

## PART 9 – COA WARGAMING, ROC DRILLS AND RED-TEAMING

### INTRODUCTION

108. **COA Wargaming, Rehearsal of Concept Drills and Red-Teaming.** Course of Action (COA) Wargaming, Rehearsal of Concept (ROC) Drills and Red-teaming are closely related but discrete tools that support different elements of decision-making. The distinctions between them are outlined in Table 9-1.

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Tool	What	Why	Who (illustrative)	When
<b>COA Wargaming</b>	A systematic method of analysing a plan to visualise the ebb and flow of an operation or campaign	To identify risks and areas of weakness in a forming plan	Chief Controller (e.g. COS, Bn 2ic) Blue Team Red Cell Staff branches SMEs (OA) <sup>1</sup> (Commander) <sup>2</sup> (Red Team) <sup>3</sup>	During any or all of: 1. COA development 2. COA evaluation 3. COA refinement
<b>ROC Drill</b>	A visual, sequenced rehearsal of a plan	To enhance understanding of a formed plan	Comd Chief Controller Staff branches Unit/sub-unit commanders SMEs	After orders have been delivered
<b>Red-teaming</b>	The provision of honest, constructive and objective criticism to improve a commander's decision-making	To challenge assumptions and fully explore alternative outcomes to reduce threats and increase opportunities	An independently constituted group of SMEs with appropriate skills for the project under consideration	Throughout the estimate/7 Questions process

Table 9-1: COA Wargaming, ROC Drill and Red-teaming distinctions

109. Common misconceptions surrounding these techniques are:

- a. 'Wargaming' and 'COA Wargaming' are not synonymous terms. COA Wargaming is but one of many wargaming techniques; in UK doctrine it generally takes place towards the end of the planning process. Other forms of wargaming can usefully be undertaken earlier in the decision-making process and elsewhere in Defence.<sup>4</sup>

<sup>1</sup> If available

<sup>2</sup> If desirable

<sup>3</sup> If formed

<sup>4</sup> Other forms of wargaming are detailed in the DCDC *A Guide to Wargaming* due for publication in Jan 13. This will explain that COA Wargaming, is but one wargaming technique in the decision-support 'golf bag'. Other opportunities exist to wargame, particularly in the early stages of the estimate/7 Questions; techniques and methods by which this can be achieved are contained in the DCDC *Guide*.

- b. ROC Drills might look and sometimes feel like a COA Wargame but they are not one; they are a separate technique used at a different point in the military decision-making process and with separate aims (see Table 9-1).
- c. A Red Team is not synonymous with a Red Cell. A Red Team challenges assumptions and explores alternative outcomes; a Red Cell plays adversary actions in a given situation.
- d. 'Simulation' is not synonymous with 'wargame'. A simulation (computer or manual) might be used to *support* a wargame, but it is not *the* wargame.

110. This is a practitioner's guide to Course of Action (COA) Wargaming, ROC Drills and Red-teaming. The COA Wargaming material is derived from higher-level DCDC doctrine<sup>5</sup> but provides additional detail sufficient to allow the staff user to prepare for and execute one form of wargaming, namely COA Wargaming. To do this it draws on a wide variety of lower level doctrine, research and best practice<sup>6</sup>.

## COA WARGAMING

111. **COA Wargaming and its characteristics** COA Wargaming is a systematic method of analysing a plan in a conscious attempt to visualise the ebb and flow of an operation or campaign. Adversarial by nature, COA Wargaming superimposes friendly, neutral and hostile elements together to identify risks and shortcomings in potential or selected COAs. It pitches planners against each other in a deliberate attempt to spark debate and generate insights into a plan. The actions and reactions of neutrals and adversaries require a duly empowered Red Cell and/or Red Team. By COA Wargaming commanders and staffs attempt to foresee the dynamics of *action*, *reaction* and possible *counteraction* of battle. COA Wargaming is an essential part of the planning process. Unfortunately, when it is not understood, COA Wargaming is sometimes viewed as an additional battle procedure step or an unwelcome intrusion that competes for valuable staff planning time.

112. A paper by the Scientific Advisor (Land)<sup>7</sup> (SCIAD (L)) lists the characteristics of a COA Wargame as:

- a. Time pressured. At brigade HQ and below it is rare for a COA Wargame to last more than 60 minutes. At divisional level 1-2 hours is usual. Even in the ARRC a maximum of 4 hours is usually allocated.
- b. Conducted primarily by non-experts, i.e. battlegroup, formation and divisional staff officers.
- c. Largely manual, i.e. not computerised.
- d. Adversarial.

113. The factors considered essential to successful COA Wargaming by SCIAD (L) are:

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<sup>5</sup> In particular DCDC Guidance Notes *A Guide to Red Teaming* and *A Guide to Wargaming* and JDP 5-00 Campaign Planning.

<sup>6</sup> For example AFSOP 5010 Annex B, AFM Vol 1 part 8 Annex I, 3 (UK) Division *Wargaming Aide Memoire*, 1 Mechanised Brigade SOIs, Op HERRICK SOIs, the Führungsakademie der Bundeswehr *Wargaming - Guide to Preparation and Execution* and Dr Philip Sabin's *Simulating War*.

<sup>7</sup> *Course of Action Analysis Requirements* dated 12 April 2012

- a. The application of comprehensive doctrine.
- b. Simplicity.
- c. Transparency of outcomes.
- d. Thorough preparation and planning.
- e. Effective control.
- f. Having the correct Subject Matter Experts (SMEs) present.

**114. Why COA Wargame. The purpose of a COA Wargame is to identify risks and areas of weakness in a forming plan.** This can be in multiple COAs for comparative reasons or in a single selected COA to refine it and add robustness; to 'bullet proof' it. Hence a COA Wargame must rigorously test the plan. Because COA Wargaming brings a wide cross-section of the staff and SMEs into the planning process it:

- a. Provides a thorough understanding of the likely actions and reactions of friendly, neutral and hostile actors within the Joint Operations Area (JOA) and, where relevant, beyond.
- b. Provides an indication of the likely effects of military activity, and the associated risks – both threats and potential opportunities – that such activity might generate. These often manifest as branches requiring Contingency Plans (CONPLANS).
- c. Enables refinement and development of COAs, including the detailed determination of synchronisation requirements, resource allocation, force (re-) deployments and logistic implications.
- d. Highlights tasks that are important to the operation and makes apparent any that may have been overlooked.

**115. Who participates in a COA Wargame.** The HQ personnel listed below are typically involved in COA Wargaming. Appointments are listed for a formation or higher HQ, but can easily be translated into their battlegroup HQ equivalents.

- a. Chief Controller (e.g. COS). The Chief Controller directs and controls the COA Wargame.
- b. Blue Team/Friendly Forces (J3 and/or J3/5 staff). The Blue Team, who have developed the plan, should include key J5 and J3/5 planners. It might include, as appropriate, J1/J4, J6, J3 staff, coalition partners, Consequence Management staff and other contributors to Joint Action such as CIMIC personnel, CULAD and POLAD. The Blue Team, usually through a spokesperson, controls Friendly Forces during the COA Wargame.
- c. Red/Adversary Cell. This is generally a J2 staff officer, or team, who control adversary activities during the COA Wargame.
- d. Red Team. If the HQ has established a Red Team it can be used during the COA Wargame to:

- (1) Play the Red (and White, Green, Brown, Black and Orange) Cell as required, invoking Red plans based on the perspectives of adversaries, partners and neutrals.
  - (2) Play a free-thinking Red/adversary Cell which reacts to the Blue plan.
  - (3) Allow J2 staff to play the Red Cell, while the Red Team stands back and takes an independent view of the game, offering advice to the commander based on its broad perspective of the overall plan.
  - (4) Inject situational and contextual changes and any 'friction' factors.
- e. SMEs and Partners Across Government (PAGs). Available SMEs and PAGs should support COA Wargaming, sharing their time between the Blue and Red Teams where necessary.
- f. Operational Analysis (OA) personnel. OA is *'the use of mathematical, statistical and other forms of analysis to explore situations and help decision-makers to resolve problems'*.<sup>8</sup> OA delivers scientific rigour and objectivity to operational planning and decision-making. OA will not make the decision for decision-makers; its purpose is to advise them and allow them to make better informed decisions. OA should be engaged as early as possible (well in advance of the COA Wargame) to give analysts time to conduct meaningful analysis to input into the COA Wargame at the appropriate point.
- g. The commander. A commander *may* wish to attend a COA Wargame personally for the greater insights he can bring and derive. These benefits, however, should be balanced against other effects that may be realised by his presence: staff may be uneasy about criticising those elements of his plan they assess as unsatisfactory, resulting in the plan not being robustly tested.

116. **When to COA Wargame.** There are three occasions when a COA Wargame is appropriate, as shown in Figure 9-1.

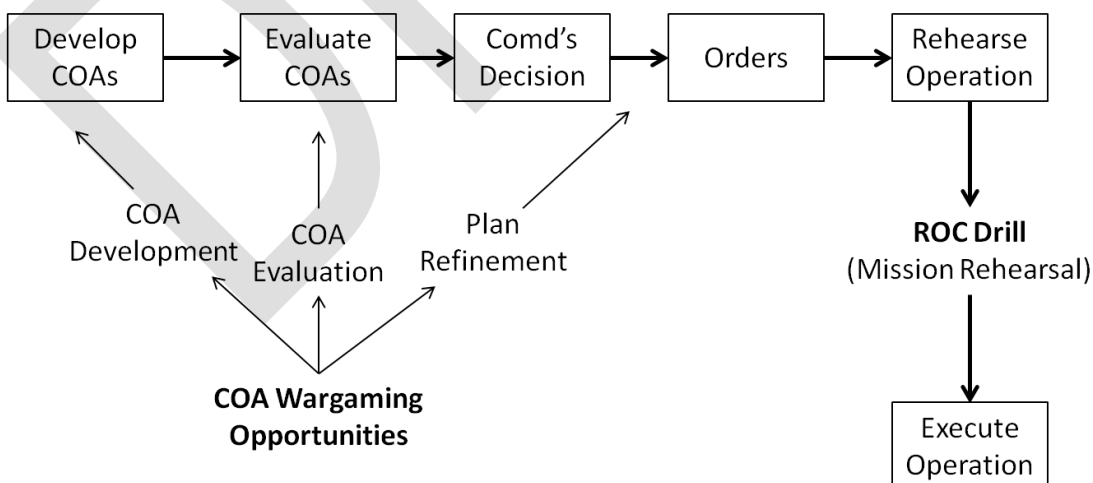


Figure 9-1: Opportunities to COA Wargame

<sup>8</sup> JDP 0-01.1 UK Glossary of Joint and Multinational terms and Definitions.

- a. **COA development and validation.** COA Wargaming can help to visualise an embryonic COA, indicating in particular the art of the possible and enabling impractical COAs to be discarded at an early stage. Early wargaming should yield a better understanding of a proposed COA, including any relevant planning considerations such as correlation of forces, relative strengths and synchronisation. Finally it also helps to ensure that that COAs are distinct and not merely a variant on the same scheme of manoeuvre.
- b. **COA evaluation and comparison.** COA Wargaming can be used to compare each friendly COA with appropriate opponent COAs and any other relevant factors to determine the likelihood of success. Wargaming at this stage provides information on the relative strengths and weaknesses of each individual COA for evaluation against a commander's COA selection criteria.
- c. **COA refinement.** Once the commander has selected his COA, wargaming can contribute significantly to its refinement, including identifying risks, areas of weakness and further Commander's Critical Information Requirements (CCIRs). In addition, wargaming assists in the production of coordinating instructions, indicates specific requirements for battlespace management and highlights potential tasks and associated readiness for reserves. Wargaming may also identify potential unplanned or unfavourable effects, and hence the requirement for CONPLANS.

117. Comprehensive wargaming during COA development and/or COA evaluation requires a considerable commitment of time and staff resources to be conducted effectively. This often precludes its use. **It is at the COA refinement stage that detailed wargaming adds most value.**

118. **How to COA Wargame.** COA Wargames require three phases to deliver: plan; prepare; and execute.

119. **Plan.**

- a. **Select the event(s) to be COA Wargamed.** The first task is to identify the event(s) to be COA Wargamed, based on what the commander wishes to achieve in the time available. This is a command decision; the commander dictates those key parts of the plan to be wargamed. The event(s) should be those the commander believes to hold most risk, either due to vulnerability to opponent action or perhaps the complexity of coordination required.
- b. **Determine the time available.** COA Wargaming is time pressured; there is rarely sufficient time to COA Wargame all desired aspects of a plan. Hence the time available will dictate the number of critical events that can be COA Wargamed and the time dedicated to each, which becomes the length of the relevant 'turn'.
- c. **Select the method.** The COA Wargame method selected will depend on the events to be COA Wargamed. The following methods are suggested but must be applied flexibly; they are a framework to be adapted as required, not a constraint.

(1) **COA Wargame phases.** This entails COA Wargaming one or more time segments of a plan. It is the method most frequently used but requires time to complete an entire plan. For the subdivision of the COA into turns the simplest

method is to divide it into segments with fixed time intervals, e.g. one segment (turn) corresponds to one week or two as shown at Figure 9-2 Turns 1, 2 and 4. However, another possibility is to divide the plan into segments with flexible time intervals that correspond to the operational steps. In such cases a time-related comparison can be difficult, as shown at Figure 9-2 Turn 3.

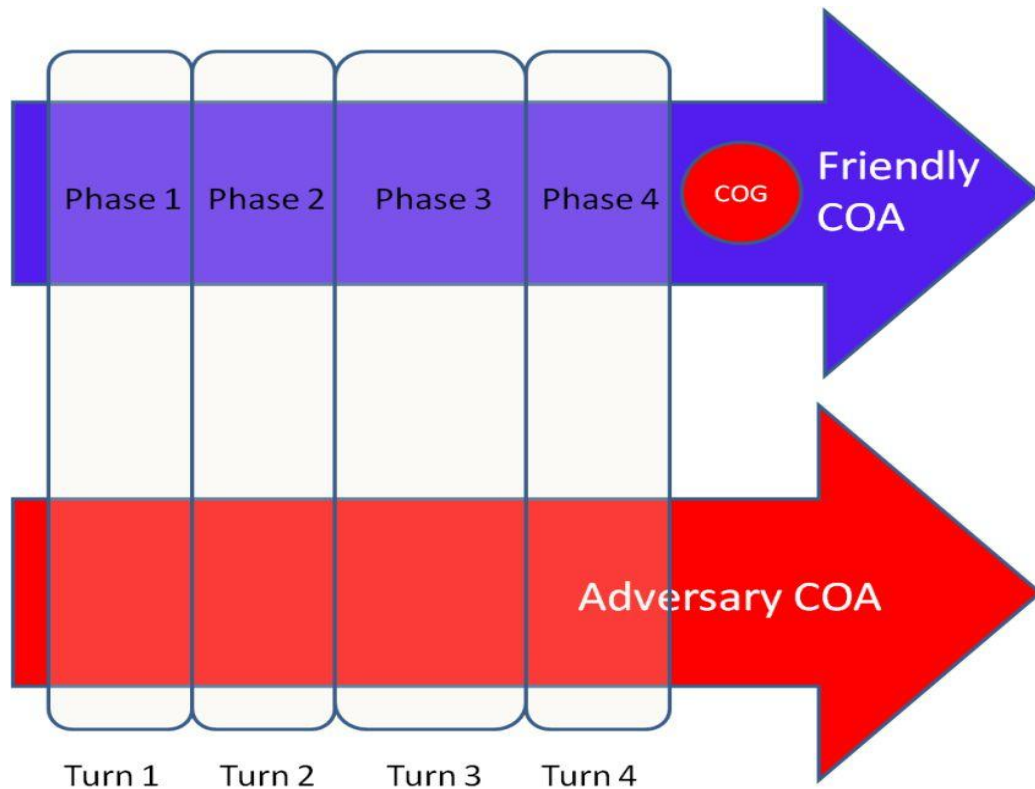


Figure 9-2. COA Wargaming Phases

(2) **COA Wargaming Decisive Conditions (DCs) and Supporting Effects (SEs).** Critical DCs in a campaign plan might be selected for COA Wargaming. The analysis covers the conduct of operations at one (or more) DC or the interval until this condition is reached. These become the game turns as shown in Figure 9-3, with each DC and its associated SEs being assigned relevant time segments within the COA to be analysed.

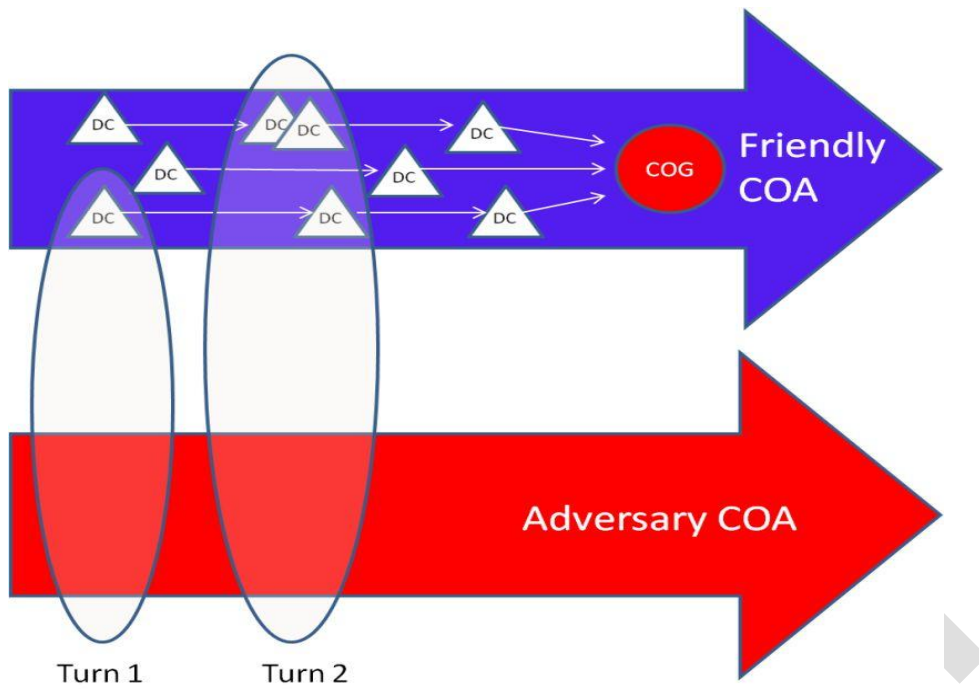


Figure 9-3: COA Wargaming DCs

(3) **COA Wargaming segments of battlespace.** This method focuses on geographical areas of interest in which critical effects are to be achieved or which are geospatially key (e.g. urban hot spots, key terrain, straits, sea or land lines of communication or Target/Named Areas of Interest). For the subdivision of the COA, the areas of the battlespace to be analysed have to be determined. Each selected area then has to be assigned the relevant time period within the COA to be analysed, as shown in Figure 9-4.

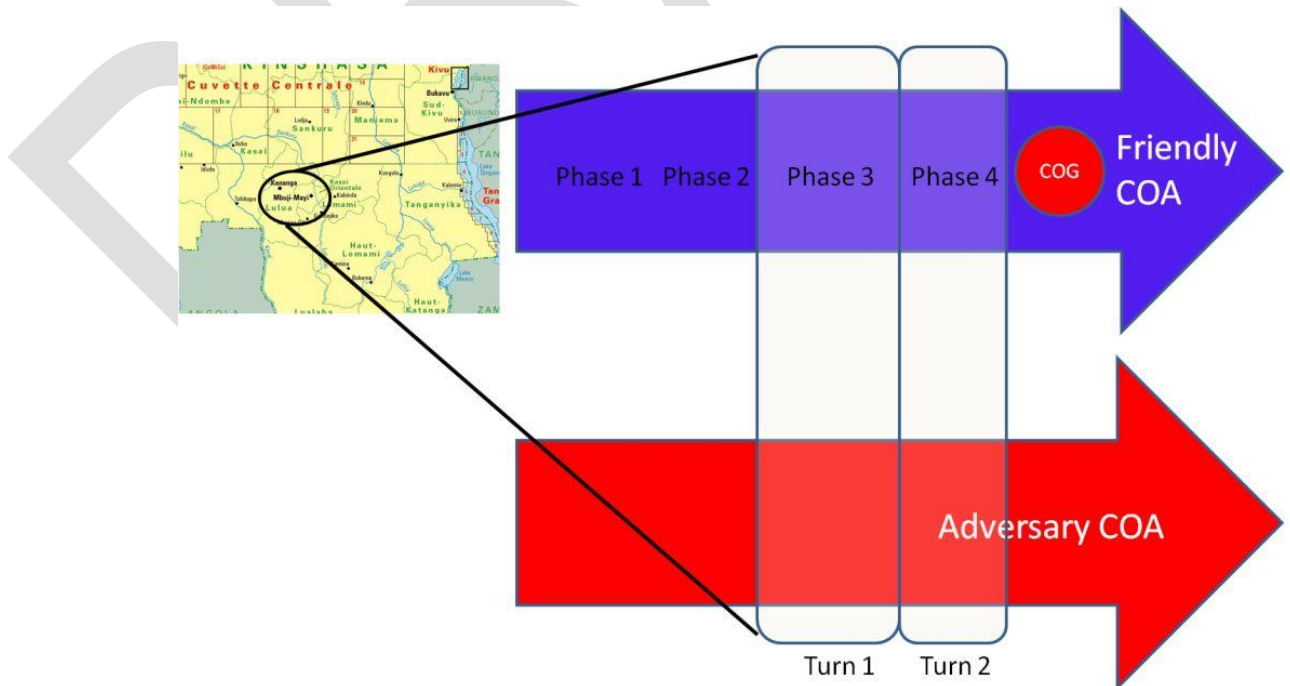


Figure 9-4: COA Wargaming Segments of Battlespace

d. **Select the adversary COA.** The Red Team and/or J2 cell should advise the commander/Chief Controller which adversary COA should be selected. The choice is usually between the adversary's Most Likely (ML) or Most Dangerous (MD)/Worst Case (WC) COA. Because COA Wargaming is an adversarial activity consideration should be given to selecting the adversary MD/WC COA as a default; the Blue plan will be only be fully tested if Red is doing everything it can to win.

e. **Select the recording method.** The output of the COA Wargame should be captured as a narrative, a work sheet or maybe as a Joint Action Synchronisation Matrix. This should be a consolidated stand-alone product, in addition to any amendments made by individual branches to staff products.

f. **Identify the personnel required.** The context and scope of the COA Wargame determines the extent of player participation. The usual commander's advisors will likely be present as a matter of course, but consideration should be given to SMEs to cover relevant domains such as Human Terrain, cyber etc.

g. **Task OA** (if not already done). OA subjects of analysis should have been identified during the preceding steps of the estimate/7 Questions. These should be briefed to the OA personnel sufficiently in advance of the COA Wargame to allow analysis to be conducted and findings presented during the COA Wargame as an input.

## 120. **Prepare.**

a. **Situational awareness (SA) aids.** Despite the increasingly digital nature of command and control there is an argument for considering manual forms of SA to enable COA Wargaming. Digital media such as BOWMAN/ComBAT and PowerPoint have their advantages, but so do manual media such as a birdtable, map(s) and 'stickies' or counters: "*When the object is to portray units positioned on a map, computer monitors and data projectors are actually less effective than physical maps and counters on one or more large tables, since their fixed resolution and limited field of view frustrates employment of the human eye's wonderful combination of central acuity and breadth of vision. It also takes at least as long to manipulate units on screen as it does to move physical counters.*"<sup>9</sup> Hence the traditional birdtable enables one key aspect of COA Wargaming: visualisation of the situation. It further provides a physical forum for discussion, that is to say all staff involved in the planning process engaged at the same time focused upon literally one physical view. The birdtable remains both the preferred COA Wargaming visualisation medium and venue in the CAST organisation. Whatever media are used, visual aids need to be prepared for:

(1) **Mapping**, providing both an overview of the JOA and insets as required for areas where greater tactical detail might be needed.

(2) **Counters or iconography.** The required map symbols must be available, be these digital or manual. The latter can range from traditional 'stickies' through mounted counters to models.

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<sup>9</sup> *Simulating War*, Professor P Sabin, p. 26.



b. **Venue.** A suitable venue should be formally arranged, with front row seats designated for players and key SMEs. Additional seating should be available for other participants. The Chief Controller must be in a position to control all proceedings.

c. **Staff products.** Relevant draft Operational Staff Work (OSW) must be available (e.g. DSO, DSM, Synch Matrix, Messaging, TASKORGs, CCIRs, OA inputs etc).

d. **Rehearsals.** In a particularly complicated or large COA Wargame rehearsals might be required. This is particularly the case where heavy reliance is placed on computer support.

121. **Execute.** A sequence of events for a COA Wargame is at Table 9-2. This uses a formation-level HQ for illustrative purposes where Blue (Friendly Forces) is assumed to have the initiative.

Ser (a)	Event or Activity (b)	Person Responsible (c)	Remarks (d)
<b>Preliminaries</b>			
1	Initial brief: <ul style="list-style-type: none"> <li>• Attendance</li> <li>• Mechanics</li> <li>• Inputs available</li> <li>• Recording</li> <li>• Higher comd's guidance</li> <li>• Mission Analysis outcomes</li> <li>• Key assumptions</li> <li>• Cfm critical event(s)</li> <li>• Timings</li> </ul>	Chief Controller	
2	Adversary review	J2	If required: Intent, SOM, ME, Endstate, TASKORG, laydown
3	Green/Orange/Black Cell reviews	Red Team	If required
4	Planning context	J5 or J35	If required
5	POLAD/CULAD review	White Cell/ POLAD/CULAD	Could incl strategic review, HTA etc
6	Friendly Forces review	J3 or lead planning branch	If required: Intent, SOM, ME, Endstate, Taskorg, laydown
7	Joint Effects review	Joint Effects	If required. Could incorporate IA/Messaging
8	Manoeuvre review	Engrs	If required
9	CSS review	DCOS	If required
10	Comms plan review	J6	If required
<b>For Each Turn</b>			
11	Friendly Forces <b>Action</b> <sup>10</sup>	J3 or lead planning branch	Intent and scheme of manoeuvre to the required level of detail
12	Adversary <b>Reaction</b>	J2/Red Team	Reaction to the required level of detail
13	Friendly Forces <b>Counteraction</b>	J3 or lead planning branch	Counteraction to the required level of detail

<sup>10</sup> Traditionally the side with the initiative goes first, but consider Blue always having the first Action.

14	<b>Consequence Management (CM)</b>	CM, CULAD or relevant SME(s)	
15	<b>Consolidation</b> and discussion	Chief Controller/ relevant SMEs	Could cover: ISTAR, time & space, TASKORG, Air/Avn, Fires, Engr, CIS, Messaging, CSS, POLAD, CULAD, HTA etc
16	Turn summary	Chief Controller	Summarise: risks, info requirements, DSO/DSM refinements, legal/ROE, BM issues, CONPLANS etc
<b>Repeat sers 11-16 as necessary</b>			
<b>After final turn</b>			
17	Recording cfm	Scribe	Summarise key findings
18	COA Wargame summary	Chief Controller	Summarise key outputs and provide D&G as required

Table 9-2: COA Wargame Sequence of Events

- a. **Initial Brief.** The Chief Controller's opening brief is key. It should include:
- (1) Attendance and participant roles, including who is expected to have a speaking role and who are observers.
  - (2) Mechanics, assuming no knowledge of COA Wargaming.
  - (3) Inputs available, including OSW and OA.
  - (4) Recording methods.
  - (5) Higher commander's guidance, Mission Analysis outcomes and key assumptions. This might be prefaced by a White Cell/POLAD review of the strategic environment.
  - (6) Critical event(s) to be COA Wargamed.
  - (7) Timings, including how much time will be dedicated to each event/turn.
  - (8) J2 review and update, to include the adversary strategic or operational intent and force dispositions (as required).
  - (9) Green/Orange/Black Cell reviews and updates, outlining key neutral, or other, actors, their intentions and dispositions (as required).
  - (10) J5 or J35 review the COA in the planning context, plus other staff branch updates (as required).
- b. **COA Wargame 'turn' mechanics.** COA Wargaming is turn-based. Each turn covers one or more area or event of the plan being developed or refined, as per Figures 9-2 to 9-4 above. The basic mechanism for each turn is: **Action - Reaction - Counteraction - Consolidation.**

c. Note the Consequence Management (CM) step (ser 14 in Table 9-2), which is useful for identifying and discussing consequences, both intended and unintended. Including a CM phase as a matter of course should be considered

d. Traditionally the side with the initiative has the first Action. However, consideration should be given to Blue *always* having the first Action irrespective of who has the initiative; it is the Blue plan being tested and the ability for Blue to always have a Counteraction phase, making amendments as required, has merit. Whichever side goes first, the mechanism remains the same. Assuming Blue has the first Action:

(1) **Action** - the Blue spokesperson should describe the Friendly Forces intent and scheme of manoeuvre to the required level of detail. This might include Main Effort, missions, tasks and coordinating instructions within the time period specified for that turn. Relevant icons or counters should be moved as appropriate.

(2) **Reaction** - the Red spokesperson describes the adversary's reaction to the Blue Action, to whatever level of detail is required, moving icons or counters as required.

(3) **Counteraction** - the Blue spokesperson explains the Friendly Forces Counteractions required to mitigate the Red Reactions.

(4) **Consolidation**<sup>11</sup> - at the end of the turn the Chief Controller should summarise key findings and actions arising and ensure these are recorded. A quick round table might be required. However, most participants should analyse the game turn as it develops within their area of expertise, noting amendments to their own staff plans and products, and only comment where there is a significant impact on the overall plan.

e. Additional inputs to this Action-Reaction-Counteraction are injected as appropriate. These could include OA-produced outcomes, CM, SME-delivered judgements or significant staff branch insights. Note, however, that time is limited so the Chief Controller must keep firm control of who speaks, and for how long.

f. **Time management.** The Chief Controller must strike a balance between useful discussion and driving the COA Wargame relentlessly forward. Most points raised can usually be noted for subsequent action or captured by staff branches for their own use. Points raised during the Action-Reaction-Counteraction phases might be quickly noted and then summarised during the Consolidation Phase.

g. **Scribing.** Accurate recording of findings is vital. This task should be given to a good staff officer who is fully conversant with the plan and able to pick out key findings without prompts from the Chief Controller. A simple COA Wargame record sheet is essential. Suggested headings are:

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<sup>11</sup> Called the 'Cognition Phase' in the Führungsakademie der Bundeswehr *Wargaming - Guide to Preparation and Execution*

Timeframe	Action	Reaction	Counteraction	Effect on Adversary	Effect on Friendly Forces	Decision Taken
(a)	(b)	(c)	(d)	(e)	(f)	(g)

122. **Outputs.** COA Wargaming outputs include:

- a. **Identified key risks.** Arguably, COA Wargaming is the best way to understand and then mitigate risks in a plan. By its very nature military activity is about understanding, balancing and taking risks, rather than avoiding hazards. Risk is an expression of the probability and impact of an activity or event, with positive or negative consequences, taking place. It is a measure of the likelihood of things going right or wrong, and the associated impact, good or bad. See JDP 5-00 Campaign Planning Chapter 2 Annex H for more detail on risk management.
- b. Identified CONPLANS (whether branches or sequels). These could be to mitigate or exploit risks.
- c. Amendments to the CONOPs and coordination measures. These could include: missions, tasks, grouping, C2, reserve options, control measures, liaison, ROE, boundaries, fires, CSS, ISTAR, messaging, stabilisation etc.
- d. Amendments to draft OSW. These could include: campaign/effects schematics, TASKORGs, DSO, DSM, Synch Matrix etc.
- e. Time and space considerations.
- f. CCIRs/RFIs, assumptions, points for clarification etc.
- g. Data for the commander's COA decision brief.
- h. Measurements of Effectiveness.

123. **Guidelines.** Best practice drawn from a wide variety of sources highlights a number of guidelines or 'golden rules', adherence to which helps deliver successful COA Wargames:

- a. Time management is crucial. The Chief Controller's judgement in this matter is critical. Not everyone is equal, not everyone has a speaking role, and a COA Wargame is not an MS moment!
- b. COA Wargaming is command-led. The commander decides which COA(s) to COA Wargame and the elements within those COAs upon which to focus.
- c. However, avoid using command authority and forcing players to conform to a plan.
- d. COA Wargaming is a process, not a forum for discussion. It serves for the presentation and collection of facts. It is important to keep an unbiased and objective perspective and not to jump to conclusions or justify or defend an individual COA.

- e. Dos and don'ts. A useful aide memoire is at Table 9-3.

Do	Do Not
Ensure that the Red Cell plays to win	Forget the aim of COA Wargaming
Manage time ruthlessly	Automatically allow the plan author to participate
Use OA	Confuse a COA Wargame for a ROC Drill
Be flexible in the approach and method used	Try to resolve all risks and issues immediately; note them for subsequent analysis
Record all conclusions and decisions taken in an understandable manner	Wargame in lieu of a thorough estimate
Treat COA Wargaming as an essential part of the decision-making process	
Practise! Develop the COA Wargaming team	

Table 9-3: COA Wargaming Dos and Don'ts<sup>12</sup>

### REHEARSAL OF CONCEPT (ROC) DRILL

124. **ROC Drills.** A ROC Drill sometimes looks and feels like a COA Wargame, but it is not one. Figure 9-1 illustrates that the ROC Drill occurs after orders have been delivered and recipients have had time to assimilate them and produce their own plans. It is a stage-managed walk-through talk-through of a plan. No new factors should be identified and there is little role for the Red Cell or Red Team. Red is no longer adversarial and the Red Cell simply describes the selected adversary COAs.

125. **Why ROC Drill. The aim of a ROC drill is to enhance an understanding of a plan by a visual, sequenced representation.** The intention is to rehearse participants in a formed plan and synchronise details rather than amend them. A ROC Drill should:

- a. Ensure a greater degree of familiarity with an operation, particularly the scheme of manoeuvre.
- b. Ensure battlespace management and synchronisation.
- c. Provide arguably the best opportunity for the commander to reinforce his Intent and ensure that subordinates understand it and their role in achieving it.
- d. Provide an opportunity to explore CONPLANS, including their potential triggers.

<sup>12</sup> Maj G J Longley-Brown, *The Dos and Don'ts of Course of Action Wargaming*, British Army Review 138, Winter 2005, p.49.

126. **Who participates in a ROC Drill.** A guide to attendance at a ROC Drill is below:

Bde HQ		BG HQ	
Comd DComd COS DCOS Unit Comds	G2/3/4/5/6/7/8/9 key staff Key enablers (Comd SHF, Tac Alt, CJIIM assets etc)	CO 2ic/COS BC & JFC Sub-unit comds IO BGLO	BGE Ops Offr Adj/G3 staff G6 staff (RSO etc) RMO STABAD CJIIM assets

Table 9-3: Suggested ROC Drill Attendees

127. **When to ROC Drill.** Figure 9-1 illustrates that the ROC Drill occurs after orders have been delivered and recipients have assimilated these and produced their own plans.

128. **How to ROC Drill.** ROC drills are simpler to organise than COA Wargames (the plan being fully formed) and generally only require a preparation and execution phase. Some consideration is required as to the time available, attendance etc, but such factors are usually self-evident.

129. **Prepare.**

- a. Model Built/BOWMAN map prepared:
  - (1) Mission Area in General.
  - (2) Mission Area in Detail.
- b. CONOPS (Intent, scheme of manoeuvre, mission/tasks).
- c. OSW.
- d. Control measures shown on model.
- e. Key messages.

130. **Execute.** The sequence of events for a ROC Drill is at Table 9-4, below, using a formation-level HQ for illustrative purposes.

Ser (a)	Section (b)	Remarks (c)
<b>Prelims</b>		
1	Key personalities introduction <ul style="list-style-type: none"> <li>• Chief Controller</li> <li>• Unit comds</li> <li>• Scribe</li> </ul>	<ul style="list-style-type: none"> <li>• Roll call (J3/5)</li> <li>• Comment on roles of units/sub units/pls</li> <li>• Visitors</li> </ul>
2	<ul style="list-style-type: none"> <li>• Model &amp; Ground Description</li> <li>• ROC Drill process (Turns etc)</li> </ul>	<ul style="list-style-type: none"> <li>• J3/5</li> <li>• Chief Controller</li> </ul> Designate rehearsal start point in relation to operation as a whole (Chief Controller) Ensure all participants understand the parts of the plan to be

		rehearsed (Chief Controller) Update participants on current operational situation. Some FEs may already be executing (e.g. adv forces) (Chief Controller)
<b>Situation Update</b>		
3	White Green Red Blue	POLAD, CULAD, J2 cell Respective cell J2 J3/5
<b>Overview &amp; Deployments</b>		
4	Overview	Comd
5	Enemy Deployment	Deploy enemy on the model as they would appear just prior to the operation. SO2 J2 to explain en ML and WC/MD COAs
6	Friendly Forces Deployment	Deploy own forces, including flanking units, to the point in time the rehearsal will start. As friendly units/sub-units are placed on the product (unit/sub-unit reps) they should state their TASKORG, mission and tasks. To incl: logistics, med, CIS, air/avn, ISTAR etc.
<b>Conduct of the ROC Drill</b>		
7	Initiate Activity Blue Green Red White Joint Effects Logistics incl Med	<ul style="list-style-type: none"> <li>• Begin military activity/tactical action and continue in accordance with the SOM</li> <li>• On completion of phases of action, assess conditions to determine if any DCs have been reached. If DC reached the comd states whether he wants to remain on current course or select a branch.</li> <li>• Each SME briefs his part of the plan</li> <li>• Ensure that the ROC Drill does not become adversarial; that is the purpose of the COA Wargame.</li> </ul>
8	Re-cock after branch	After a branch end-state is reached, 're-cock' to the situation where the first DC was triggered. Continue the mission from that point forward until the desired end-state is reached reacting to subsequent DCs as required
<b>Conclusion &amp; Comd's Summary</b>		
9	Conclusion	<ul style="list-style-type: none"> <li>• Complete any co-ordination to ensure understanding and Comd's requirements are met.</li> <li>• Review any actions captured by the scribe (Chief Controller)</li> </ul>
10		Comd's closing remarks

Table 9-4: Formation level ROC Drill sequence of events

## RED-TEAMING

*'Red Teams are quintessential heretics. They are constantly trying to overthrow expectation.'*<sup>13</sup>

131. **Red-Teaming.** Red-teaming is the art of applying independent but structured critical thinking, from a variety of perspectives, to challenge assumptions and fully explore alternative outcomes in order to reduce threats and increase opportunities.<sup>13</sup> The aim of red-teaming is to provide honest, constructive and objective criticism to improve the commander's decision-

<sup>13</sup> Definition of 'Red-teaming' as defined in DCDC Guidance Note - *A Guide to Red-teaming*, Feb 2010, page 1-1.

making by reducing risk and increasing opportunities. It is not focused solely on the enemy perspective but encompasses the range of actors involving in conflict. Red-teaming is complementary to existing the principal staff functions and challenges these areas' known or derived information with alternative thinking. Red team outputs, in the form of written estimates, back-briefs or war-game outcomes, provide the commander with an independent alternative view to his plans and operational design, even if they prove to be unexpected or unpalatable.

132. **Why Red-Team.** Military culture enshrines team cohesion, selection and maintenance of the aim, and a can-do approach. These are virtues in many circumstances but they are incompatible with producing diverse and atypical perspectives. Red-teaming is an activity to guard against *group-think* and should generate constructive tension between the staff. An environment that tolerates and values internal criticism, and challenges routine and self-assured decision-making, will enable greater innovation and thus reduce hidden risk in the planning. Fig 9.5 illustrates the outputs of red-teaming.

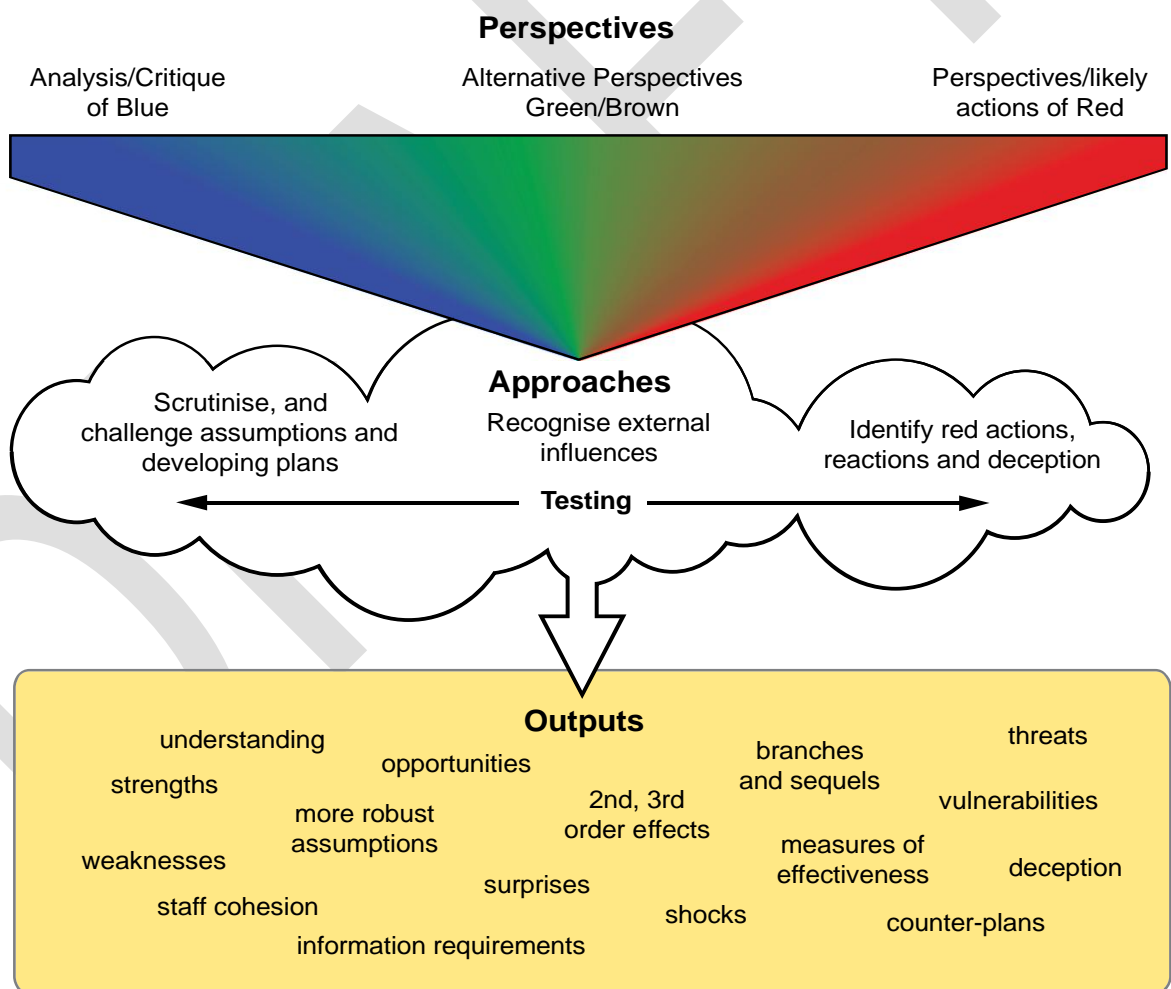


Fig 9.5 - A Guide to Red-teaming

133. **Benefits.** The most common benefits of red-teaming include a deeper understanding of possible outcomes, the development of robust COAs and CONPLANS, and a more focused ICP. Red teams can be established to conduct any of the following activities depending on the purpose, scope and context of the problem being considered:



- a. Deliberately challenge own plans, programmes and assumptions.
- b. Identify previously unthought-of elements of SWOT.
- c. Identify desired or undesired 2<sup>nd</sup>/3<sup>rd</sup> order effects.
- d. Propose alternative approaches.
- e. Challenge or test a system, plan or perspective through the eyes of an adversary, outsider or competitor.
- f. Understand options available to adversaries by generating plausible hypotheses of adversary behaviour and countering adversary deception.
- g. Gain greater understanding of partners, local populations and other influential actors and how they may react.
- h. Prepare an organisation to deal with surprises, risks and strategic shocks.<sup>14</sup>

134. **Who participates in the Red Team.** The emphasis for building a Red Team must be placed on the character of the person, rather than the staff appointment they hold. Members of the team should be selected for their special subject matter expertise, professional or cultural perspective, imagination or penchant for critical analysis. Areas of expertise to strengthen the red team include: economics; anthropology; sociological, political and religious systems; military theory; and culture, including attitudes to death and violence. All red team members should have an understanding of the red team processes and receive some initial training to shape the red team prior to the start of the planning process.

135. **Skills.** The red team should be tailored appropriately for the project under consideration and should be a discrete entity without broader tasking. Red teams may comprise a diverse mix of skills and experience, or may be focused in one particular area, depending upon the issue being addressed. For Formation-level planning, the commander is likely to require a reach-out or reach-back capability that enables him to call on experts from the broader military<sup>15</sup>, academia, think-tank institutions and defence industries. Alternatively, for smaller scale planning, individuals capable of critical thought can be drawn from internal staff, allies and partners, although it is preferable not to use J2/G2 staff as they will already have a formed mindset regarding the problem.

136. **Communication.** In addition to the attributes already listed, red teams must be capable of effective communication. They need the knack of asking questions to stimulate thought without alienating the blue team, yet maintain a robust line of argument whilst avoiding antagonism. For large and diverse teams a facilitator may be required to umpire ideas, maintain focus and ensure outcomes are captured. Importantly, the product of a successful red team will be of no benefit if it is rejected or not considered by the commander. The team needs sufficient clout to raise issues that might not be welcome; red teamers must have the authority to appropriately challenge the blue commander and confidence that their insights

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<sup>14</sup> It was in this context that Red-teaming gained significant traction in the US following the 'failure of imagination' of the US intelligence community to forewarn of 9/11.

<sup>15</sup> DCDC is working on recommendations to identify a layered network of supporting expertise as a reach-back capability for operations (Enhancing Situational Understanding and Campaign Continuity).

will be seriously considered. The credibility of the output hinges on the quality and experience of the red team, their approach and toolset, and the quality of the leadership. An uninformed, overconfident or culturally biased team is unlikely to add value.

**137. When Red-Teaming can be used.** The red team can participate at each stage of the planning process and require clear objectives from the outset. The commander should give early consideration to the linkage between the red and blue staffs and decide when these teams should interact.<sup>16</sup> It is vital that the red team's advice is timely, accurate, and that they have access to all relevant information held by the command group. The commander should plan how he will evaluate any options or alternatives that are highlighted by the red team and consider how he will incorporate them into the final plan.

**138. How to Conduct Red-Teaming.** Robust interaction between the red and blue teams is essential, but it is not competitive. The objective is to better inform decision-making by establishing an environment in which blue learns from the process, and comes out with sharper insights or more robust solutions and a greater appreciation of issues. Equally, the red team should not stifle the blue team's ideas or lead to pre-judgement of a situation. It is unlikely that the red team will have the capacity to mirror all of the blue team's activities, therefore they should focus on critical vulnerabilities, areas of uncertainty and in-depth analysis of decision points to contribute quality insights.

*'The application of red-teaming requires a deft touch. On the one hand, we don't want to stifle good ideas by subjecting them too early to the most formidable opponents possible. On the other hand, we can't wait too long to learn what adaptive enemies might have in store for our favourite idea.'*<sup>17</sup>

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<sup>16</sup> Section II of the DCDC Guidance Note – *A Guide to Red-teaming* provides detailed instruction on how, and at what stages, of the planning process the red team should engage with the blue team, and describes possible red deliverables that may add the most value through each step.

<sup>17</sup> Gold T, *Joint Advanced Warfighting Program*, Institute for Defence Analysis, USA. January 2001.

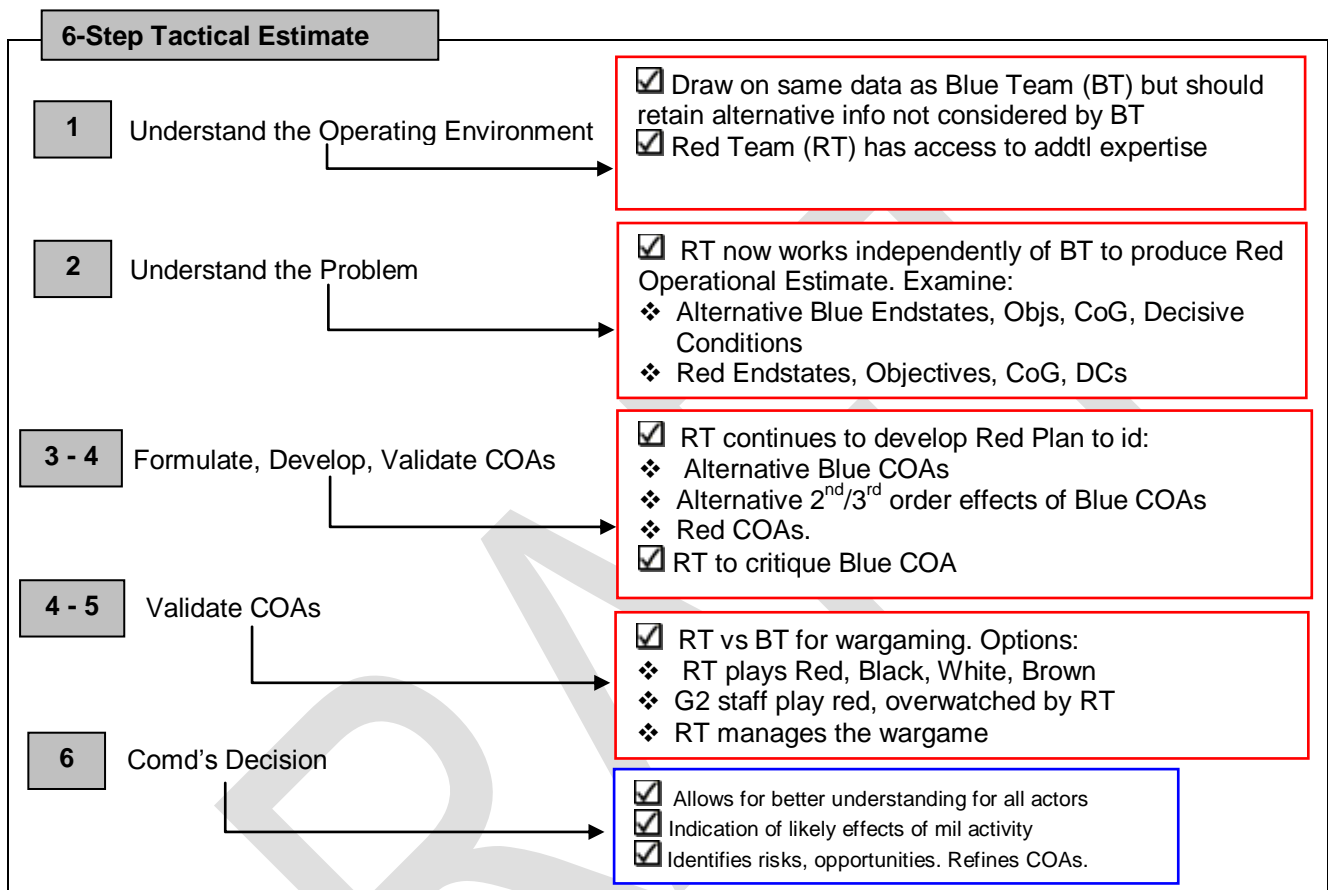
139. In the majority of cases, a key role for the red team is to challenge the underpinning assumptions, identify invalid or unnecessary assumptions, validate robust assumptions and offer alternatives as appropriate, such as:

Ser	Method	What	When	Method
(a)	(b)	(c)	(d)	(e)
<b>Diagnostic Techniques</b>				
1	Key Assumptions Check	Review the key working assumptions on which fundamental judgements rest	Start of planning	4 steps: 1. Review current thinking. 2. State all premises/assumptions. 3. Challenge each, asking why it must be true. 4. Refine list to incl only those that <i>must</i> be true.
2	Quality of Information Check	Evaluate integrity and reliability of available information	Ongoing- establishes confidence in decision-making process. Reviews <i>what</i> we know & <i>what</i> we <i>don't</i> know	Estb database eg HUMINT sources with indications of strengths/weaknesses of source. Periodic reviews essential.
3	Indicators/ Signposts of change	Review list of observable events/trends to track events, monitor targets for early warning	Ongoing but depends on time so more suited to strategic/op planning	1. Id set of competing hypotheses 2. Create separate list of potential activities/events for each hypothesis. 3. Regularly review/update indicators list. 4. Id most likely/most correct hypothesis based on # of changed indicators.
4	Deception Detection	Systematic use of checklists to determine when deception may be present and how to avoid being deceived	Part of Blue Team process. Requires time. Campaign Planning. Does the adversary have a history of deception? What means does he have?	4 sets of criteria: 1. Does adversary have motive, opportunity & means to deceive? 2. Would this potential deception be consistent with past operations? 3. Concerned over manipulation of sources? 4. What can be learned from evaluation of evidence?
<b>Contrarian Techniques</b>				
5	Devil's Advocacy	Taking an alternative viewpoint to drill out assumptions or reasoning	Appropriate where strong consensus or established mind-set exists.	1. Consider main line of thinking & assumptions. 2. Select 1-2 assumptions most susceptible to challenge. 3. Review validity of assumptions. 4. Highlight any evidence to support alternative assumptions. 5. Present findings if review uncovers major flaws.

Ser	Method	What	When	Method
(a)	(b)	(c)	(d)	(e)
6	Team A/Team B	Use of separate teams to contrast 2 (or more) strongly held views or competing theories.	Useful if there are 2> competing views on a subject	Create alternative judgements to capture essential differences, similarities, pros/cons, building consensus. Method of Analysis-Debate.
7	High Impact/Low Probability	Highlights a seemingly unlikely event that would have major consequences if it happened.	When analysts, staff, policy-makers are convinced that an event is unlikely & have given little thought to the implications	<ol style="list-style-type: none"> <li>1. Define high-impact outcome clearly to scope unlikely events.</li> <li>2. Devise plausible pathways to low prob outcome. Insert possible triggers eg death of key leader, collateral damage.</li> <li>3. Id set of indicators for low prob event</li> <li>4. Id factors to deflect bad outcome</li> </ol>
8	What If Analysis	Assumes that an event has occurred with potential (-ve/+ve) impact and explains how it might come about	Challenge strong mind-sets. Similar to High-Impact/Low Probability analysis	<ol style="list-style-type: none"> <li>1. Assume 'event' has happened.</li> <li>2. Select trigger events &amp; logical argument to make 'what if' scenario plausible.</li> <li>3. Work backwards from event and id plausible pathways to event.</li> </ol>
9	Experimentation	A test under controlled conditions to examine the validity of a hypothesis, or determine the efficacy of something previously untried	Demonstrate how certain proposals might play out within a certain context eg workshops/MJPs	Objective and subjective data analysis
10	Wargaming	An event to simulate a military operation; testing underpinning assumptions and testing/comparing COAs.	Latter stages of planning	See later discussion

Ser	Method	What	When	Method
(a)	(b)	(c)	(d)	(e)
<b><i>Imaginative Thinking Techniques</i></b>				
11	Brainstorming	An unconstrained group process designed to generate new ideas, theories or concepts	To stimulate new thinking. Red teams will brainstorm when they begin a project to generate a range of hypotheses about their issue	Paradoxically, more effective if structured. Ineffective if done as group. Allow individuals to brainstorm pre-group session. Never censor an idea. Takes time to set rules of the game, make group comfortable etc. Involve at least one outsider
12	Outside-In Thinking	Consideration of the external changes that might, over time, profoundly affect the issue/plan	Used to identify <u>all</u> issues that would indirectly shape a plan. Useful during first steps of OE, TE and CE	List all key forces (PMESII) that might affect issue/plan/problem. Focus on key factors which you might be able to exert some influence. Assess how each force affects the issue.
13	Alternative Future Analysis	Systematically explores multiple ways a situation can develop when there is a high degree of complexity/uncertainty	Throughout the planning process	Convene a group of experts to examine the focal issue. Select 2 most critical factors and convert into axes. Estb endpoints for each axis. Form a futures matrix by crossing the 2 chosen axes. 4 resulting quadrants represent the future scenario. Generate narratives that describe these views. Examine how current decisions would fare in each problem space.
14	Role Play/Surrogate Adversary (Prism Technique)	Models the behaviour of an individual/group by trying to replicate how they might think	Opening steps/questions of the estimates	That those role-playing have cultural capability/group contains expert.

140. **Red Team Involvement in the Estimate.** The red team can participate in any stage of TE or the CE; its involvement will usually depend on the complexity of the problem and the time available. Hence the concept has more utility for the 6-Step estimate. Interaction between the blue and red teams throughout the estimate could occur at the following stages:<sup>18</sup>



141. **Pitfalls.** Red-teaming is a dynamic and challenging activity. To remain effective at all stages of the planning process, the red team should be alert to the following challenges and pitfalls:

- a. **Group-think.** The desire for solidarity or unanimity within a staff constrains wider alternative thinking.
- b. **Narrow Focus.** Slow to react to changing situations.
- c. **Paradigm Blindness.** Reluctance to adopt new practices leads to predictable actions and failure to recognise changes in adversary actions.
- d. **Trends faith.** Blind adherence to trends without considering other problems or possible shocks.

<sup>18</sup> Section II of the DCDC Guidance Note – *A Guide to Red-teaming* provides detailed instruction on how, and at what stages, of the planning process the red team should engage with the blue team, and describes possible red deliverables that may add the most value through each step. Pages 2-10 to 2-12.

- e. **Self-imaging.** Expecting other actors' attitudes, such as values, beliefs, cultural concepts and capabilities to be the same as one's own, thus gaining a flawed understanding of consequences and outcomes.
- f. **Cultural contempt/misunderstanding.** The staff may recognise that cultural differences exist, but they fail to understand their significance or interpret them correctly.
- g. **Over optimism/pessimism.** Assume that success will be the only outcome, or to be unable to see the route to success.
- h. **Oversimplification and tunnel vision.** Failure to take an holistic view of a complex problem with many variables, especially when time constrained and operating with poorly integrated coalitions. This is likely to lead to implicit or untested assumptions.
- i. **Faulty perceptions or mindsets.** A tendency to perceive the expected.

#### **The Commander's principles for establishing a red team**

1. Plan red-teaming from the outset. It cannot work as an afterthought.
2. Provide clear objectives for the red and blue teams.
3. Support the red team. Its contribution should be valued by the command group and used to improve outcomes.
4. Create the right conditions. Red-teaming needs an open, learning culture that accepts challenge and criticism.
5. Fit the tool to the task. Assemble an appropriate red team and ensure individuals have the right skills and experience to do the job.
6. Ensure that the red team works with the blue team, not against them. Equally, ensure the red team approach is critical and appropriately adversarial.
7. Focus on key issues. Red-teaming should contribute quality thinking rather than quantity.