence. List the assumptions. Assumptions can be those clearly stated or not.

- **Step3. Review the evidence.** Select an assumption that appears susceptible to challenge. Review the evidence to determine whether any of it is questionable validity, whether deception is possibly at play, or whether major gaps in knowledge exist.

- **Step 4. Highlight the evidence that contradicts the current thinking.** If there is evidence that may support an alternative hypothesis, decision or position, highlight where exactly it contradicts the current thinking.

- **Step 5. Present findings to the group for discussion.** Present to the group the findings that demonstrate there are flawed assumptions, poor quality evidence, or possible deception at work. If sufficient flaws are discovered, consider drafting a separate 'contrarian' paper that lays out the arguments for a different conclusion.

Example

- President Kennedy, fresh from a stinging defeat in the Bay of Pigs fiasco, appoints his brother Robert and Theodore Sorenson to play the role of devil's advocate and

critically examine alternative American responses to the placement of Soviet missiles in Cuba suggested by the president's advisory staff. The quality of decision making improves dramatically during the Cuban Missile Crisis and the US chooses and effective response to the Soviet threat.

- McDonalds launched a social media marketing campaign on twitter directed at customers to use the hashtag #McDstories to share their happy memories of the mega franchise. The assumption was made that Customers would share their stories using the hashtag, which is what the customers did, unfortunately not their happy memories, rather their bad experiences were shared instead. Had this assumption been subjected to Devil's advocacy, they may have realised that such a hashtag could also inspire the opposite reaction of what they planned.

Benefits

- Devil's advocacy highlights weaknesses in thinking or alternatively helps to reaffirm confidence in prevailing judgements by:
    - Explicitly challenging key assumptions to see if they will not hold up under some circumstances
    - Identifying any faulty logic or information that would undermine the key judgements
    - Presenting alternative hypotheses that could explain the information available

- Devils' advocacy serves 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

- Devil's advocacy can improve:
    - decision makers satisfaction with the process
    - decision makers use of ambiguous environmental cues in decision making
    - the number and quality of strategic alternatives generated

- Devil's advocacy leads to the explicit identification of previously unrecognised assumptions

- Devil's advocacy can expand a decision maker's view of the problem and weaken the narrowing influence of expert recommendations

Challenges

- The devils' advocate position is taken to an extreme and argue just to argue, preventing productivity.

- A devil's advocate can quickly become a nuisance by constantly disagreeing with what you say.

- Be aware that the playing devil's advocate may help solidify a commitment to a disastrous course of action by giving the decisions makers confidence that they considered all points of view and arrived at the decision rationally and objectively.

Hints & Tips

- 'The devil's finest trick is to persuade you that he does not exist'. That's what you want to accomplish as a Devils' advocate. This means that even as you are contrarian to someone's position, you should keep your tone positive and encouraging, and try to emphasize that the goal is to address the same problem, not just to shoot down an idea.

- How can I be a good Devil's advocate?

    o Reject the idea that anger and contrarian are the same thing. Don't let anger be the only motivation to address tough issues.

    o Ask tough questions and make challenging statements without threatening

    o Embrace politeness, always

    o Watch your body language. Maintain welcoming eye contact and open postures.

    o Convince everyone you support them. Agree, affirm, and support, a lot. Contrarian leaders finish last, if contrarian means constant disagreement. Contrarian isn't about being aloof or superior – Always show respect.

    o Maintain optimism. Contrary isn't negative.

- Strategies for being a Devil:

    o Challenge assertion

    o Ask for elaboration or examples

    o Restate a claim as a question (i.e. is this what you are saying?)

    o Propose alternative definitions

    o State a specific opposing viewpoint

- Be sure that any products generated, clearly lay out the conventional wisdom and are identified as an explicitly Devil's advocate piece of work, otherwise the reader/user can become confused as to the current official view on the problem.

Further Reading

- The Use of Devil's Advocates in Strategic Decision-Making, Schwenk, Charles R. April 1984, Available at: https://www.ideals.illinois.edu/bitstream/handle/2142/29170/useofdevilsadvoc1036sc hw.pdf?sequence=1

Team A / Team B

The use of two separate teams that contrast two or more strongly held views or competing hypotheses.

When to Use

The technique is useful when there are two (or more) different competing views towards a problem. Team A/Team B helps to resolve differences between the competing views. In general it can be used:

- When a longstanding strategic issue remains unresolved;

- On a critical decision that has far reaching implications;

- If there is a dispute within a community that has obstructed effective co-operation.

This analysis method can easily be confused with Devil's advocacy where simply Team B is given the role of Devil's advocate. Where Devil's advocacy focuses on challenging a position, Team A/Team B focuses on reducing friction and narrowing differences through focused and evidence based arguments.

Application

Analysis Phase

1. Identify the two or more competing views

2. Form two or more teams

3. Review information and identify gaps

4. Structure each argument with supporting evidence

Debate Phase

5. Independent Jury established

6. Presentation of each team's findings

7. Defence and challenge opposing team

8. Jury makes recommendations

Analysis Phase. These series of steps allow a deep analysis of each competing view to inform an evidential debate in the next phase.

- **Step 1. Identify the two or more competing views.** Identify the two or more competing hypotheses or points of view towards an issue.

- **Step 2. Form two or more teams.** Form teams to develop the best case that can be made for each hypothesis. If opposing hypotheses are well established, it can be useful to place people on teams that will advocate positions they do not normally support, forcing them to argue for the other team (enhances their awareness of their own mind set).

- **Step 3. Review information and identify gaps.** Review all pertinent information that supports their respective positions. The use of brainstorming or starbursting can also be used to facilitate this step. Identify missing information that would otherwise strengthen their hypothesis (i.e. empirical evidence).

- **Step 4. Structure each argument with supporting evidence.** Structure each argument with an explicit presentation of key assumptions, key pieces of evidence and careful articulation of the logic behind the argument.

Debate Phase. During this phase each team is allowed to present their arguments and rebuttals in a coordinated and parallel fashion.

- **Step 5. An independent jury established**. A jury is formed to be an impartial panel capable of drawing a conclusion. Neutrality in position is preferred in the formation of an independent jury.

- **Step 6. Presentation of each team's findings.** Each team are allocated a time to present their findings that support their hypothesis. During the presentation step the jury are able to question the teams regarding their assumptions, evidence or logic.

- **Step 7. Defence and challenge of opposing teams.** Each team are allowed time to challenge the other team's arguments, and defend themselves against the opponent's critique. It is important at this stage that a facilitator ensure fairness and prevent dysfunctional behaviours which is most likely to occur at this step.

- **Step 8. Jury makes recommendations.** The jury is given time to consider the strength of each presentation and recommend possible next steps for further research.

Examples of application

- Deputy Chief Intelligence George Bush commissioned a Team A/Team B on the subject of Soviet Strategic Objectives in 1976. Team A consisted of CIA analysts and Team B consisted of outside experts. The use of external experts can enhance the credibility of the final outcome of the issue you were initially trying to resolve. However, the results from this example application of Team A/Team B were perceived to question the value of the analysis overall and became a controversial topic.

    o When using external experts be prepared for an outcome that is not what was expected.

Benefits

- Team A/Team B analysis can help opposing experts see the merit in the other groups' perspective.

- The process of conducting Team A/Team B can reduce the friction and even narrow the differences. At a minimum, it allows holding opposing views to feel that their views have been given equal attention

- For the Commander and decision makers, Team A/Team B helps to surface and explain important differences in views. They can learn more by weighting well-argued conflicting views than from reading a point paper that masks substantive differences or drives analysis to the lowed common denominator. By making the key assumptions and information used for each argument more transparent it is easier to judge the merits of each position and reach an independent judgement on which argument is the strongest.

Challenges

- If each team has very strongly held opposing views the debate phase will require an experienced facilitator.

Hints & Tips

- The facilitator should assign and enforce strict time limits during the debating phase to overcome unintentional bias.

- Search the internet for the term 'how to debate' and 'debating skills' if you require ideas of how to present a team's findings during the debate phase.

Further Reading

- Re-examining the Team A-Team B exercise, Robert C. Reich, International Journal of Intelligence and CounterInterlligence, Vol 3. Issue 3, 1989.

Pre-Mortem Analysis (PM)

Pre-mortem analysis is an application of mental simulation; the objective is to explain why a plan might fail. The premise for pre-mortem analysis is that people may feel overly confident once they have arrived at a plan due to the cognitive bias to "buy-in" to something on which much effort has been devoted.

Groupthink could also bias the group into a feeling of "invulnerability", expecting any plan they generate to be highly effective, due to the strength of the underlying military forces and the competence of the planning team. This bias can affect even highly experienced planning teams, who should thus apply available techniques such as PM to attempt to guard against this effect.

This is a powerful tool with specific application to Operations Planning. The pre-mortem analysis uses reverse brainstorming on an existing plan rather than an existing problem. In a military context failure is a difficult concept to address, as military members are averse to dealing with the concept even in a "hypothetical" way. However, there are significant benefits to be gained from this method as shown below.

When to Use

- Can be applied in any situation where a plan is explicitly formulated.

- In an operations planning context, the ideal time to use a pre-mortem analysis is just before a wargaming step in the planning process, either the wargame that analyses proposed COAs or the wargame that refines the selected COA into the concept of the operation.

- It is frequently the case that during the various planning stages conducted; members of the planning team have (by virtue of group pressure and the desire to conform) withheld their misgivings regarding aspects of the plan. Done correctly, pre-mortem analysis is a technique to bring forth these issues so that they may be identified and corrected or mitigated.

Application

There are two possible methods of applying the technique as described below.

Method 1: In the first method pre-mortem analysis requires one person to take notes in a round table group session. For best results the session must be limited in duration to no more than 30 minutes, ideally 20. During this period the following steps are performed:-

- **Step 1: Familiarisation with plan.** In preparation, participants should already be familiar with the plan being analysed.

- **Step 2: Set up challenge.** The AltA Facilitator should challenge them imagine a fiasco. The plan has failed, a total, embarrassing failure. Then ask; "What could have caused this?"

- **Step 3: Generate the reasons for failure.** This can be done using e.g. brainstorming or brain-writing techniques (similar to techniques 4 and 5). 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.

- **Step 4: Cross-check against plan.** Re-visit the plan using the comprehensive list of concerns to determine what to consider mitigating. Planners may begin to develop potential branch plans at this point.

- **Step 5: Periodically review the list**. Repeat this review 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.

Method 2. The second method is to formulate a written question which is passed to the planners with space for their comments. While this technique takes longer to yield results, it is especially effective in harnessing the views of those who are more challenged in group settings and may have less advocating or linguistic skills. The collection activity could last 24 - 48 hours, while the collation & review should need up to 1 man day. The team meeting to review findings and assign corrective actions is again a short one, although it requires a wide audience of planners. The technique helps the planning team to get the best benefit from the experience of each assigned member. To conduct this method, perform the following steps:-

- **Step 1: Familiarisation with plan.** In preparation, participants should already be familiar with the plan being analysed.

- **Step 2. Formulate failure questions and distribute.** In concert with the problem owner, formulate a suitable questions addressing the failure of the plan under consideration. To provide a measure of anonymity, it may be best to offer these in the form of a paper slip which is filled in and dropped into a collection box, or to use a survey collection web tool. Ensure that you set a firm deadline for replies to be submitted.

- **Step 3. Analyse replies.** Collect and collate the replies received attempting to group the replies into categories by failure cause e.g. logistics, understanding of opponent, shortage of weapons/troops, timing or the effects of other regional actors etc.

- **Step 4. Present results to planning team(s).** Present to the planning team(s) in a non-attributable form the concerns received (and frequency information if applicable i.e. how many participants mentioned this). Identify any suggested "unprecedented events"; a "black swan" type event. This could trigger a separate requirement to conduct Alternative Futures Analysis for example.

- **Step 5: Group review of concerns.** Review in group the concerns, ranking them for criticality to the plan and priority to plan or mitigate their impact. As time permits it can be worthwhile to conduct a second round of questioning to again review the updated plan to attempt to identify further recognised weaknesses.

- **Step 6: Periodically review the list.** Repeat this review 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.

Example: PM Analysis – Steadfast Jazz 13 Operations Planning

Stage 1 – Question Development

- In this case order to capture opinions from the diverse planning team (about 60 people since it was a training event), the following questionnaire was prepared and distributed during a plenary session. The objective of the Pre-Mortem analysis was explained to the planners.

Stage 2 – Soliciting Views

- A collection box was provided in an open area for participants to drop off their completed forms. With only a little encouragement from the AltA Facilitator ("Have you had time to fill in the Pre-Mortem question ....) A total of 33 replies were collected and collated together to identify themes, and categorise the information received. A "+" sign was annotated to each subsequent version of the same problem (capturing the frequency of that problem view).

Stage 3 – Collation and Analysis of Input

- The replies received were collected together and categorised by the analyst, looking to identify common threads, key themes and also any "off the wall" inputs which could perhaps help to identify problems while there is still time to pre-plan corrective action. The categories used were developed from reviewing the input received.

Input received broken down by category

Assessment of Regional Situation
- Asymmetric attacks on NIMFOR +
- Deterrence needs B1/B52's, might not be available
- Lack of full commitment by nations to NIMFOR
- Lack of full review of situation in Theatre ++
- Low political commitment

Assessment of Opponents
- KAM air forces move to STE and fight as one entity +
- Chemical BM attack on LCC forces in TP
- STE attacks via PET
- Unexpected escalation to include STE attack
- Wrong J2 assessment - STE uses WMD

Planning Methods
- Lack of LCC/MCC planners in support
- Lack of preparation for casualties / body bags
- Poor AOPG, lack of trained planners
- Poor Operations design +
- Spent too long on the details of the plan

Sustainment & Logistics
- Fuel availability
- Heavy & vulnerable logistic footprint
- Long LOCs +
- Pipeline from Osman broken +
- Sustainment problems, airways down Red Sea
- UNAKOS fuel infrastructure vulnerable

Maritime Shipping Routes
- Impact of Piracy onto SLOCs leads to poor resupply
- Loss of Osman SPOD +
- SLOCs blocked by STE with SSMs/Aircraft
- SSMs against ships close SLOCs

Support to Land Component
- Loss of initiative in air due to LCC support
- Poor airspace control plan - will cause fratricide
- Poor co-ord with LCC
- SA-10 impedes CAS Ops, preventing support to LCC
- Too much effort supporting LCC, loss of control of air

Air Defence Design
- AD posture too CAP based, use more QRA
- Poor air defence cover

Shortage of Resources
- Insufficient MCC carrier air assets
- Lack of NIMFOR assets if simultaneous attack ++ +++
- Lack of sufficient standoff weapons/TLAM +
- Too few AAR assets

Host Nation Issues
- Loss of support from TYT population
- No plan for TYT forces, must not kill/expose them

Stage 4 – Review of Concerns / Identification of Corrective Actions

- Working with a small team including the problem owner, the themes were assessed for validity and importance before conducting a wider plenary meeting to discuss and review the concerns. Teams of planners were then tasked to review the plan and recommend correction of the plan to prevent such a failure occurring for the issues identified as critical to ensuring success. The short list of top problems identified is tabulated below, together with a list of remedial actions identified for follow up:

Failure Causes - Pre-Mortem Views (short list)

- Coordinated STE/KAM attack
- Lack of NIMFOR assets
- Fuel supply, logistic support, dependency on Red Sea Air routes & SLOC
- Lack of understanding of the theatre situation
- Poor coordination with LCC, leading to fratricide

Things to Refine in Plan (short list)

- Coordinate action with LCC, prevent fratricide
- Ensure that COAs can deal with simultaneous/coordinated STE/KAM attack including sufficient assets
- Improve Operations Design, e.g. have a separate Air Design with own objectives and "stepping stones"
- Increase understanding of the theatre situation
- Protection of Osman SPOD, keeping the harbour open
- Reduce dependency on Red Sea Air routes & SLOC
- Robustness of logistic support and fuel supply system

Benefits

- This technique is both simple to use and straightforward to understand. When used during the operations planning process it will empower the leaders (supported by AltA) and the larger planning team, to question the premise of a proposed course of action, assumptions, or specified tasks.

- The use of a pre-mortem analysis will help to break the ownership of a particular course of action by a thorough (if in method 1 rapid), session of answering the question, "What would cause this course of action to fail if it is the basis for the operations plan?" Breaking down the bonds of "ownership" is an essential part of making a cool headed appraisal of the effectiveness and robustness of a plan or COA, helping to accept information which counters the cherished assumptions of a plan.

- Remaining aware of the possibility and consequences of failure, and actively seeking out such issues for corrective action can greatly enhance the ability to develop a plan capable of successful implementation, or at least one which is aware of the nature and scope of any risks which are knowingly taken.

Challenges

- The senior "problem owner" needs to accept and welcome the free thinking involved. They must also see the need to use a technique to explore wider options and justify the time and resources applied to the technique. The criticism of the plans or COAs must be taken in a constructive way to isolate and eliminate possible weaknesses.

- Ensuring the wide participation of a diverse group of planners to conduct the PM work, encompassing many types of expertise and ensuring that they feel empowered to share their ideas.

- At the review stage, facilitating the discussions to keep the group focussed on the PM identified problems, not wandering too far from the key topics or becoming entrenched in dogmatic positions. Stimulating the discussions without leading the group to conclusions originating from the facilitator.

Hints & Tips

- If possible test out the question to be used with a "focus group" to ensure that the wording is as clear as possible. This will minimise spoiled returns or irrelevant comments. Try to make it clear that we need to focus on issues that we have the power to mitigate e.g. we can't stop a meteor hitting a city.

- Request legible input, or use a computer based survey tool to receive typed input.

- Reassure participants of the anonymity of their inputs. They need to be free to criticise any element of the plan, planning or leadership, without fear of adverse consequences. Negotiate this with the "problem owner" based on the benefits that can be obtained from a frank set of inputs and a diverse range of expertise (exactly why the planning group has a wide representation of nations, services and experience).

- At the review stage, ensure that the facilitator is empowered to "Red Card" discussions that they feel are counterproductive, leading nowhere, are re-iterations, overly time consuming or to silence a dominant speaker who is blocking others from contributing.

What If Analysis

Assumes that an event has occurred, which has resulted in a negative or positive outcome. What if Analysis explores the possible explanations of how the event might come about. This helps to identify the appropriate safeguards required to protect against potential problems in the future.

When to Use

- If there is a strong mindset that an event may not occur as planned.

- If a confidently made forecast may not be clearly justified.

- When there is a need to understand how an event may come around in the future.

- When there is a need to identify the key stakeholders when such an event occurs and what issues should be addressed prior to an event occurring.

Application

- **Step 1. Assume the event has happened.** Agree what the event is and what the world would look like if the event has happened. Develop a statement which simply describes the event as it would look like in the future.

- **Step 2. Identify possible trigger events.** Using the brainstorming technique identify all possible triggering events that permitted the event to unfold through a possible chain of other events.

- **Step 3. Examine plausible pathways to the event.** Using the triggering events identified in Step 3 identify one or more plausible pathways to the unlikely event. Draw links and relationships between trigger events to identify the multiple pathways as the scenario may develop. Working backwards from the event in concrete ways, specifying what must actually occur at each stage of the scenario can help this step.

- **Step 4. Develop lines of argument for each pathway.** As the linkages are drawn between events, for each pathway to the event, develop a line or argument or a story line that is based on facts, logic and evidence to explain how the event may become possible. Consider the scope of the positive and negative consequences of each event and their relative impacts.

- **Step 5. Generate indicators.** Generate a list of indicators or observable events that would help to detect the beginning of the event (the beginning of the potential pathways) and signs that it is evolving along a pathway.

- **Step 6. Monitor indicators.** Monitor the indicators developed on a periodic basis and make an assessment of the situation.

Example: Corruption in Afghanistan

The Event: International forces are perceived to be corrupting Afghanistan.

What would the world look like. Afghanistan is often portrayed as a corrupt nation in many reports, surveys and opinion articles. But the Afghan Government wants to eradicate this stain of corruption. International forces agree to assist the government. But the presence of the international coalition contributes to Afghan corruption. Corruption thrives, not in spite of international forces' efforts but because of these efforts
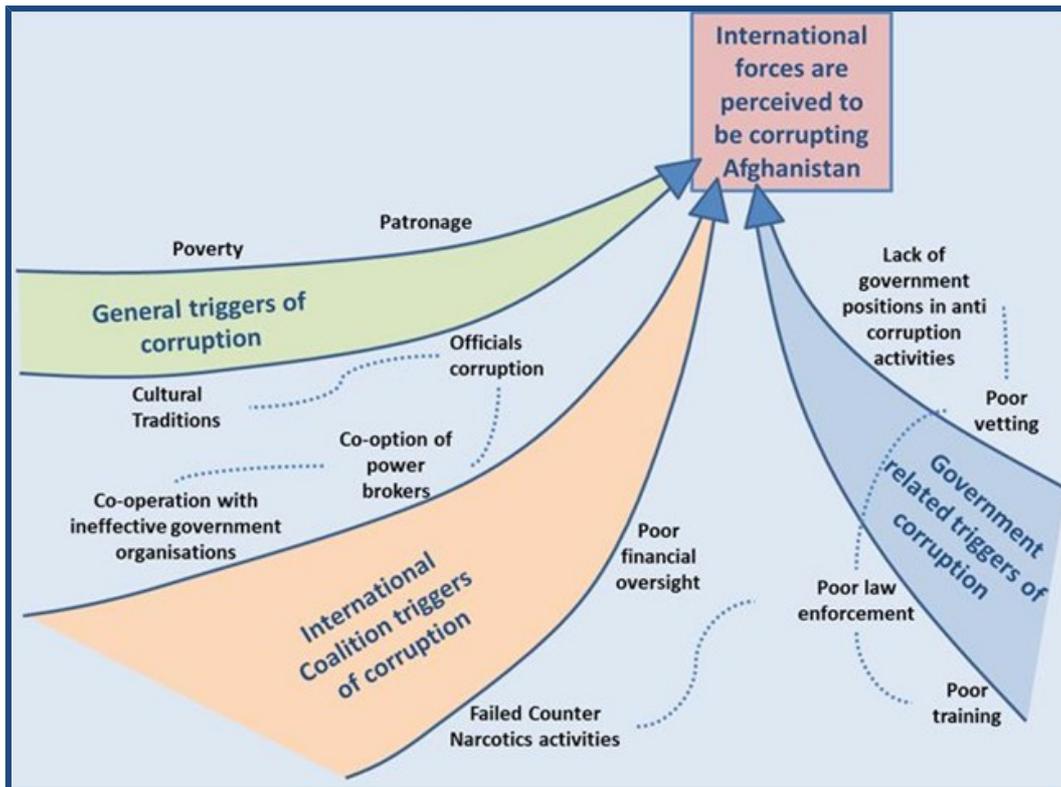
Benefits

- Shifts the focus from whether an event could occur to how it may happen.

- Frees staff from arguing about the probability of an event and consider its causes.

- If judgement rests on limited information or unproven assumptions this analysis method allows exploration of the potential factors that could cause or alter an event.

- Helps develop indicators for an event's possible emergence to prime action.

Challenges

- Results from this type of alternative analysis can be highly sensitive, particularly as it may highlight weaknesses in plans or capability gaps.

Hints & Tips

- Use creative AltA techniques to facilitate steps 2 and 3.

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PART 3: ALTA FACILITATION

(insert here nice picture of a facilitator)

Introduction

The use of a facilitator is an underpinning part of the AltA capability. While the application of AltA techniques may not always need the assistance of a facilitator, it is likely that a good one will improve the outcome of the application.

The AltA Course will train the basics of facilitation but it should be recognised that this is a skill which some people have naturally and others will have to work at. It is also important to recognise the difference between chairing a meeting and facilitating a meeting. As the Chair you have a vested interest in the outcome. As a facilitator you simply want the meeting participants to come up with the best outcome that they can regardless of what that outcome means.

The role of the facilitator is similar to a midwife, who works to assist the process of creation without themselves being the producer of the end result. Facilitation is described as:

> "A structured meeting, in which a person (the facilitator) guides the participants through a series of pre-defined steps to arrive at a result that is created, understood and accepted by all participants."[7]

Group facilitation is an art and a skill, a science and an intuition. The aim is to build a team that is excited, committed and focussed on getting an answer to a problem. It should be used when more than a few people are involved and understanding and buy-in are needed.

Role of the facilitator

Before starting a facilitated session, the AltA facilitator must agree with the problem owner what the role of the facilitator will be during the session. After that it is all about preparation. In the pages below there is one model that you may choose to use to prepare and manage a facilitation session. There are of course other ways of doing it but this might be a good starting point. Michael Wilkinson's book, "The Secrets of Facilitation[CITATION Mic12 \l 1033]" is the principle reference, and hence a good resource for this method.

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7 *The SMART Guide to Facilitation*, Michael Wilkinson, Jossey Bass Press, 2004.

Asking Questions
Design your questions to get better answers

The Facilitation Cycle

Preparing for Success
Know your 5 Ps

Getting the Session Started
Inform, Excite, empower, involve

Focusing the Group
Establish the Course, avoid detours

Using the Pen
Use it, don't abuse it, make it theirs

Information Gathering
Know your tools and how to use them

Closing the Session
Review, define, evaluate, end, debrief

Group Dynamics

Managing Dysfunction
Conscious prevention, early detection, clean resolution

Building Consensus
Create and maintain a consensus-focused process

Keeping the Energy High
Set the pace, anticipate the lulls

Agenda Setting
*Adapt your agenda to address the need*

Figure A-1:The Principles of Smart Facilitation (Wilkinson, 2012)

Questions

There are principally two types of questions that can be used within a facilitation session: closed questions and open questions. Starting with the right type of question is fundamental to success. What you are aiming to do is to 'paint a picture' and inspire wider thinking rather than shut down creativity by asking closed questions. Inevitably open questions take more thinking about, which is why preparing the initial question is so important. As an example:

Closed question:

- Is the damage caused by water ingress?

- Do you have any idea why this has happened?

- Are you responsible for this?

Open question:

- What do you think is causing this problem?

- How many alternatives can you think of?

- When did this happen?

Preparation
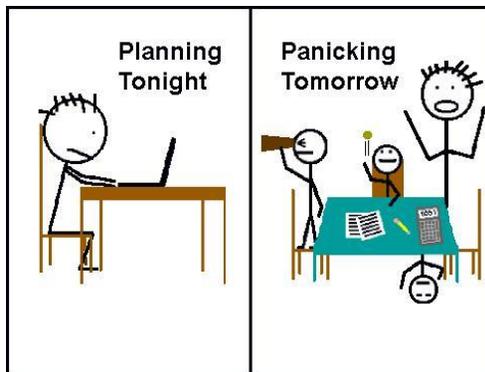
It is important to know the '5 Ps' before you start:

Purpose. Why are we holding the session? What is the key Problem and what are the key objectives?

Product. What do we need to have when we are done? How will we know when we have been successful? What are the criteria for success?

Participants. Who needs to be involved, and what are their perspectives? What are the skills and competencies and experience that are needed within the group to have confidence of success?

Probable issues. What are the concerns that will likely arise? What are the "gotchas" that could prevent us from creating the product and achieving the purpose?

Process. What steps should we take during the meeting to achieve the purpose, given the product desired, the participants and the probable issues that we will face? How are we going to implement any outcomes from the session?

You will begin to see that most of the success in a facilitation process is built in the preparation phase. By clearly identifying these elements before you start, you will have a much better chance of keeping the discussions on track and delivering the intended product at the end.

It is also important to understand what is achievable and what is simply beyond the ability of the group to deliver. Keep the outputs as simple as possible – you can always develop an iterative process that builds on the successes of earlier sessions.

Getting the session started

It is very possible that the team gathered in the room at the start of the session may not want to be there or, more likely, do not fully understand why they are there. The facilitator will have a significant task to bring the elements and expertise in the room into focus and sufficiently enthusiastic about what they are doing to really deliver the benefits of the team dynamic.

There are many different techniques that will not be covered in detail in this guide but some will be dealt with on the AltA course.

The facilitator must remember above all else that he is there to assist with the delivery of the output and not to impose his will or views on the problem. Structure, ground rules and timeliness are key components of a successful session and setting these out at the beginning (then sticking to them) helps the team to understand where they are going and what is expected of them.

Equally, any rules that are established have to be agreed, or at least conceded, by all in the room. Try not to spend too long on this (again, preparation is key) as there is no point booking an hour-long facilitation session where 50 minutes is taken up with a discussion about the agenda. It is suggested that you have about 15 minutes to make your impression and get the team excited and involved so think how your opening question might do that. Make it personal. Use words like 'you' and 'your' within your opening statements and maybe even court a little controversy to challenge people's perception.

Example Ground Rules for an AltA Facilitation Session

Sessions start on time; there will be no review for latecomers;
Agenda times are flexible;
Agenda times are fixed, even if we have to curtail discussions
No distractions: no checking email / reading papers
Breaks will be taken when the group lead says so / or when the group decides
Constructive feedback only;
All ideas are to be considered

Figure A-2: Example Ground Rules for Facilitation

Focus

With an interesting topic it is very easy to go off on a tangent during a session. The facilitator must have some techniques lined up to keep the team heading towards the product within the time allocated and the agreed ground rules. One way of doing this is to break the problem/question down a little and have checkpoints along the way – in effect sub-questions that build a complete picture throughout the discussion. This also helps to prevent staff from going back – i.e. we reach a point of agreement then move on. It is also a useful way of building breaks into the day and gives a sense of purpose and momentum.

Checkpoints are also useful to review progress after a break and get the team re-engaged with the problem by reminding them of where you have got to and where you still have to go.

If something comes up that really does need to be considered then think about using something like a 'parking board' to ensure that it is not lost and to ensure that the staff member who raised it still feels that his voice is being heard. Remember to re-visit and put actions against issues on the parking board before you finally close the session.

Setting the pace and keeping it going

There will be lulls during the session and a good facilitator does not want the team to burn out too soon when there is still much to do. Careful agenda preparation and the use of checkpoints help to manage this. If one element of the discussion is drying up then be prepared to move to another or to consider a different viewpoint on the one that had been used up until then.

If you are doing a brainstorming and it does not seem to be going well then why not consider turning it around and doing a reverse brainstorming instead. It may just free up the creativity that has been blocked. You can always return to the original intent later. The trick is to keep the team excited by the work and wanting to contribute to the outcomes.

Remember, spot the lull coming and take action before it happens.

Using the Pen

Traditionally, facilitation sessions revolve around whiteboards, flipcharts, post-it notes and pens. The person with the pen wields immense power and needs to take great care how he uses it. Facilitators should not question what people want on the board or interpret it into their own words but should write what they said, not what you heard. However you can ask the contributor to 'headline' (i.e. if you were writing this as a newspaper article, what would the headline be?) what they have just said if you feel that their comment is too long for the paper.

Gathering information
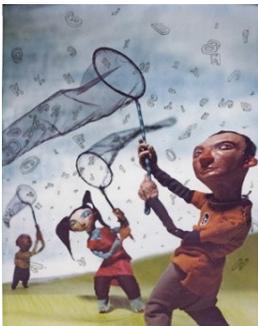
Somewhere in the room should be all of the information that you need to get to an outcome (assuming that the team you have is the right team). The trick is getting them to disclose that information. Remember that information is power and there is sometimes a reason why people may hold back on a vital piece in order to maintain that control that they want.

It is not particularly important which order the information comes in as long as it is all revealed. You can always sort the order later. Techniques such as brainstorming or brainwriting are often useful in capturing the knowledge of the whole team.

It is also useful for the facilitator to have an understanding of his team and where they come from so that he can 'tease' the necessary information from the relevant experts if necessary.

Closing

Once you have got to a natural conclusion, either by agenda or by consensus, it is time to review, define, evaluate, end and debrief the session. Remember your team will be tired and ready to go but it is vital to not rush this stage and to get an end product that is agreed by all even if you have to wind back to an 80% answer rather than the full solution.

What you are looking for at the end depends on the question that you set at the start. It may be that you need a set of agreed decisions or a new programme of work. Whatever happens, you need to make sure that something comes out of day and that the team feel that their efforts have been worthwhile.

If the output is a set of actions then make sure that they follow the principles of SMART and understand who is going to follow up on the work as it will probably not be the facilitator. Actions need owners and timelines or they become pretty worthless.

Make sure that you review everything that has been covered. Re-visit the Parking Board and agree what is to be done with items on it. Check that you have a method for capturing all of the data that has been presented and agree with the team what is going to be done with it.

Encouragement and Motivation

More than anything else, the Facilitator needs to be able encourage and motivate the team that he has before him. Understanding the team is fundamental to this as a misplaced action or comment can completely destroy any further creativity. A Facilitator also has to have the energy to carry the team along with him on what may often be long days.

Think about the way that you use your voice. Despite the language differences in NATO it is always possible to consciously increase your intonation and modulation on what you would normally use. Remember to speak and

enunciate clearly, emphasising key words and phrases. Slow your speech down, get the arms waving and move around. If the team do not know where you are going to go next they may well stay awake long enough to find out and remain engaged in the session.

Using praise is a valid but tricky technique as you want to avoid appearing prejudiced. If used try to spread the praise and encourage agreement from others in the room. Similarly, if elements of the session involve some form of presentation then it would be entirely appropriate to have a short period of applause to recognise the effort that the presenter has made.

In a long session, think about how you will deal with the inevitable drops in energy. Typically these will occur at 1030, 1330 and 1500 but the overall threat in the early afternoon is very high, particularly if there has been a good lunch involved.

Primarily the only effective way to deal with this is by movement and changing the environment. Your options are to have small group breakouts; conduct a short team-building exercise or some sort of facilitated process that includes movement. Long presentations, reading or individual exercises should be firmly avoided during these periods.

When it goes wrong

Despite all the best planning and preparation, sometimes the facilitation session will not go as expected and the facilitator must have tools available to him to try and deal with this. The main problems you will encounter come from resistance to change and express themselves in dysfunctional behaviour.

Resistance

The past is gone; the present is full of confusion and the future scares the hell out of me! – David L Stein

People are naturally conservative and do not want to change what they do or how they do it. They are often comfortable with what they are doing and will needed to be persuaded of the benefits of the proposed change probably without fully understanding the full implications of the proposal. As a facilitator you will hear a multitude of reasons why it won't work ranging from "we tried that before' through "we have always done it that way" to "it can't be done" and "I'm playing cricket".

People resist change for many reasons but largely because the change is perceived by them to be negative or they do not want to deal with the reasons for it. This leads to a fear of:

- Loss of credibility or reputation

- Lack of career or financial advancement

- Possible damage to relationships with superiors

- Loss of employment

- Interpersonal rejection

- Change in job/role

- Embarrassment/loss of esteem

- Job transfer or demotion

- Loss of control.

The resistance will manifest itself in what people say and, often more importantly, in what they do. The facilitator must therefore be alert in identifying this resistance by:

- Watching how people behave

- Listening carefully to what they say.

At Error: Reference source not foundthere are some examples of forms of resistance and responses that might be used by the facilitator to help overcome them however there are probably many more.

Resistance Forms	Comments	Acknowledgement/ Response Examples
Attack (project or personal)	Most blatant form of resistance	"You are really questioning a lot of what I do" "You seem really angry about something"
"Give me more detail"	Stakeholder has an insatiable appetite for detail	"We are getting into a lot of detail"

"We're unique/different"	"Our business is too different, it can't work here"	"Are we really that different? Are there any lessons we could learn from others?"
"No time"	Means: "You are not a priority"	"You don't have the time to work with me. I am having a hard time trying to proceed without your involvement"
Silence	Toughest to deal with	"I don't know how to read your silence"

Table A-1: Resistance forms and responses

There are 3 fundamental steps to dealing with resistance:

- **Step 1 – Identify the form that the resistance is taking**

    o   Trust what you see more than what you hear

    o   Listen to yourself – use your own feelings as a barometer

    o   Listen for repetition / tell-tale phrases

- **Step 2 – Acknowledge and name the resistance**

    o   Tell the person your perception of the resistance

    o   Do it in a "win/win" manner; neutral, non-aggressive manner – "what I think I hear you saying is...."

    o   Tell the person how the resistance is making you feel

- **Step 3 – Be quiet, listen, let the person respond**

    o   Get the person talking

    o   Encourage full expression of the concerns

o   Gradually uncover underlying resistance / issue- be aware of other forms of resistance surfacing

Ideally the facilitator would do all that he can to minimise the resistance before he has to deal with the impact of it. Many staff will be initially uncomfortable with applying some of the AltA techniques and the facilitator will have to be sensitive to this.   A few strategies to help reduce the impact of this problem are listed below [CITATION Blo11 \l 1033].

- Identify the benefits
- Explain why change is necessary
- Invite and answer questions – solicit participation and, if possible, early involvement
- Avoid surprises – over communicate
- Recognise and reward effort
- Give more feedback that usual to ensure people always know where they stand
- Encourage people to think and act creatively

There are of course there are actions that, as a facilitator, you should not do, for example:

- Fight the resistance
- Take it personally
- Go into more data collection and get obsessed by detail
- Avoid or collude with the individual
- Work more with your 'Allies' than the 'resistor'
- Give too many reasons
- Lose your confidence
- Expect to have all of the answers
- Avoid giving bad news
- Use aggressive or demeaning language

- Delay or wait just one more day

- Expect approval, encouragement, support and affection

Above all, remember that, most of the time, **it is not personal**.

Dysfunction

Unmanaged resistance will often give rise to dysfunctional behaviour in the team. Dysfunctional behaviour is any activity by a group member that is consciously or unconsciously expressing displeasure with the session, content or purpose, the facilitation process, or outside factors. Dysfunctional behaviour is a symptom, not a root cause. Examples of dysfunctional behaviour are given in figure

This sort of behaviour can also be plotted on a continuum:
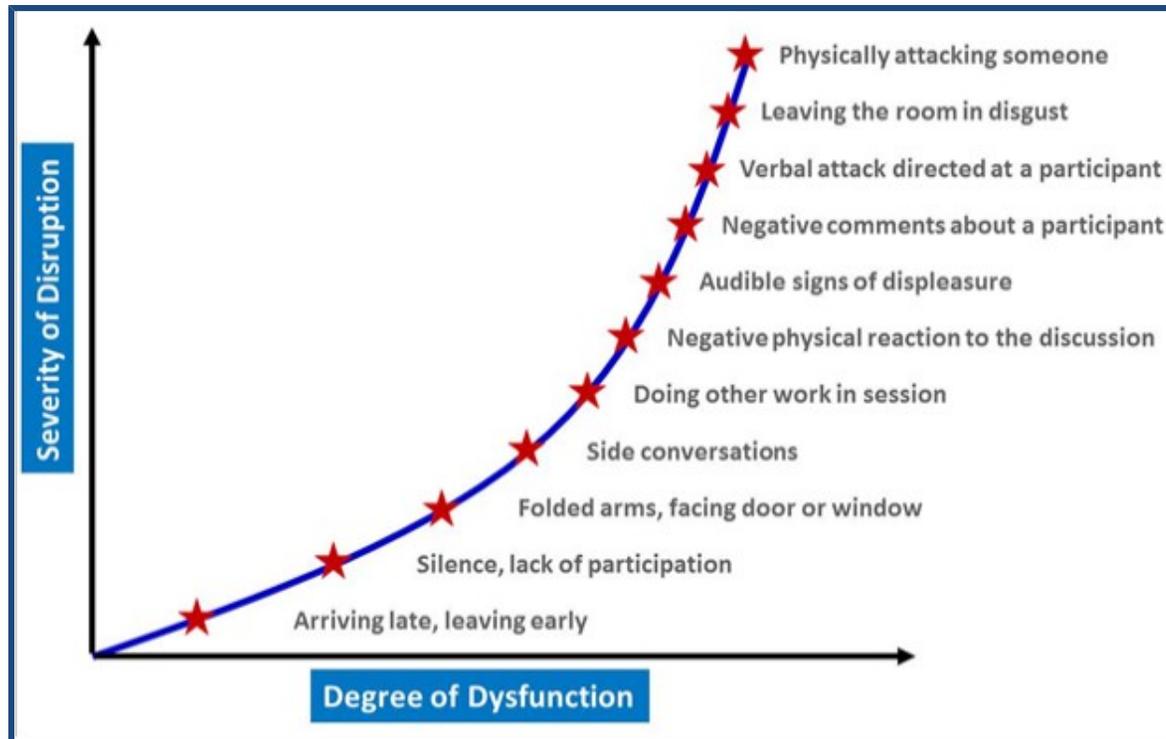
Figure A-3: Degrees of Dsyfunction

A facilitator should be constantly on the lookout for early signs of dysfunction. There are some obvious and more subtle signs to look out for:

- Participants who are not speaking

- Participants who may be complaining or objecting privately to a neighbour through side conversations

- Participants whose outward expressions seem to indicate that they are not buying in

- Participants whose body language seems to indicate uneasiness with the session, such as folded arms, legs crossed, or bodies leaning away from the centre of the room.

Dealing with dysfunctional behaviour will vary depending on the nature of the dysfunction, when it occurs, the number of people affected and the probably root cause. There are some recommended steps a facilitator can take to help resolve the behaviour. Initially, the facilitator may want to approach the participant privately as publicly calling attention to the person's behaviour might get in the way of resolution.

- Empathise with the symptom – express concern about the situation.

- Address the root cause – make an effort to get at the real issue – ask a question that will yield a response that confirms the issue

- Get agreement on a solution – dependent on what the issue is.

Body Language

A facilitator needs to be very well attuned to the non-verbal communication during the facilitation session. When we interact with others, we continuously give and receive wordless signals. All of our non-verbal behaviour—the gestures we make, the way we sit, how fast or how loud we talk, how close we stand, how much eye contact we make—send strong messages. These messages don't stop when you stop speaking either. Even when you're silent, you're still communicating nonverbally.

Often, what comes out of our mouths and what we communicate through our body language are two totally different things. When faced with these mixed signals, the facilitator has to choose whether to believe the verbal or non-verbal message, and, in most cases, they will choose the non-verbal because it's a natural, unconscious language that broadcasts true feelings and intentions in any given moment.

There are a multitude of signs to look for but here are some simple ones are presented in Table A -2[8]

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8 Adapted from Jeanne Segal, P. M. (2014, May). NonVerbal Communication. Retrieved September 25, 2014, from HelpGuide.Org: http://www.helpguide.org/mental/eq6_nonverbal_communication.htm

Defensive signs[9]

Some of the common signs that the person you are speaking with may be feeling defensive include:

- Hand/arm gestures are small and close to his or her body.

- Facial expressions are minimal.

- Body is physically turned away from you.

- Arms are crossed in front of body.

- Eyes maintain little contact, or are downcast.

By picking up these signs, you can change what you say or how you say it to help the other person become more at ease, and more receptive to what you are saying.

Equally, if you are feeling somewhat defensive going into a negotiating situation, you can monitor your own body language to ensure that the messages you are conveying are ones that say that you are open and receptive to what is being discussed.

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9 Adapted from http://www.mindtools.com

Evaluating non-verbal signals	
Eye contact	Is eye contact being made? If so, is it overly intense or just right?
Facial expression	What is their face showing? Is it masklike and unexpressive, or emotionally present and filled with interest?
Tone of voice	Does their voice project warmth, confidence, and interest, or is it strained and blocked?
Posture and gesture	Are their bodies relaxed or stiff and immobile? Are shoulders tense and raised, or slightly sloped?
Touch	Is there any physical contact? Is it appropriate to the situation? Does it make you feel uncomfortable?
Intensity	Do they seem flat, cool, and disinterested, or over-the-top and melodramatic?
Timing and pace	Is there an easy flow of information back and forth? Do nonverbal responses come too quickly or too slowly?
Sounds	Do you hear sounds that indicate caring or concern?

Table A-2: Evaluating non-verbal signals

Disengagement

Ideally, when you stand up to deliver a presentation or work with group, you want 100% engagement with all concerned. Some of the typical signs and signals of people not being engaged include:

- Heads are down.
- Eyes are glazed, or gazing at something else.
- Hands may be picking at cloths, or fiddling with pens.
- People may be writing or doodling.

- They may be sitting slumped in their chairs.

When you pick up that someone appears not to be engaged in what is going on, you can do something to re-engage him or her and bring their focus back to what you are saying, such as asking them a direct question.

Lying

Some of the typical signs and signals that a person is lying include:

- Eyes maintain little or no eye contact, or there may be rapid eye movements, with pupils constricted.

- Hand or fingers are in front of his or her mouth when speaking.

- His or her body is physically turned away from you, or there are unusual/un-natural body gestures.

- His or her breathing rate increases.

- Complexion changes such as in colour; red in face or neck area.

- Perspiration increases.

- Voice changes such as change in pitch, stammering, throat clearing.

Desirable Qualities for an AltA Facilitator

Facilitating a group is not easy, but with sufficient practice it can yield very valuable results, especially when combined with AltA techniques. The AltA Facilitator should strive to develop 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:

- **Rational.** Exhibits critical thinking skills: relies on reason rather than emotion; considers all known evidence; follows evidence where it leads; is more concerned with finding the best explanation than being right, analysing apparent confusion and asking questions.

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

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

- **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.

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

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

- **Courageous.** Has the ability and confidence to present—in a constructive manner—potentially unpopular or challenging arguments that go against perceived "group norms."

Summary

Facilitating a group is not easy. It takes practice, preparation, confidence and a degree of innate skill. Anyone should be able to do it but some people will inevitably be better at it than others. As a Facilitator you must always keep an eye on the end state (and the clock). While you may not always get to the result that you thought that you wanted, as long as the whole team have contributed and you have had the opportunity to give all of the relevant issues a good airing, this should not be considered a failure.

Recognise and use the strengths of the team in front of you. Look for the opportunities to engage the quiet ones who might have that vital piece of information that unlocks the whole problem. Take charge of and guide the loud ones. Recognise that they too may have something valuable to give so try and get it then make room for the others to have their say.

Maintain the energy of the group. It will go up and down but if you adjust your programme to the natural rhythms of the day, you can still maximise the output of the team.

In any session the Facilitator must constantly balance the process with content, provide an impartial space for group discussions, and deal with dysfunction behaviour as it occurs.

Be patient, non-judgemental and positive. Always think before speaking. It is far too easy to inadvertently cause offence and destroy the group dynamic.

Finally, believe in what you are doing and that you can make a difference. Learn from every session that you run and apply the good bits and bad bits in future sessions.

Further Reading for AltA

ANNEX A:

ANNEX B: The following books, websites and reports are recommended for those with an interest in AltA.

- Bi-Strategic Commands Concept for Alternative Analysis (AltA) dated 23 Apr 12.

- Red Team Handbook, University of Foreign Military and Cultural Studies v.5, dated 15 Apr 11.

- Red Teaming Guide, DCDC Guidance Note, UK Ministry of Defence, dated Jan 13.

- NATO Guide for Judgement-based Operational Analysis in Defence Decision Making. 2012. RTO-SAS-087, dated March 2012.

- http://www.mindtools.com/

ANNEX C: Title	ANNEX D: Authors	ANNEX E: Recommended Pages	ANNEX F: Synopsis
ANNEX G: Nudge: Improving Decisions About Health, Wealth and Happiness	**ANNEX H:** Richard H. Thaler and Cass R. Sunstin	**ANNEX I:** Ch 1 & 3	**ANNEX J:** Describes how we make choices and why we make mistakes
ANNEX K: Sway: The irresistible pull of irrational behaviour	**ANNEX L:** Ori Brafman and Rom Brafman	**ANNEX M:** Ch 1 & 8	**ANNEX N:** Discusses the forces that influence every aspect of our lives including loss aversion diagnosis bias and chameleon effect.
ANNEX O: Predictably Irrational: The hidden forces that shape our decisions	**ANNEX P:** Dan Arielly	**ANNEX Q:** Ch 1	**ANNEX R:** Discusses cognitive biases.
ANNEX S: Smart Choices: A practical guide to making better decisions	**ANNEX T:** John S Hammond, Ralph L Keeney and Howard Raiffa	**ANNEX U:** pp 185-212	**ANNEX V:** Discusses cognitive biases and heuristics.
ANNEX W: Critical Thinking: What it is & why it counts	**ANNEX X:** Peter A Facione	**ANNEX Y:** pp 1-12	**ANNEX Z:** What critical thinking consists of and what we should do to effect it.
ANNEX AA: Developin	**ANNEX BB:** S	**ANNEX CC:** pp	**ANNEX DD:** Explains the theory

ANNEX C: Title	ANNEX D: Authors	ANNEX E: Recommended Pages	ANNEX F: Synopsis
g Critical Thinkers	tephen D. Brookfield	ix-xi and pp 15-25	behind critical thinking
ANNEX EE: Asking the right questions: a guide to critical thinking	**ANNEX FF:** M Neil Browne & Stuart M Keeley	**ANNEX GG:** Ch 1	**ANNEX HH:** Discusses argument deconstruction and the importance of self-reflection, and deciding what to believe and what to be sceptical of. **ANNEX II:** (Pdf version available of AltA Community of Interest Portal)
ANNEX JJ: A tradecraft primer: Structured analytical techniques for improving intelligence analysis	**ANNEX KK:** U S government	**ANNEX LL:** All	**ANNEX MM:** Describes some of the AltA techniques, plus other more advanced analytical techniques used in intelligence analysis.
ANNEX NN: Rational Analysis for a Problematic World: Problem structuring methods for complexity, uncertainty and conflict	**ANNEX OO:** R osenhead, J & Mingers, J	**ANNEX PP:** All	**ANNEX QQ:** Analytical methods to assist in problem formulation and problem solving in an uncertain world
ANNEX RR: The Abilene Paradox and other meditations in management	**ANNEX SS:** J erry Harvey	**ANNEX TT:** Ch 2	**ANNEX UU:** Demonstrates how group dynamics can keep individuals from stating true beliefs.
ANNEX VV: Winning Decisions: getting it right the first time	**ANNEX WW:** J Edward Russo & Paul J H Schoemaker	**ANNEX XX:** Ch 1 & 7	**ANNEX YY:** Step by step analyses of how people typically make decisions. Provides worksheets, tools, questionnaires to support getting a big decision made.
ANNEX ZZ: Sources of Power: How people Make decisions	**ANNEX AAA:** G ary Klein	**ANNEX BBB:** Ch 6 & 16	**ANNEX CCC:** Discusses complexity and systems thinking.
ANNEX DDD: A practical guide to policy analysis: The eightfold path to more effective problem solving	**ANNEX EEE:** B ardach E	**ANNEX FFF:** All	**ANNEX GGG:** Guide to policy review and provides checklist of items to be considered in policy analysis

ANNEX C: Title	ANNEX D: Authors	ANNEX E: Recommended Pages	ANNEX F: Synopsis
ANNEX HHH: Listening Effectively	**ANNEX III:** John A Kline	**ANNEX JJJ:** All	**ANNEX KKK:** Techniques to aid the AltA facilitator in improving their listening skills **ANNEX LLL:** (pdf version available on the AltA Community of Interest Portal)

ANNEX MMM: