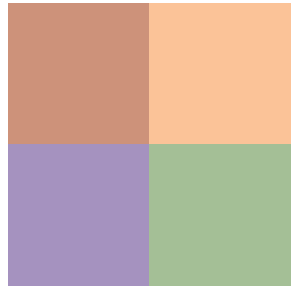
QUICK WINS

FOR BUSY ANALYSTS



FOREWORD

This handbook has been prepared by my Futures and Analytical Methods Team as a guide to help busy analysts tackle intelligence questions using simple analytical approaches or techniques.

All the approaches inside can be used quickly by the individual analyst or with a small group of colleagues. Analysts often lack the time and resources to carry out in full some of the more demanding analytical techniques taught on DI training courses, but still need a structured approach to producing intelligence assessments. This guide seeks to address the gap. It does not pretend to be exhaustive, but I view it as an important addition to the analytical toolbox. The guidance provided is based on DI FAM's research and its practical experience in helping DI analysts tackle a range of intelligence questions using structured analytical approaches and techniques.

For further details regarding the analytical approaches in this handbook or additional methodologies, please contact the DI FAM team. Contact details are provided at the end of this guide.

Paul Rimmer
Deputy Chief of
Defence Intelligence

Start Here

REFINING THE QUESTION

The role of Defence Intelligence is to reduce decision makers' uncertainty so that the optimal courses of action are more likely to be taken, or policies adopted. Understanding the customer's information requirement, and helping them frame their questions, are some of the most important characteristics of a good analyst. If the question, as understood by the analyst, does not reflect the genuine information requirements of the customer then analytical resources might be wasted and the customer is likely to be disappointed.

- Use the checklist below to guide your discussions with customers when framing a question prior to undertaking analysis.
- Go to the next section of this guide once you are clear about the question.

STAGE	KEY CONSIDERATIONS
1 Clarification	• Is it clear what would constitute an answer to the question? • Is it obvious what you would need to know to provide an answer (even if finding it out would be difficult)? If **YES** then go to stage 2. If **NO** then clarify the precise definitions of the terms in the question with the customer.
2 Widening	Based on your engagement with the customer, why exactly are they interested? • Are they *really* interested in something else, which they have assumed your question will answer? • If the question they have asked is *closed* (a 'yes / no' question): ° Would they probably be disappointed with an answer of 'yes' or 'no'? ° Would you want to answer it 'yes, but...' or 'no, but...' • Are there any hidden assumptions lying behind the question? If **NO** to all then go to stage 3. If **YES** to any then reframe the question with the customer so it covers the *real* object of interest, or is an appropriately *open* question instead of a *closed* one.
3 Focusing	• Does the customer's decision depend on whether the answer meets some threshold or set of thresholds, rather than the precise answer you give? If **YES**, reframe the question with the customer so it covers the narrower question of whether or not the threshold has been (or will be) met. If **NO**, turn over.

Now turn over

Next

CLASSIFYING THE QUESTION

Assuming you have clarified the question, and confirmed that it is indeed asking for an assessment that directly addresses issues on which the customer's decision depends, the next stage is to consider broadly what the fundamental characteristics of the question are.

- **Closed questions** can in theory be answered 'yes' or 'no' - they ask you whether something is or will be the case.
- **Open questions** cannot be answered 'yes' or 'no', and typically start with 'What', 'Who', 'Why' etc.
- **Present-focused** questions are about things that could in theory be observed now.
- **Future-focused** questions are about things that have not yet happened, but might do.

	Present	Future
Closed Question	**'Yes'/'No' questions about what is happening now**	**'Yes'/'No' questions about what could or will happen**
Open Question	**'What', 'Which', 'When', 'Who', 'Where', 'How' or 'Why' questions about what is happening now**	**'What', 'Which', 'When', 'Who', 'Where', 'How' or 'Why' questions about what could or will happen**

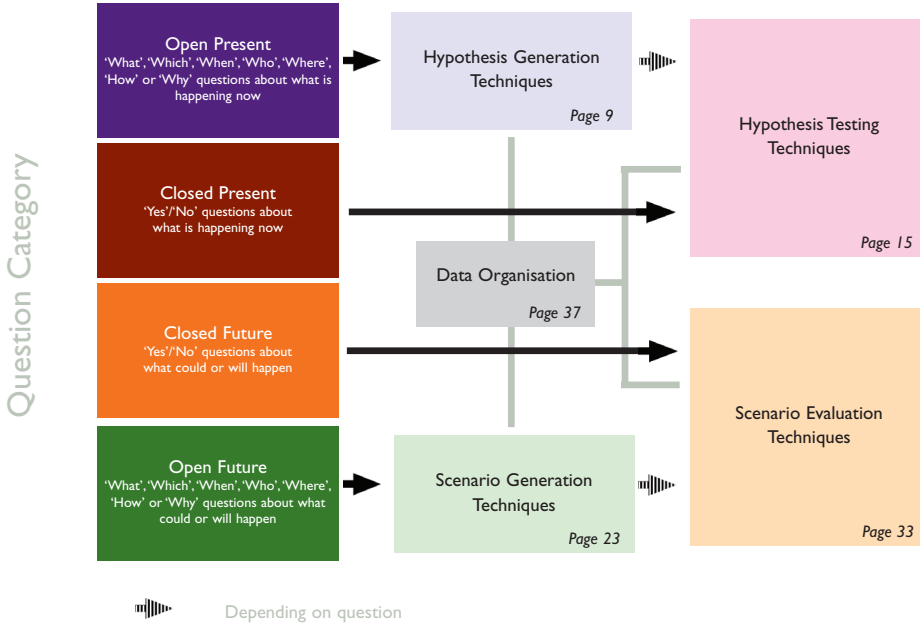
Quantitative Questions

Questions asking 'how many', 'when', 'how much', and so on might require an approach designed to tackle quantitative questions. These approaches are outside the scope of this booklet, but advice and guidance can be obtained from the FAM team - contact details are at the back of this book.

Finally

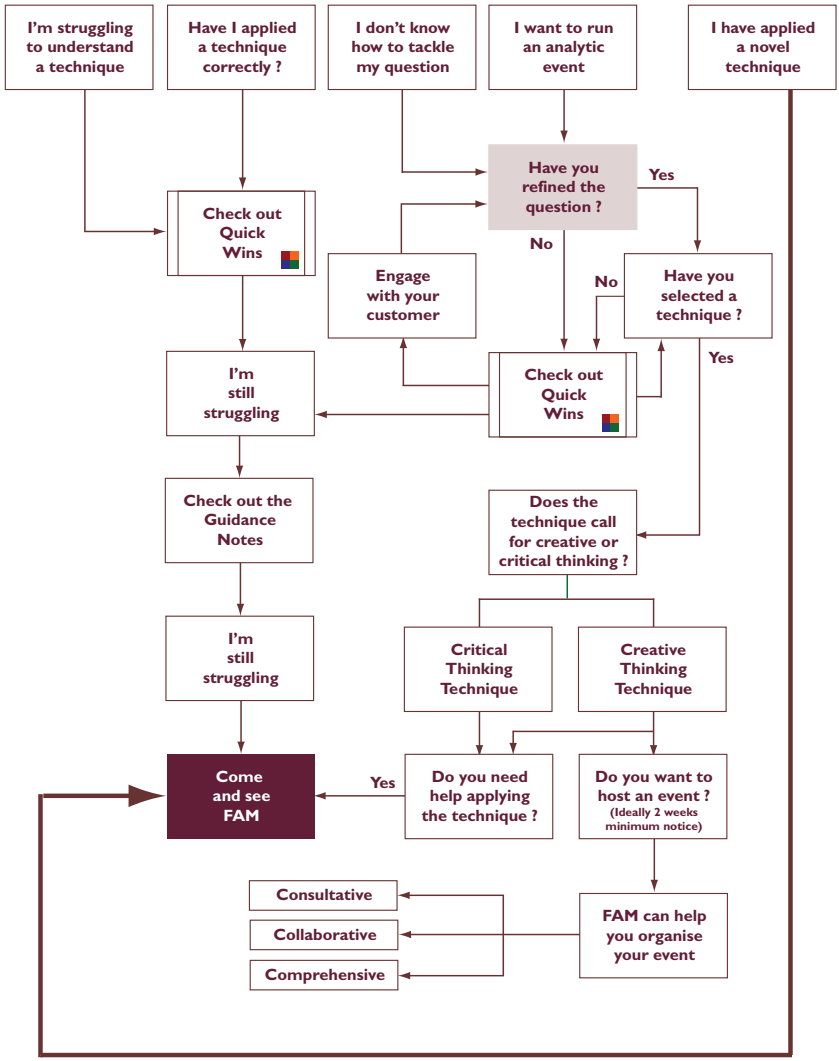
SELECTING THE TECHNIQUE OR APPROACH

Use the diagram below to navigate your way to the appropriate section of this guide. Each section contains a short description of one category of technique, what it is useful for, and also some information on a few simple techniques and approaches - and how to use them - within that category.



Still need help ?

WHEN SHOULD I COME AND SEE FAM ?



This guidance aims to provide analysts with a clear framework for:

- aligning an intelligence question as closely as possible with the customer's information requirement;
- understanding the question you are being asked;
- choosing the right approach to help you answer your question;
- communicating uncertainty effectively.

Quick Wins aims to demonstrate that structured analysis does not have to be time- or resource-intensive. Simple, pared-down techniques and approaches to tackle clearly defined intelligence questions can aid quick thinking and provide a framework for rapidly producing clear and robust assessments. They also provide structures for presenting assessments effectively to customers and seniors.

Structured analysis can benefit analysts in a variety of other ways, including:

- providing an intellectual audit trail allowing analysts and others to understand how an assessment was reached and if necessary, in future, review it easily;
- making analysis more persuasive to customers and stakeholders;
- encouraging creativity;
- identifying and questioning assumptions;
- identifying discriminating evidence;
- identifying denial and deception;
- managing complexity; and
- avoiding cognitive biases

The main sections contained in this modular guide are outlined below. Use the schema on pages 1 – 3 to help you clarify and classify your question and select a suitable technique category. Each technique listed in this book has four main headings:

- What is it ?
- Other techniques and approaches to use with it;
- Level of effort required; and
- How to do it.

Page 55 provides guidance on communicating uncertainty effectively in intelligence assessments (e.g. by using the 'Uncertainty Yardstick).

Page 61 gives some guidance on using analytical techniques to capture expert judgement in a variety of ways.

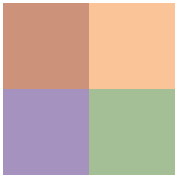
Finally, at the back of this book you will find details of training courses and contact details for the Defence Intelligence Futures and Analytical Methods Team (DI FAM).

This page is intentionally blank

Cognitive Trap	Description	Mitigate using...
Confirmation bias	The tendency only to consider hypotheses that you already believe are true.	Brainstorming (page 12) Environmental scanning (page 10) Analysis of Competing Hypotheses (page 16)
Anchoring effect	The tendency to place undue weight on the first piece of information you come across.	Key Assumptions Check (page 20) Analysis of Competing Hypotheses (page 16)
Groupthink	The tendency for analysts to conform to the views and positions of the group to which they belong.	Key Assumptions Check (page 20) 'Breaking the Mirror' (page 24)
Hindsight bias	The tendency to underestimate how surprising past events were, which makes future shocks seem less plausible than they actually are.	Cone of Plausibility (page 28)
Failure of imagination	The unconscious tendency to dismiss or ignore unlikely-sounding scenarios without considering them in detail.	Any scenario- or hypothesis-generation technique (pages 23 and 9)
Availability and recency effects	The tendency to focus on scenarios which are particularly salient or similar to recent events rather than examining alternatives.	Any scenario-generation technique (page 23)
Mirror-imaging	The tendency to underestimate the differences in the beliefs and objectives of foreign protagonists, which tends to lead to the belief that others will act in much the same way that we would.	'Breaking the Mirror' (page 24)

CONTENTS PAGE

HYPOTHESIS GENERATION



"There should be no combination of events for which the wit of man cannot conceive an explanation"

Sherlock Holmes (Arthur Conan Doyle)

Hypothesis generation is applicable to open, present-focused questions, such as:

What are the motivations behind RED's nuclear programme?
Why has RED stopped providing assistance to insurgent groups based in GREEN?

These questions ask you to generate a range of potential facts about the world – or hypotheses – that might have a bearing on the subject of interest.
Because there are always more possible hypotheses than data, there are no approaches that can *guarantee* that you will identify the 'true' hypothesis among those you generate. Nevertheless, structured hypothesis generation is designed to stimulate your imagination to make it more likely that the right hypothesis will be among your candidates. It encourages you to look at a wider range of possibilities, and, in a group, to prompt one another's thinking with new ideas.

You don't have to generate hypotheses in a structured way, but if you don't you run the risk of falling into various cognitive traps, including:

- confirmation bias (the tendency only to consider hypotheses that you already believe are true); and
- the availability heuristic (the tendency to think of ideas that are particularly salient, rather than likely).

ENVIRONMENTAL SCANNING

10 mins

What is it?

Environmental scanning is the use of simple mnemonics to widen the scope of your thinking and generate a range of explanations (hypotheses) for developments. It is a way of forcing yourself to think beyond explanations which seem intuitively obvious or which were the first, or most salient, ideas that sprang to mind.

Environmental scanning, however, is almost universally useful in helping you generate ideas for a variety of purposes. STEMPLES is particularly useful for examining defence-related questions and stands for Social, Technological, Environmental, Military, Political, Legal, Economic and Security. Other variations, however, may be more appropriate to the intelligence question at hand. These include PESTLES, PEST or STEEP. In some cases, you may need to generate your own bespoke set of categories to help you generate ideas relevant to the question.

Other techniques and approaches to use with it:

- Mind mapping to prompt new ideas and link existing ones (see page 42).
- Environmental scanning is useful for widening the scope of your thinking and generating ideas, drivers, key assumptions etc during:
  - Structured Brainstorming sessions (see page 12);
  - Cone of Plausibility/Drivers Identification exercises (see page 28);
  - Backcasting-Light (see page 34);
  - I&W exercises
  - SWOT Analysis (see page 40)
  - Breaking the Mirror/Red Teaming exercises (see page 24)

Level of effort required

Using environmental scanning to generate hypotheses is an analyst's at desk 'quick and dirty' alternative to a structured brainstorming and can take as little as 10 minutes. If possible, however, hold a structured brainstorming with 6 – 8 participants (see 'Event planning rules of thumb' on page 63 for more information on group size) to generate hypotheses as the range of ideas is likely to be greater.

How to do it

1. Select a suitable mnemonic from above or generate a bespoke set of categories for your question. Use your categories or headings to generate as many ideas as you can and write them down. The table directly below provides some possible interpretations of/prompts for the categories that you find relevant to the question you are tackling.

CATEGORY	POSSIBLE INTERPRETATIONS
Social	Culture, attitudes/perceptions, education, population, health, welfare, corruption etc.
Technological	Developments, funding, access to technology, patents, licensing, IT, mobile phones, infrastructure etc.
Environmental	Climate, impact of weather, natural disasters, natural resources, geography etc.
Military	Capabilities, developments, doctrine, command and control, leadership, loyalty to government etc.
Political	Leadership, political system, policies, pressure groups, elections, relations with other states etc.
Legal	Current and future legislation, regulatory processes, judicial system, international organisations (membership of), treaties (signatories to) etc.
Economic	Internal economy, trade, industry, agriculture, economic blocs (membership of), external investment, aid, unemployment, interest rates, global markets etc.
Security	Police and paramilitary forces, coast guard, terrorism, insurgent groups, criminal networks, private companies, reforms etc.

Once you have generated a broad range of hypotheses, review them to see whether any are so similar that they can be combined and to check whether you have missed any. 2

Make a record of them and consider them periodically to keep an open mind about them, rather than fixing on a hypothesis or hypotheses prematurely. Alternatively, you may need to evaluate the hypotheses more formally and systematically against the information available using a hypothesis testing approach, such as ACH. Bear in mind that in some cases (e.g. who assassinated the president of RED?), you may be seeking just one explanation, whereas in others there may be a range of interconnected (rather than mutually exclusive) hypotheses. For example, you might use STEMPLES to tackle the question about RED's motivations for a nuclear weapons programme. See the example directly below. 3

CATEGORY	HYPOTHESIS
Social	None
Technological	RED's technological base is advanced so nuclear weapons development can be done easily and rapidly.
Environmental	RED has large quantities of the right kind of raw materials.
Military	RED's armed forces have demanded a nuclear capability to compensate for conventional military weakness.
Political	RED's leadership sees nuclear weapons as conveying prestige. RED's leadership sees possession of nuclear weapons as a bargaining chip with the international community.
Legal	RED is not party to treaties to deter it from developing nuclear weapons.
Economic	RED's leadership has opted for nuclear weapons as they are cheaper than buying large amounts of conventional weaponry.
Security	RED's leadership is concerned about its neighbours, GREEN and BLUE, which have nuclear weapons and are hostile.

STRUCTURED BRAINSTORMING

<60 mins

What is it?

Brainstorming is a widely used group creativity technique designed to generate a large number of ideas and concepts to help solve a problem or tackle a challenge. It is a useful way of bringing analysts together to generate explanations or hypotheses to explain events. It is also almost universally useful in helping them generate ideas for a variety of purposes in analytical events (see below). It involves two stages: a divergent thinking stage to generate new ideas; and a convergent thinking stage to organise them and, if appropriate, reduce them.

Other techniques and approaches to use with it:

- A suitable environmental scanning approach, such as STEMPLES to widen the scope of your thinking (see page 10).
- Mind mapping to prompt new ideas and link existing ones (see page 42).
- Structured brainstorming is useful for generating:
  - key drivers in Cone of Plausibility/Drivers Identification exercises (see page 28);
  - key assumptions in Backcasting-Light exercises (see page 34);
  - indicators for I&W exercises
- Voting and ranking to reduce the number of ideas for further explanation (see page 50).

Level of effort required

Assuming the question to be brainstormed has been clarified in advance, a group of 6 – 8 analysts (see 'Event planning rules of thumb' on page 63 for more information on group size) can complete a very simple brainstorming in under an hour, though additional activities at the convergent stage (such as voting and ranking) will mean your brainstorming could last longer.

How to do it

1. A generic brainstorming workshop process is set out below. However, for generic guidance on planning and running analytical events see 'Analytical Events' on page 63. The facilitator should set at least one specific ground rule - 'no deriding of ideas' - at the start of the brainstorming and ensure adherence to it. This is to help prevent the stifling of creativity and avoid group think, anchoring and the authority fallacy. Essentially, the facilitator should try to ensure that there is no 'official' analytic line.

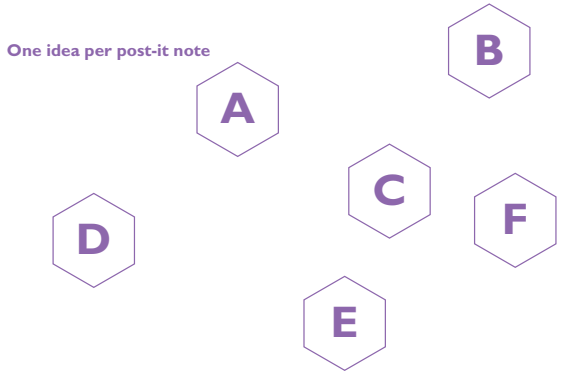
2. The facilitator should: (i) give people a few minutes to think and write their ideas down silently on sticky notes (one idea per sticky note); and (ii) refer them to environmental scanning posters to help them think widely.

   Asking participants for a maximum number of hypotheses (e.g. three or five) at the silent brainstorming stage can help avoid facilitators being swamped with numerous ideas which might contain duplication. Once the initial sticky notes with ideas have been dealt with as described in the paragraph below the facilitator can ask participants for further ideas.

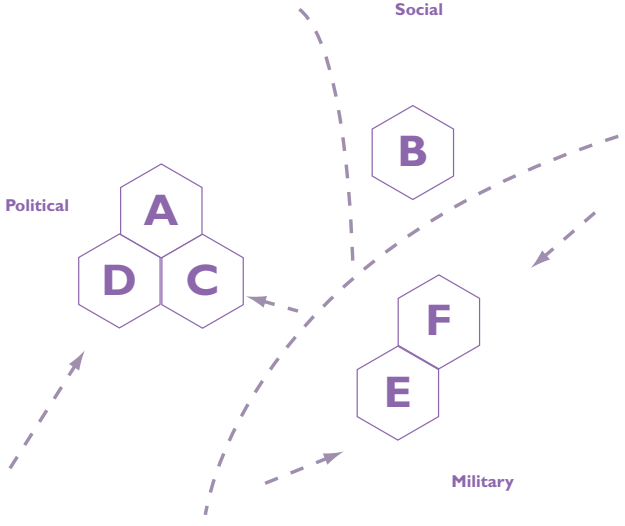
3. The facilitator (preferably with a helper) then starts collecting the sticky notes, reads them out, and seeks clarification of them (if necessary) before placing them on a whiteboard or wall where all can see them. They inevitably trigger further ideas which the participants should

write on their sticky notes and hand to the facilitator. By this stage it is acceptable for participants to call out their ideas as they write them on sticky notes, but there should be no criticism or debate - these should be saved for the next stage. Wild ideas are acceptable in most brainstorming sessions. They keep things moving, stimulate deeper thinking and can lead to other useful ideas.

When ideas wane, the convergent phase can begin. This involves reducing the ideas to those which will be taken forward. The facilitator works with the participants to group the ideas thematically and eliminate any duplication and ideas irrelevant to the question. Mind mapping can be used during this phase to show the linkages between the different ideas or hypotheses. This may prompt further ideas, which should be allowed and added to those already generated. 4



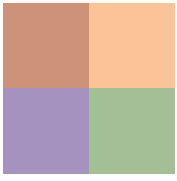
Next, further reduction, if appropriate, can take place. There are two main ways of reducing ideas. Participants vote for their favourite ideas using a simple voting system or they discuss the ideas and the facilitator sees what emerges. 5



'Boultbee's Criterion' says that if the converse of a statement is absurd, the original statement is an insult to the intelligence and should never have been said.

Take your key judgements in turn, and ask yourself how you would KNOW if they were FALSE. If you can't easily think of a way they could be disproved, they are probably vacuous.

HYPOTHESIS TESTING



"Never assume the obvious is true"

William Safire

Hypothesis testing is appropriate for closed questions about the present, such as:

Is RED's nuclear programme purely civil?
Is RED providing technical assistance to GREEN's armed forces?

These kinds of questions ask you to come to a conclusion about the likelihood of particular, pre-defined hypotheses. Often, open questions about the present will require you to move on to a 'hypothesis testing' phase once you have generated some candidate hypotheses.

Hypothesis testing techniques are designed to help analysts establish what assumptions a hypothesis rests on, whether it is likely to be true and if so with what probability, or which hypothesis from a range of possibilities is most consistent with the data.

Although you don't need to use an explicit hypothesis testing technique, not doing so runs the risk of you falling prey to various cognitive traps, including:

- the anchoring effect (the tendency to place undue weight on the first piece of information you come across);
- the availability heuristic (the tendency to think of ideas that are particularly salient, rather than likely);
- overconfidence about the most likely hypothesis; and
- groupthink.

QUICK ANALYSIS OF COMPETING HYPOTHESES (ACH)

4 hrs

What is it?

Assuming you have a set of hypotheses already generated, ACH involves identifying a list of potentially-relevant pieces of information and assessing their consistency with those hypotheses. The approach is designed to help analysts consider all the evidence in the light of all the hypotheses as objectively as possible. Without this kind of structure, there is a risk that the hypothesis which 'survives' the first few pieces of evidence will stand unchallenged even when contradictory evidence arises.

A busy analyst can use a pared down version to organise their thinking on a sudden new development of interest (e.g. the assassination of a leader by parties unknown or the interdiction of a component which might have a use in a weapon system) which:

(i) requires the rapid analysis of a small set of hypotheses (e.g. five or fewer) to explain it; and
(ii) involves a limited set of evidence (e.g. 10 - 20 items) to manage. A simple ACH of this kind can help analysts quickly see how or if the available data relates to the hypotheses and thus which of them are more or less likely, and what the intelligence gaps are.

Other techniques and approaches to use with it:

- Environmental scanning (e.g. STEMPLES) to widen the scope of your thinking, to encourage the identification of all relevant pieces of information and to organise them into categories (see page 10).
- It uses a matrix to list the hypotheses and the key evidence (see page 48).
- It involves filtering evidence to assess its usefulness (see page 52).

Level of effort required

Applying ACH to a new development as described above can be done relatively quickly in a few hours using a simple matrix by a busy analyst at their desk or a group of 6 – 8 analysts (see 'Event planning rules of thumb' on page 63 for more information on group size). The methodology output provides a useful framework for structuring and producing a product quickly and a clear audit trail for explaining or justifying an assessment.

Remember that an ACH exercise can be labour-intensive if applied rigorously to a long-standing problem. It would involve gathering and evaluating a large quantity of data against a range of hypotheses over the course of weeks or months. Such an exercise might also require the use of a spreadsheet to sort the evidence in various meaningful ways (e.g. by diagnosticity, relevance, reliability or credibility, source, date etc).

How to do it

1 Create a matrix and write your hypotheses along the top, one hypothesis per column. Down the vertical axis make a list of all the evidence that is relevant to evaluating the hypotheses and thus answering the question posed, listing one distinct piece of evidence per row. This could include known facts, assumptions, arguments and the absence of things you would expect to see if a hypothesis were true. Listing assumptions and arguments as well as hard facts can provide you with useful insights about the issue. For example, if your entries are predominantly assumptions and arguments and not hard facts, the assumptions will need to be examined carefully.

QUICK ANALYSIS OF COMPETING HYPOTHESES (ACH) (cont.)

EVIDENCE	CREDIBILITY	HYPOTHESIS					
		H1	H2	H3	H4	H5	H6
ITEM 1							
ITEM 2							
ITEM 3							
ITEM 4							
ITEM 5							
ITEM 6							
ITEM 7, ETC							
TOTALS							

You may well wish to annotate your evidence with report reference information and use a colour code to rate its reliability/credibility using a simple system, e.g. green for high, amber for medium and red for low as shown immediately above.

Then work down your list of 'evidence' assessing each item against the hypotheses using a standard key[1] as follows: (2)

- ✕ If it is highly likely, or almost certain, that you would see this evidence if the hypothesis were true (i.e more than 75% likely), put '4' in that box.
- ✔ If it is likely (between 50% and 75% probable), put '3' in that box.
- N/A If it is a realistic possibility (between 25% and 50% likely) put '2' in that box.
- ? If it is unlikely (between 10% and 25%), put a '1' in the box.

Analysts can also use a hard or big ✕ to indicate that if the evidence is true, then a hypothesis **must** be false. Analysts should be wary of denial and deception, misinformation and source reliability when considering the use of a hard ✕ to refute a hypothesis.

The last row in the matrix is to record the total number of ✕ and against each hypothesis.

Refine the matrix: this involves examining the utility of the evidence in the matrix and discarding any that either has little or no diagnosticity or is only applicable to one or two hypotheses. If evidence is discarded it should be retained for the audit trail, and it is wise to leave a record of the evidence in your matrix in case it becomes relevant at a later stage. Eventually your matrix may look something like this: (3)

[1] Analysts will find several different keys are used in ACH. Analysts may wish to adopt their own key if it assists their analysis, which is acceptable tradecraft practice **provided** the key is displayed with the ACH matrix. For example, some analysts prefer to use CC, C, I and II to represent wholly consistent, consistent, consistent, inconsistent and wholly inconsistent.

QUICK ANALYSIS OF COMPETING HYPOTHESES (ACH)

EVIDENCE	CREDIBILITY	HYPOTHESIS					
		H1	H2	H3	H4	H5	H6
ITEM 1		✗	✓	✓	✓	✗	✗
ITEM 2		✗	✗	✗	✗	✗	✗
ITEM 3		✗	✓	?	✓	✓	✓
ITEM 4		✓	✓	✓	✓	✓	✓
ITEM 5		✓	N/A	✓	✗	✗	✓
ITEM 6		✗	✓	✗	✓	✓	✓
ITEM 7		✓	✗	✗	✓	?	?
ITEM 8		✓	✗	?	✗	✗	✗
ITEM 9		✓	✗	✗	✗	✗	✗
ITEM 10		✓	?	N/A	?	N/A	N/A
ITEM 11		✓	✗	✗	✓	✗	✗
TOTALS		4/7	5/4	5/3	4/6	6/3	5/4

4 When conducting an ACH, there are a few things to bear in mind:

- Be aware that evidence scoring the same across all hypotheses is *non-diagnostic* and does not tell you anything useful about your hypotheses. This kind of evidence can be put to one side. (This applies to evidence item 4 in the example);
- Pay most attention to the most diagnostic evidence - i.e. that which is highly consistent with some hypotheses and inconsistent with others. (Using the example above, evidence items 3, 7,9 and 11 are the most diagnostic and items 2 and 4 the least diagnostic);
- Double-check how reliable/credible the most diagnostic evidence is – especially if your conclusions hinge upon it. (Using the example above, item 1 is the most reliable/credible and item 5 is the least reliable/credible;)
- Consider how many scores are based on the same underlying assumption and double-check your confidence in those assumptions;
- Consider whether your overall conclusions would change significantly if these pieces of evidence were interpreted differently, were wrong or were deceptive;

QUICK ANALYSIS OF COMPETING HYPOTHESES (ACH) (cont.)

Bear in mind that the approach is not a silver bullet. Your results may well be inconclusive as shown in the example (two or more hypotheses being equally well-supported).

The results of an ACH can be used to help you to:

- engage with collectors with regard to the most diagnostic intelligence reports (e.g. to clarify content and reliability/credibility and see whether further information might be available);
- consider what evidence would help to further distinguish between the various hypotheses and thus steer collection requirements and engagement with intelligence allies; and
- highlight intelligence gaps.

Discuss the relative likelihood of all the hypotheses when reporting your conclusions. Explain the significance of the diagnostic evidence in distinguishing between the relative likelihood of the hypotheses.

Tips

Following the steps and structures outlined above allows an analyst to conduct a very simple exercise at their desk. Doing such an exercise alone, however, may not be as effective as having a group of analysts analyse the evidence against the hypotheses. Use a simple table in Word as shown in the example above or an Excel spreadsheet.

For generic guidance on planning and running a simple ACH event, see 'Analytical Events' on page 63. Below are a number of tips that should help you organise a simple group ACH.

For workshops, make sure you have empty matrices with the exam question and the hypo-theses printed onto A1 paper or draw them onto whiteboards in advance. They can then be completed during the event. They provide helpful structure, keeping both facilitators and analysts focused and systematic.

KEY ASSUMPTIONS CHECK (KAC)

10 mins

What is it?

If a most likely hypothesis has been established, a KAC involves identifying all the underpinning assumptions behind it, and making judgements as to how: (i) important to the hypothesis (i.e. 'load-bearing'); and (ii) well-supported they are. It allows you to check your analysis (or that of others), potentially exposing firmly held assumptions that may have gone unchallenged over time. This is especially important for intelligence analysts who routinely have to make assumptions to fill gaps where information is incomplete or ambiguous.

A KAC can be conducted at the start of an analytical project by identifying and testing all your working assumptions underpinning a current assessment. It is also useful, however, at the draft or coordination stage when you are seeking the input of other SMEs. For really important assessments consider conducting two KACs - one early on and one at the draft stage.

Other techniques and approaches to use with it:

- Matrices to list and rate the assumptions (see page 48).
- Filtering to identify the most important and least well-supported assumptions (see page 52).
- Structured brainstorming (see page 12).

Level of effort required

Assuming there is only one analytic line of interest, and that it has been identified in advance, this can be done by a group of 6 – 8 analysts (see 'Event planning rules of thumb' on page 63 for more information on group size) in less than two hours. Generating the list of key assumptions in advance of an event will also reduce the workshop length. An analyst at their desk could almost certainly complete a KAC faster than a group of analysts, but KAC works much better as a group activity as a range of perspectives will be considered.

How to do it

1. Identify your 'analytic line' to be tested. It might look as follows:

   RED is GREEN's most important military supplier. RED has also been pivotal in assisting GREEN with its WMD programmes which are now reaching maturity.

2. List all of the key assumptions that you believe underpin the analytic line, i.e. those that are accepted as being true for the conclusions to be valid. For the example above these would look as follows:

NUMBER	ASSUMPTIONS
1	RED is supplying GREEN militarily
2	GREEN has no other significant military supplier
3	RED has provided GREEN with non-military goods and training
4	GREEN has WMD programmes
5	GREEN depends on RED assistance for its WMD programmes
6	GREEN's WMD programmes are reaching maturity
7	...etc.

After you have developed as complete a list as you can, go back and critically examine each assumption using the following questions to aid your thinking:

- If it were false, how seriously would this undermine the analytic line?
- How much confidence do you have that this assumption is valid?
  - Why do you have this degree of confidence?
  - Under what circumstances might this assumption be false?
  - Could it have been true in the past but no longer true today?
  - What would we expect to see if this assumption were true?
  - Why aren't we seeing these indicators?

Based on these, score each assumption according to two criteria:

- RELEVANCE:
  - Largely irrelevant to analytic line (0)
  - Important - analytic line would be significantly less likely if assumption were false (1)
  - Essential - analytic line cannot be true without assumption (2)
- SUPPORT:
  - Unsupported or very questionable (0)
  - Correct with some caveats (1)
  - Solid (2)

We are looking for the shaky, load-bearing assumptions. Find the assumptions which score highest for 'relevance'. Of these, the assumptions with the lowest 'support' scores are the key uncertainties. A matrix template like the one below should be used to filter your key assumptions and provide a clear structure for the exercise. Use a comments column to record the rationale behind the results of your confidence check. This might relate to the quality and quantity of evidence, reliability of sources etc. 3

In this example, the scores suggest that items 4 and 5 require revisiting as they are essential to the analytic line but unsupported. Item 3 can be ignored.

Consider whether the key uncertainties identified have revealed collection requirements. The number of key uncertainties will also dictate whether/how much the analytic line requires further research and analysis, including contact with collectors, to ensure it is as robust as possible and accurately reflects the available information.

ASSUMPTION	RELEVANCE	SUPPORT
RED is supplying GREEN militarily	2	2
GREEN has no other significant military supplier	1	1
RED has provided GREEN with non-military goods and training	0	2
GREEN has WMD programmes	2	1
GREEN depends on RED assistance for its WMD programmes	2	0

Tips

For generic guidance on planning and running a simple KAC event, see 'Analytical Events' on page 63. Below are a number of tips that should help you organise a simple group KAC. Include one or two experienced analysts who have some familiarity with the topic, but who are not currently working on the subject matter and are not constrained by the prevailing view on the analytic line. The facilitator should make clear at the start that those taking part need to be prepared for and open to the fact that the analytic line may be wrong.

The list of assumptions underpinning the analytical line in question can either be:

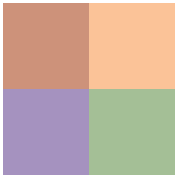
- generated by the participants and collated into a single list prior to the workshop and then reviewed and checked during the workshop;
- both generated and checked during the workshop.

If you plan to do the latter, DI FAM recommends some silent brainstorming initially during which each participant is asked for a limited number (e.g. 3 – 5) of key assumptions on sticky notes, though it is also acceptable to ask participants to just call out their ideas and a facilitator to note these down on a whiteboard or flipchart. See also 'How to do it' on page 12, as a simplified version of structured brainstorming to generate the key assumptions would work well in this instance.

Remember that generating the key assumptions during the event is likely to make your workshop considerably longer, though how long will depend on the complexity of the analytic line. For most problems it is likely to take 30 - 60 minutes. Generating key assumptions prior to the event allows you to plan how long you will need to filter them and complete your matrix. Allow up to 30 mins to consider and discuss the KAC results and their implications for the analytic line.

Make sure the analytic line and the prompting questions are displayed where all can see them (e.g. on a whiteboard, flipchart or the wall). An A1-size pre-printed matrix attached to a whiteboard or wall, or a matrix hand drawn onto a whiteboard should be used for the exercise. These props will help to keep both the facilitator and the participants systematic in their approach and focused on the tasks at hand.

SCENARIO GENERATION



"The impossible sometimes happens; the inevitable sometimes does not."

Daniel Kahneman

Scenario generation helps answer open, future-focused questions such as:

How would RED react to international pressure over its nuclear activities?
What will GREEN's leadership be like in 2020?

Such questions ask you to generate a set of hypotheses about the future, or 'scenarios'. Often, the customer is interested only in getting an idea of the range of possible futures, so they can make their decisions or policies as robust as possible. Sometimes, however, the policy customer needs an idea of which scenario (or category of scenarios) is most likely, in which case the scenario generation phase should be followed by a scenario evaluation of the generated scenarios.

Structured scenario generation can help you overcome the natural tendency to assume that the future will look much as it does today or that the future is unknowable so there is no point trying to envisage what it may entail. They can allow you to identify plausible alternatives and longer term perspectives that challenge conventional thinking, and encourage a better understanding of the key drivers behind an issue in your area of expertise. Generating a range of scenarios can be useful for a range of customers who need to have strategies for a variety of outcomes.

You don't have to use a scenario-generation technique in responding to an open, future-focused intelligence requirement. Not doing so, however, means you might be more likely to fall prey to cognitive traps, including groupthink, hindsight bias, failure of imagination, availability and recency effects, and mirror-imaging.

'BREAKING THE MIRROR' (OR RED TEAMING AT DESK)

< 2.5 hrs

What is it?

Red Teaming has a range of interpretations, but as a specific analytical technique or approach it usually involves trying to adopt the mindset of a foreign protagonist to think through their policy or strategy on a particular issue.

Preparing a Red Teaming event, however, can be time-consuming and labour-intensive. This pared down or basic version of Red Teaming - which is based around SWOT Analysis (see page 40) - can allow an analyst at their desk to develop potential courses of action for a state or group of interest.

Other techniques and approaches to use with it:

- SWOT Analysis is a useful framework for examining an organisation's position with regard to a particular situation, given its objectives (see page 40). The results can be used to infer its potential actions and where appropriate to identify the UK's own vulnerabilities.
- A suitable environmental scanning category, such as STEMPLES, to widen the scope of your thinking and encourage the identification of all relevant pieces of information (see page 10).

Level of effort required

Much depends on the nature of the question. Assuming, however, you have clarified the question and already gathered some suitable background material, a simple 'Breaking the Mirror' desk exercise could be completed in as little as 60 mins.

How to do it

1. Before you commence your exercise, make sure you are clear about your intelligence question and then rephrase it from the protagonist's perspective. For example,

   How would insurgency group RED respond to GREEN's military withdrawal from Redistani territory, and move itself closer to taking power?

   might become:

   How can we exploit the invaders' withdrawal from soil which is rightfully ours and move ourselves closer to leading our people?

2. Next, list all the key objectives of the protagonists as you understand them which relates to the issue at hand.

KEY OBJECTIVES OF RED STRATEGY DURING WITHDRAWAL
• Make sure GREEN leaves for good • Be the only credible candidates for government of Redistan • International recognition of RED government • Support from Redistani people.

Formulate appropriate SWOT questions to help you - as RED - identify your internal strengths and weaknesses as well as the external factors presenting opportunities and threats with regard to your objectives as described.

3

STRENGTHS Which of our characteristics will help us achieve our objectives?	**WEAKNESSES** Which of our characteristics will work against the achievement of our objectives?
OPPORTUNITIES What events or developments might help us achieve our objectives?	**THREATS** What events or developments might work against the achievement of our objectives?

Whilst answering your four SWOT questions use STEMPLES to help you widen the scope of your thinking.

‘BREAKING THE MIRROR’ (cont.)

STRENGTHS

- Unity of purpose – we will rule ✻
- We have choice over location and nature of engagement
- The invaders are leaving and we know it ✻
- We represent the population
- We have infiltrated GREEN’s forces
- Our networks are resilient and adaptable
- We have support from country BROWN ✻
- We have good media capability – can send messages of victory
- We have long military experience and an experienced leadership

WEAKNESSES

- We lack medical equipment and training
- We have no defence against invader aircraft
- We lack conventional firepower
- Contact with senior leaders is difficult ✻
- We cannot rely on all commanders to enact orders
- We have too much autonomy at lower levels
- We have a weak, compromised and very slow communications network ✻
- We generate negative publicity due to civilian casualties

OPPORTUNITIES

- Withdrawal timescales are driven by the invaders’ political masters ✻
- It will be generally much easier for us to operate and our leaders will be able to return home more often
- Media provides a global and domestic audience ✻
- Retreating invader forces will be sloppy, complacent and predictable, and lack resolve

THREATS

- Threat from our enemies in ORANGE province increases
- GREEN’s capability to target and incarcerate our fighters increases
- Invaders change their minds and stay ✻
- Invaders manage to bribe our fighters to switch sides

Once you have answered your SWOT questions, and are still thinking from RED's point of view, pick the key two or three items from each quadrant (see the starred (*) entries in the example on the left) and identify a best course or courses of action to exploit strengths and opportunities, and mitigate weaknesses and threats. See the table below for ideas generated from the populated SWOT matrix.

SUGGESTED STRATEGIES FOR RED
• No need to change tactics drastically - we can sit and wait • Solicit military aid from BROWN before GREEN forces leave • Invest in more secure communications equipment • Expand communications strategy to encompass new media • Ensure we don't provoke GREEN into staying any longer • Reassure BROWN that we will leave their territory when GREEN has withdrawn

Finally, develop these into a more detailed action plan. Use your knowledge of the intelligence to assess the extent to which the protagonist is considering or planning along these lines. If you have generated any particularly high-impact potential actions that you hadn't previously considered, you might want to amend your collection plan to take account of them.

CONE OF PLAUSIBILITY

What is it?

The Cone of Plausibility allows the generation of a range of plausible scenarios that describe how a subject area may look after a given timeframe (e.g. a few weeks through to some 20 – 25 years hence). It provides a clear audit trail to explain how they are reached. However, simply generating key drivers relating to a subject area (without generating scenarios) can provide you with useful insights about what factors are the most important in shaping the future.

Other techniques and approaches to use with it:

- Brainstorming to identify key drivers (see page 12)
- Environmental scanning (e.g. STEMPLES) to widen the scope of your thinking and encourage the identification of all key drivers (see page 10).
- Voting and ranking (i) to identify the most important drivers if more than 7 are generated (ii) to identify which assumptions to change (see page 50)

Level of effort required

Assuming the question and timeframe is clarified before a workshop a group of 6 – 8 analysts (see 'Event planning rules of thumb' on page 63 for more information on group size) could:

- complete up to 5 simple scenarios in a minimum of two and a half hours;
- identify key drivers in around 30 mins.

An analyst at their desk could probably complete both tasks faster. The Cone methodology output provides a useful framework for structuring and producing a product quickly as well as presenting the results effectively.

How to do it

1. Determine the question and set a timeframe, for example:

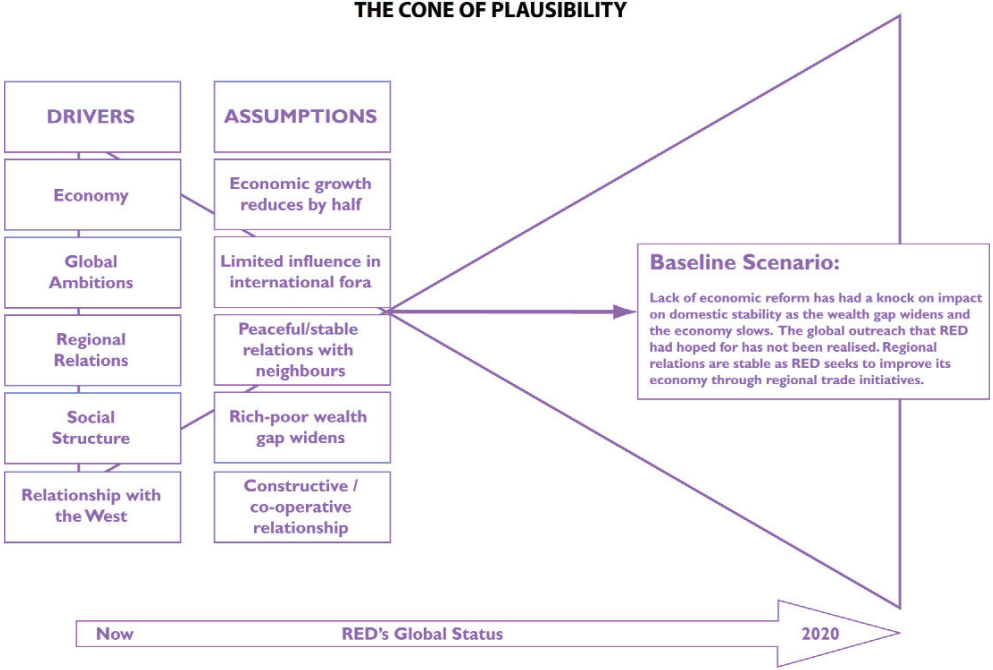
   'What will RED's international status be in 2020?'

   The timeframe may be determined by the task at hand or specified by the customer. Alternatively, it may be determined by forthcoming issues that an analyst deems important (e.g. elections, age of a dictator, expected acquisition of a military capability).

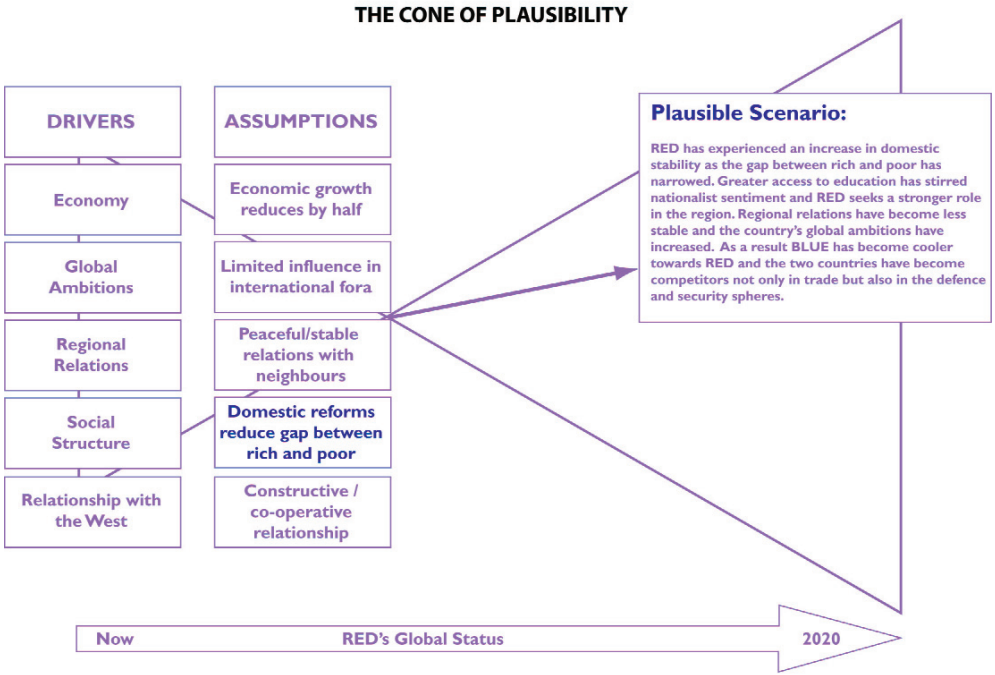
2. Identify the drivers. These are the forces shaping current events in the subject area. They should be written as neutral statements e.g. "oil price" rather than "rising oil prices" or "leadership" rather than "repressive leadership". They should also be forces that you judge will remain relevant over the timeframe. Use STEMPLES or similar to encourage identification of all key drivers. DI FAM recommends that you generate 5 - 7 drivers for most exercises. If substantially more drivers are generated then you should select the 5 - 7 drivers they consider to be the most important.

3. Make judgements ('assumptions') about how the drivers will behave over the timeframe. Try to be as specific as possible when wording your assumptions. For example, rather than saying "the economy will grow", a more specific assumption could be "the economy will continue to grow at the same rate as in recent years". The more specific the assumption, the less ambiguity and doubt there will be in the minds of analysts and customers. Generate only one assumption per driver.

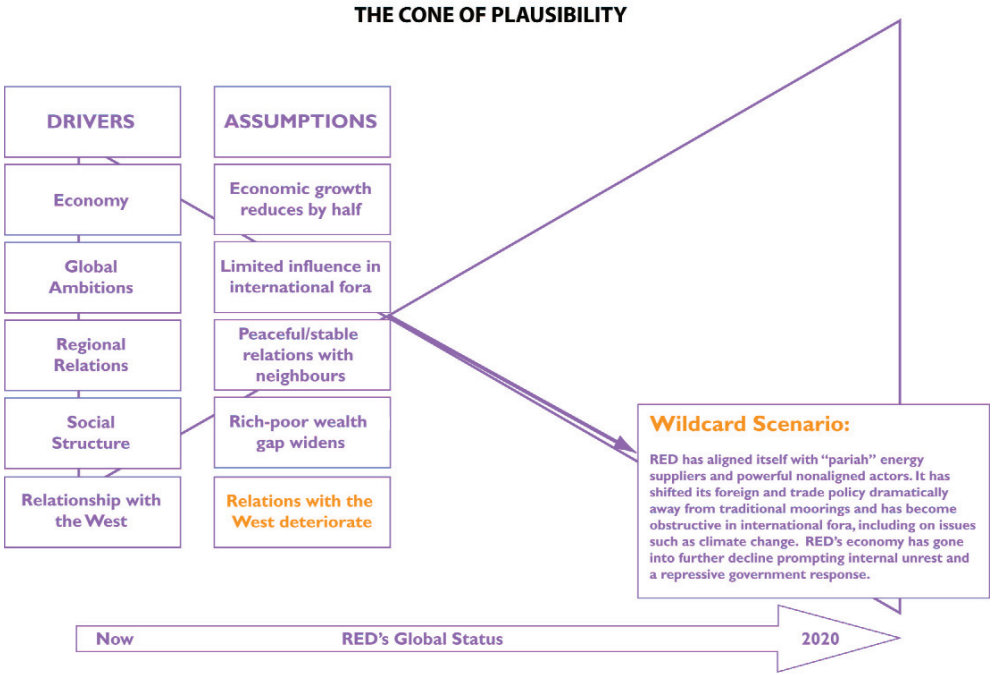
THE CONE OF PLAUSIBILITY



4 Generate a baseline scenario by taking your list of drivers and assumptions and creating a scenario from them. This is usually a projection forward of the current situation. For your baseline (and for that matter your plausible alternative and wildcard) scenarios, use a narrative style and write them as a future that has already come to pass. This means the scenarios should not contain the kind of qualifying language (e.g. possibly, could, may) commonly used in intelligence assessments. Use either the past ("RED has achieved") or the present continuous ("It is 2030 and RED is achieving") tense can help to do this.



5 Generate a plausible alternative scenario. The most common way to do this is by changing an assumption that you judge is ***more likely*** to change over the time-frame of the study than the others. Then consider the impact on the baseline of the change made to that assumption. Consider any possible impacts that the changed assumption may have on the other assumptions you have not deliberately changed. These impacts should appear in your scenario description. For example, if we change the assumption related to the social structure, a plausible alternative scenario as described above may emerge.

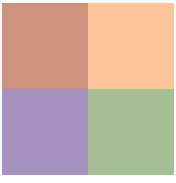


6 Generate a plausible 'wildcard' scenario by re-examining the assumptions underpinning the baseline and radically changing the assumption you judge to be the ***least likely to change***. This should produce a high impact/low probability scenario. For example, if we change the assumption about RED's relations with the West, a "Wildcard" scenario as described below may emerge.

When you suspect that two phenomena A and B are related, there are always five possibilities to consider:

1. That A causes B
2. That B causes A
3. That A and B are both caused by a separate phenomenon, C
4. That the apparent relationship between A and B is a coincidence.
5. That the data are wrong.

SCENARIO EVALUATION



> "There is a tendency in our planning to confuse the unfamiliar with the improbable. The contingency we have not considered seriously looks strange; what looks strange is thought improbable; what is improbable need not be considered seriously."
>
> Thomas Schelling

Scenario evaluation is appropriate for closed, future-focused questions such as

Will RED withdraw from the Nuclear Non-Proliferation Treaty by 2020?
Will there be a peace treaty between RED and GREEN by 2015?

These types of questions invite the analyst to investigate specific, defined scenarios, typically to identify warning indicators, identify key points of influence, or in terms of their probability. Scenario evaluation techniques are designed to give analysts proven structures for their approach to questions of this sort, which are extremely common in the field of intelligence analysis.

Scenario evaluation techniques raise your awareness about what is essential for a high impact outcome to occur - however unlikely you may deem it - and what would be seen (i.e. indicators) were it coming to pass. You may have some idea of what would lead to particular scenarios, but without systematically identifying, filtering and monitoring and reviewing indicators you run the risk of missing key indicators and being surprised by events. Using such techniques helps to expose intelligence gaps and the limitations of intelligence with regard to specific warning problems, helping you to demonstrate quickly and clearly to seniors and customers why the precise timing of a high impact outcome was not predicted.

You don't have to use a structured scenario evaluation approach in answering questions of this sort, but not doing so means you run the risk of various cognitive traps, including failure of imagination, availability and recency effects, and a number of biases associated with the way we comprehend and process information about the future.

‘BACKCASTING-LIGHT’ (QUICK I&W)

< 2.5 hrs

What is it?

Backcasting provides analysts with a framework to explore how future outcomes (usually high impact) could come about. It is a useful first stage for tackling a warning problem and usually involves:

(i) specifying an outcome and a timeframe for it;
(ii) establishing what is essential (i.e. key assumptions) to bring it about; and
(iii) using these key assumptions to plot a timeline of plausible events and trends leading to the outcome. Some of these events and trends may serve as useful I&W once further analysed.

If busy, however, you can simply use stages (i) and (ii) of backcasting as they can provide valuable insights into the necessary pre-conditions for a particular outcome to occur.
If you have more time and wish to do a backcast, see Chronologies and Timelines on page 44 and the PHDIA Backcasting Analysis Guidance Note.

Other techniques and approaches to use with it:

- Environmental scanning (e.g. STEMPLES) to widen the scope of your thinking and encourage the identification of all factors that are essential for the outcome to occur and to organise them by theme (see page 10).
- Chronologies and timelines (see page 44): Develop potential indicators – i.e. events and trends - from your key assumptions and plot them in chronological order on a timeline.
- Filtering (see page 52): Take the indicators developed and filter them by a range of appropriate criteria (such as relevance, uniqueness, observability, timeliness) to identify which are useful for monitoring a warning problem over time.

Level of effort required

Assuming the outcome to be analysed has been established in advance of a workshop, a group of 6 – 8 analysts (see ‘Event planning rules of thumb’ on page 63 for more information on group size) could probably generate the key assumptions in around 30 minutes, though this depends on the complexity of the future outcome being considered. An analyst at their desk could probably complete this more quickly.

How to do it

Establish the short scenario or future outcome (and timeframe) which is to be examined. Go through the scenario in detail to make sure there are no ambiguous terms in it (e.g. use 'regular demonstrations numbering thousands of people' rather than 'unrest'). Ask yourself the following key question:

"What would have to happen for this scenario to come about?"

Use STEMPLES to help you generate these 'key assumptions' which the scenario depends on. Remember that external factors should be considered (e.g. issues such as the behaviour of regional players and global trends like oil prices if the outcome relates to developments in a particular state).

5 – 10 key assumptions are usual if the future outcome is relatively simple. Outcomes involving numerous players (e.g. the achievement of a comprehensive Middle East peace) may involve considerably more.
Review your ideas to ensure nothing is missing.

If required the next stage would be to produce an illustrative timeline setting out how a scenario might unfold. See page 46 for an example.

SCENARIO KEY ASSUMPTIONS CHECK

What is it?

Once a 'most likely' scenario has been established, a scenario KAC involves identifying all the underpinning assumptions behind it, and making judgements as to how important and well-supported they are. It allows you to check your analysis (or that of others) with regard to future developments or outcomes, including exposing firmly held, hidden (i.e. unconscious) assumptions which may have gone unchallenged over time. This is especially important for intelligence analysts who routinely have to make assumptions to fill gaps where information is incomplete or ambiguous etc.

Other techniques and approaches to use with it:

- Matrices to list and rate the assumptions (see page 48).
- Filtering to identify the most important and least well-supported assumptions (see page 52).
- Structured brainstorming (see page 12)

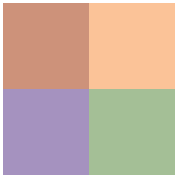
Level of effort required

Assuming there is only one key scenario of interest, and that it has been identified in advance, this can be done by a group of 6 – 8 analysts (see 'Event planning rules of thumb' on page 63 for more information on group size) in less than two hours. Generating the list of key assumptions in advance of an event will also reduce the workshop length. An analyst at their desk could almost certainly complete a KAC faster than a group of analysts, but KAC works much better as a group activity as other perspectives are required.

How to do it

Using your scenario in place of a hypothesis follow the process set out on page 20.

DATA ORGANISATION



"Effective analytic designs entail turning thinking principles into seeing principles."

Edward Tufte

The final category, data organisation, applies to all questions. There are numerous such approaches at the analyst's disposal. In some cases, it may be sufficient to use them alone (e.g. SWOT analysis) to tackle a question, particularly closed questions about the present that require you to determine whether or not something is the case. However, data organisation is useful for supplementing the four categories of technique. Some data organisation approaches – like the use of environmental scanning and matrices – are almost universally helpful.

Analysts have to scan and assess ever increasing amounts of information which can feel over-whelming. Used alone or with other approaches data organisation can help you in a variety of ways. These techniques can save time by providing ready made checklists of things to consider and useful categories for grouping ideas. They also reduce complexity by helping by allowing you to present large amounts of data visually aiding your own, senior and customer understanding of an issue.

ENVIRONMENTAL SCANNING CATEGORIES

10 mins

What is it?

Environmental scanning is the use of simple mnemonics (e.g. STEMPLES) to widen the scope of your thinking and generate a broad range of ideas or explanations – that is hypotheses - for particular developments seen (see page 10). However, the categories themselves can be used to group ideas generated or intelligence gathered into themes for the purposes of interpreting them to help answer the question at hand.

Other techniques and approaches to use with them:

- Use matrices to present ideas in themes (see page 48)
- Use environmental scanning categories to organise data generated during, for example:
  - Structured Brainstorming (see page 12);
  - SWOT Analysis (see page 40);
  - Breaking the Mirror/Red Teaming (see page 24);
  - ACH (see page 16);
  - Cone of Plausibility (see page 28);
  - Backcasting-Light (see page 34);
  - Analysis of Warning Indicators/I&W (see Filtering on page 52).

Level of effort required

1 Minimal effort is required. Using environmental scanning categories to organise ideas can help speed up interpretation of data and the production of written assessments as well as help you present your data well.

How to do it

2 Simply use appropriate environmental scanning categories to help you cluster your ideas into themes. In some instances this might be required during a group activity (e.g. brainstorming and mind mapping). In other instances this will be when you are at your desk and are seeking to organise and interpret data to produce an assessment.

3 See opposite an example of how ideas generated during a brainstorming can be clustered into STEMPLES themes to interpret and present them. The matrix quickly reveals that the bulk of the drivers leading states to develop or acquire WMD programmes generated were deemed either military/security-related or political (including personality-based drivers).

Another commonly-used acronym is TEPID OIL, which describes eight components of 'capability': training, equipment, personnel, information, doctrine and concepts, organisation, infrastructure, and logistics. 'SWOT' is another simple environmental scanning acronym. Acronyms along these lines are useful to make sure you have considered a wider range of factors than you might have done without such structures.

DRIVERS OF WMD PROGRAMMES OR ACQUISITION
Social
A galvanising individual (e.g. scientist) inspires or facilitates a programme
Technological
Access to necessary technology at home
Access to an ally's technology
Environmental
Availability of fissile material
Military
Need to counter existing threats from hostile (or simply powerful) states from neighbours and beyond
Security
The need to counter future threats from the above
Weak conventional forces and faced with threats as above – WMD seen as force multiplier
NBC programmes offer advantage of covert development or at least ambiguity
Political
Leadership or regime paranoia
Satisfy the ego of a leader, or Regimes, wanting to bolster prestige at home and abroad
Keep the armed forces satisfied
Programme could serve as bargaining chip
Legal
Perception that control frameworks are not very effective may lead states to assume they can get away with developing a capability while remaining a signatory to agreements
Economic
States unable to afford adequate conventional forces may believe WMD provides comparable effect at less cost where dual use technology available in country
Economic problems may prompt state to develop WMD to sell them for profit

SWOT ANALYSIS

<2 hrs

What is it?

SWOT is a simple mnemonic which helps you to classify the strengths, weaknesses, opportunities and threats to/for in an organisation's (e.g. government, armed forces, terrorist or insurgent group) ability to achieve their objectives. Strengths and weaknesses are internal to the organisation and the opportunities and threats are generated by the external environment.

Other techniques and approaches to use with them:

- Matrices (see page 48): SWOT uses a simple matrix to capture the ideas generated.
- Use a suitable environmental scanning approach, such as STEMPLES, to help you widen the scope of your thinking and use its categories to organise your SWOT results (see pages 10 and 40).
- Use SWOT to structure Breaking the Mirror or Red Teaming exercises (see page 24)
- Use filtering to ascertain the relative importance of the strengths, weaknesses, etc. that you have generated (see page 52).

Level of effort required

Assuming the overall question and the four SWOT questions are clarified in advance a group of 6 – 8 analysts (see 'Event planning rules of thumb' on page 63 for more information on group size) could complete a simple SWOT analysis in around 2 hours. An analyst at their desk could almost certainly complete a SWOT faster. Any filtering of the ideas generated would add to the times quoted. The methodology output provides a useful framework for structuring and producing an assessment quickly and is good for presenting data clearly.

How to do it

1. First, it is very important to establish the objective of the state, organisation or individual that you are interested in. For example:

   RED wishes to retake the disputed Indigo Islands from GREEN by force and sustainably occupy them.

2. Then establish your four SWOT questions. In this case they would be as follows:

STRENGTHS What capabilities does RED currently have that would assist them in retaking the Indigo Islands?	**WEAKNESSES** What characteristics of RED work against their ability to retake the Indigo Islands?
OPPORTUNITIES What might happen, outside RED's control, that would make it easier for them to retake the Indigo Islands?	**THREATS** What might happen, outside RED's control, that would make it harder for them to retake the Indigo Islands?

SWOT ANALYSIS (cont.)

3

Then use an appropriate environmental scanning approach to ensure you widen the scope of your thinking and identify all the relevant strengths and weaknesses etc. In this case, you would want to consider developing categories relevant to the structure of RED's armed forces (e.g. air, naval, ground forces and special forces).

4

Spend some time generating ideas for each of the four SWOT questions, inserting them in a simple four box matrix as you do so. Review your ideas again using environmental scanning to ensure you have not forgotten anything.

5

Look at your completed matrix and see what it tells you about your question. Consider whether you need to filter your ideas to get a better feel for the relative importance of strengths, weaknesses etc. For example, you may have identified seven strengths and only two weaknesses, but the weaknesses may nevertheless be more important than the strengths overall. So it may help to filter all your ideas by significance to the overall exam question using a simple scoring system such as 1 – 3 (1 being low significance, 2 being medium significance and 3 being high significance).

See page 26, within the 'Breaking the Mirror' section, for a fully worked SWOT example (from the perspective of a foreign protagonist).

MIND MAPS

<60 mins

What are they?

These are visual representations of concepts and the links between them. Mind maps show ideas (words or images) connected by lines to explain the relationship between them. They can help clarify your thinking on a topic or to help communicate it. Other techniques and approaches to use them with

- Structured brainstorming: use mind maps to organise and link ideas as or once they are generated (see page 12).
- Environmental scanning like STEMPLES to widen the scope of your thinking and to encourage identification of all relevant pieces of information (see page 10).

Level of effort required

Assuming the question has been clarified in advance, a group of 6 – 8 analysts (see 'Event planning rules of thumb' on page 63 for more information on group size) working quickly could complete a structured brainstorm with mind mapping in around 60 mins. An analyst at their desk may be able to complete a mind map more quickly. Creating a mind map can help you express clearly a complex issue or problem and thus help you to quickly provide a useful framework around which to write an assessment.

How to do it

1. Generate a list of ideas that relate to the question at hand. Write the question at the centre of the diagram.

2. Sort ten or so ideas at a time them into themes or groups that seem logical given the question. Arrange the ideas to radiate from the central question starting with the most general themes.

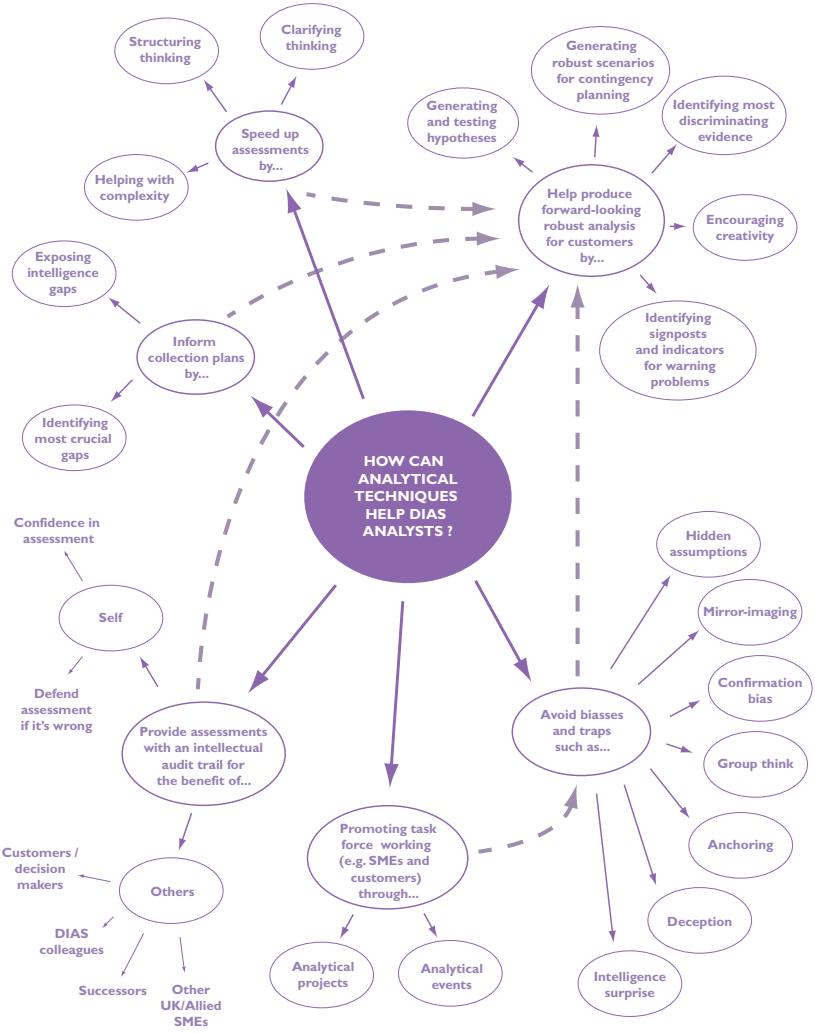
3. Use lines to make connections between related ideas and arrows to show the direction of the relationship – just one way or both ways. Don't just link ideas outwards from the central question, also link them crossways, too, where appropriate. You may wish to label the connecting lines with the ideas or - as shown in the diagram overleaf - just use lines to link the ideas.

4. Once all the ideas have been incorporated into the mind map, review it to see whether there are any obvious gaps in terms of the ideas themselves or the links between them.

An analyst working alone could either take ideas generated by a group or come up with their own ideas using environmental scanning (e.g. using a mnemonic like STEMPLES). If you come up with a lot of ideas, it may well be quicker and easier to complete your mind map by using the sticky note and whiteboard/paper approach described above as you will inevitably change things considerably before you are finally satisfied. Once finished you can then draw it on a piece of paper or use Excel to recreate it.

For using this technique in a group, once ideas have been generated through structured brain storming use the mind mapping approach described above to organise them. Have your question at the centre of a whiteboard or large sheet of paper so all participants can see it. Then the facilitator (preferably with a helper) should by way of discussion with the participants move the clusters of ideas written on sticky notes to radiate out from the central question, arrange and link them as appropriate. For generic guidance on planning and running a simple analytical event see 'Analytical Events' on page 63.

MIND MAP


HOW CAN ANALYTICAL TECHNIQUES HELP DIAS ANALYSTS ?
Speed up assessments by...
Structuring thinking
Clarifying thinking
Helping with complexity
Help produce forward-looking robust analysis for customers by...
Generating robust scenarios for contingency planning
Generating and testing hypotheses
Identifying most discriminating evidence
Encouraging creativity
Identifying signposts and indicators for warning problems
Inform collection plans by...
Exposing intelligence gaps
Identifying most crucial gaps
Provide assessments with an intellectual audit trail for the benefit of...
Self
Confidence in assessment
Defend assessment if it's wrong
Others
Customers / decision makers
DIAS colleagues
Successors
Other UK/Allied SMEs
Promoting task force working (e.g. SMEs and customers) through...
Analytical projects
Analytical events
Avoid biasses and traps such as...
Hidden assumptions
Mirror-imaging
Confirmation bias
Group think
Anchoring
Deception
Intelligence surprise

CHRONOLOGIES AND TIMELINES

<60 mins

What are they?

A chronology is a list of past or future events or actions in the order they occurred or may occur. A timeline is a graphic representation of the events or actions over a specific time-frame. Chronologies and timelines help to identify patterns and trends and reveal connections between events or actions. They are also a useful tool for systematically creating a chain of events and trends leading to a future outcome (e.g. such as a coup, the collapse of a regime, a successful weapons programme, the deployment of military forces) and are therefore helpful in generating indicators for monitoring warning problems.

Other techniques and approaches to use it with

- Backcasting-Light (see page 34): Use as a bolt on to Backcasting-Light if you have time to do a full backcasting exercise
- Filtering (see page 52): Use to assess the usefulness of indicators developed through creating a timeline. Those judged to be useful can then be used to monitor a future outcome/warning problem.

Level of effort required

Timelines and chronologies can be used to order information (e.g. relating to a particular theme of interest) as reports come to your desk. The amount of effort required will clearly depend on the topic of interest and the quantity and nature of the incoming data. This effort is counter-balanced by the fact that the output of the approach can help you analyse data and produce an assessment quickly. Timelines are also useful for helping you present complex data either in a briefing or in an assessment.

As part of a backcasting exercise a group of 6 – 8 analysts (see 'Event planning rules of thumb' on page 63 for more information on group size) could probably populate a timeline (leading to a specific future outcome) in around 60 mins. An analyst working at their desk could almost certainly create such a timeline more quickly.

How to do it

1 When preparing a timeline (it can be a vertical or horizontal line) summarise the events and trends etc and add them with dates in chronological order. Much depends on what you are trying to achieve, but consider the following:

- Using the space on both sides of the line for your entries;
- Colour coding the actions of different actors or have their behaviour along separate parallel lines;
- Dividing your timeline into particular phases, if appropriate;
- Including small pictures or symbols instead of text.

2

For populating backcasting timelines (which involve postulating future events leading to an outcome rather than plotting a timeline of events that have already occurred) DI FAM recommends the following:

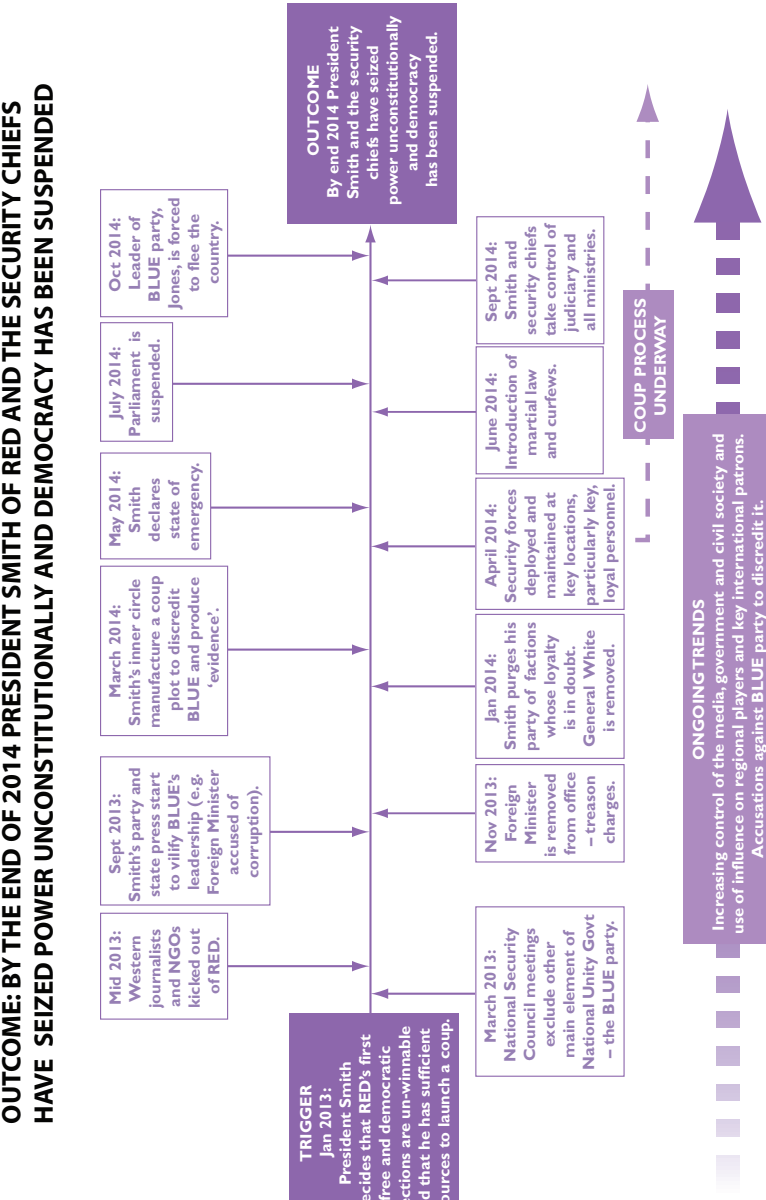
- Using the key assumptions (i.e. what is essential to bring the outcome about) you have developed as an aide memoire to develop the entries for your timeline;
- Having a trigger at one end of the timeline to set off a chain of events to a future outcome. You may need others to maintain momentum towards the outcome;
- Having the future outcome and its date at the other end of the timeline to keep you focused;
- Representing trends (e.g. growing influence of religion, increasing popular unrest) as lines running parallel to your timeline of single events for all or part of the timeframe under examination;
- Deciding whether to just put events in chronological order or to give them more specific dates.

See below a set of example key assumptions relating to a notional coup and the timeline developed from the assumptions.

FUTURE OUTCOME
By the end of 2014 President Smith of RED and the security chiefs have seized power unconstitutionally and democracy has been suspended.
KEY ASSUMPTIONS
• President and National Security Council (NSC) would have to fear the imminent loss of their power and consequences • President and NSC would need to agree on course of action • President and NSC would have to retain the loyalty of the security forces and there would be no large scale/unmanageable social resistance • President's party would require sufficient sources of funding to pay security forces • President and NSC would be able to manage/control the information environment • President and NSC would need to be confident of withstanding foreign intervention and pressure. • There would have to be a complete suspension of the rule of law • The BLUE party would have to be neutralised

CHRONOLOGIES AND TIMELINES (cont.)

OUTCOME: BY THE END OF 2014 PRESIDENT SMITH OF RED AND THE SECURITY CHIEFS HAVE SEIZED POWER UNCONSTITUTIONALLY AND DEMOCRACY HAS BEEN SUSPENDED



For a workshop ensure you have the empty timeline drawn up with the future outcome and timeframe specified so all participants can easily see it. Use a large whiteboard or wall space with butcher's paper (long continuous roll of paper). Remember that a whiteboard has the added benefit of allowing you to make amendments to the timeline.

For a backcasting exercise, have the key assumptions on a poster where everyone can see them and use them as an aide memoire to develop events and trends for the timeline. Then simply ask participants to offer event and trend ideas based on their subject matter expertise. Analysts tend to feel comfortable identifying a trigger first and then working mostly from the present to the future. However, developing a timeline is a messy business and there can be a lot of heated discussion and jumping around from one end to the other to fill in the gaps. Events etc often have to be shifted around as the timeline develops.

The output (i.e. the ideas generated) can be used as indicators to monitor a warning problem. If they require further examination to see how useful they are, DI FAM recommends you filter them by a range of criteria (see page 52).

MATRICES

10 mins

What are they?

A matrix is a grid that can be used to organise, filter, assess and present data systematically. Matrices are particularly helpful when you need to deal with a lot of information quickly, and can provide insights into similarities, differences, trends and gaps etc.

Other techniques and approaches to use with it:

- The following techniques commonly use matrices:
  - SWOT Analysis (see page 40);
  - KAC (see page 20);
  - ACH (see page 16);
  - Analysis of Warning Indicators/I&W.
- Filtering (see page 52): Use matrices to structure and conduct filtering exercises as well as capture and present their results.
- Voting and ranking (see page 50): Use matrices to structure and conduct voting and ranking exercises as well as capture and presenting their results.

Level of effort required

1 Matrices require minimal effort to prepare and can help analysts working solo or in a group deal quickly with large quantities of data relating to an issue get insights from it quickly.

How to do it

2 Make sure that the matrix is geared towards answering the intelligence question at hand, i.e. that all the relevant categories or filtering criteria have been identified. Ensure the categories or filtering criteria are clearly defined. Then simply populate the matrix.

For workshops, empty matrices can be printed onto A1 paper or drawn onto whiteboards in advance. They can then be completed during the event. They provide helpful structure keeping both facilitators and analysts focused and systematic. The table below was used to help structure part of an 'over-the-horizon proliferation' conference workshop examining what prompts states to develop or acquire WMD and taking these drivers to identify and

COUNTRY CANDIDATE	APPLICABLE DRIVER FOR A CAPABILITY	POTENTIAL TIMEFRAME FOR A CAPABILITY	POTENTIAL DELIVERY MEANS	INTELLIGENCE GAPS
RED	• Feels threatened • Wants prestige • Conventional imbalance	Less than 3 years if purchased. At least 10 years if developed	Ballistic missiles and aircraft	Circumstances under which GREEN would supply RED with nuclear weapons.
BLUE	• Ego of leader • Paranoia of leader • Bargaining chip	Less than 3 years	Aircraft	How serious is BLUE's leadership about a nuclear weapons option?
YELLOW	• Changing alliances • Feels threatened • Keep the military happy	Less than 5 years	Ballistic and cruise missiles	Are YELLOW's economic and political ties more important to it than security concerns?

assess candidate states that may choose to start WMD programmes over the next 10 years. (3)
On your own at the desk create simple tables or – if there is a lot of data which needs to be filtered - spreadsheets. The structure a matrix provides can also help an analyst present that data coherently in a report or presentation. Below is a table from the post-workshop report relating to the same over-the-horizon proliferation event already mentioned. It was used to present the results of a voting and ranking exercise conducted by one of the work-shop sub-groups to identify candidates of most concern.

COUNTRY CANDIDATE	VOTES FOR 'CANDIDATES MOST AT RISK OF BECOMING A PROLIFERANT'	VOTES FOR 'GREATEST POTENTIAL THREAT TO NATO INTERESTS'	TOTAL VOTES	'OF MOST CONCERN TO NATO' RANKING
RED	6	6	12	1
BLUE	5	6	11	2
GREEN	5	3	8	3
YELLOW	4	3	7	4
PURPLE	4	3	7	4
WHITE	2	2	4	6
BLACK	0	3	3	7
BROWN	2	0	2	8
ORANGE	0	2	2	8

VOTING AND RANKING

<20 mins

What is it?

Voting and ranking is used to get analysts to quickly ascertain the top 5 or 10 (or however many) subjects out of many or to obtain agreement rapidly.

Other techniques and approaches to use with it:

- Structured brainstorming (see page 12): Use voting and ranking to reduce ideas to those deemed most important or to obtain agreement rapidly.
- Cone of Plausibility (see page 28): Use voting and ranking to determine the most important key drivers if more than 7 or to help decide which assumptions to change.
- SWOT Analysis (see page 40): Use voting and ranking to identify the most important strengths, weaknesses etc.
- Matrices are excellent for structuring and presenting the results of voting and ranking exercises (see page 48).

Level of effort required

A group of 6 – 8 analysts (see 'Event planning rules of thumb' on page 63 for more information on group size) could vote on and rank a limited set of ideas in under 20 mins with pre-prepared voting slips and an empty matrix to tally votes.

How to do it

1. For generic guidance on planning and running a simple analytical event, see 'Analytical Events' on page 63.

2. Prior to a workshop:

   - make sure the question to be voted on is clear;
   - prepare voting slips with the question on them and make clear how many answers are required. See the example below;
   - have an empty matrix pre-printed onto A1-size paper or draw one onto a whiteboard. For a single vote on an issue, a three column table like the one shown below is ideal to capture the results.

3

During the workshop the facilitator should:

- prior to the vote enter the items (e.g. drivers) to be voted on into the left hand column of the matrix so participants can see what they are selecting from;
- give each participant three silent votes to cast - this means no discussion is allowed between participants. They are not required in any particular order of importance, but participants can only vote for each item once;
- ask participants to hand in their voting slips when finished;
- enter the voting results into the second column of the matrix;
- create a ranking order to show which items received the most votes through to which received the least;
- select however many items required (e.g. the top 3, 5 or 10). The example shown below relates to a Cone of Plausibility exercise which requires 5 – 7 drivers. In this case it would probably be appropriate to take forward the top 6, unless the participants felt further discussion was required.

VOTING SLIP

Question: What are the three most important key drivers with regard to Country X's stability in 2015?

1. .....
2. .....
3. .....

KEY DRIVERS	NUMBER OF VOTES	RANKING ORDER
Leadership	12	1
Insurgency	11	2
Armed forces	8	3
Oil production	7	4
Population growth	7	4
Religious minorities	4	6
Relations with neighbours	3	7
Technological developments	2	9
Foreign aid	2	9
Agriculture	2	9

FILTERING

30 mins
(10 items to filter)

What is it?

Filtering involves assessing a set of data against a range of criteria relevant to answering the question. You might filter items to determine which are the most useful, most important, most reliable or the most likely etc.

The following techniques involve filtering:

- KAC (see page 20): This involves filtering key assumptions underpinning an 'analytic line' as 'solid', 'with caveats' or 'unsupported' to ascertain the accuracy of an assessment.
- Analysis of warning indicators/I&W, involves filtering indicators identified by relevance to the question, uniqueness, observability, timeliness etc to establish their usefulness.
- ACH (see page 16): This involves assessing or filtering evidence in different ways (e.g. by reliability/credibility) and against specific hypotheses to identify discriminating evidence and ascertain which hypotheses are more or less likely.

However, you may wish to develop your own set of bespoke filtering criteria depending on the question at hand.

- Matrices are excellent for structuring and conducting filtering exercises as well as capturing and presenting their results (see page 48).

Level of effort required

The level of effort depends on the number of items to be filtered and the number of filtering criteria. But assuming a matrix with items to be filtered and the filtering criteria have been pre-prepared, a group of 6 – 8 analysts (see 'Event planning rules of thumb' on page 63 for more information on group size) working fast could filter a maximum of 10 items against 3 – 5 criteria in 30 – 45 mins. An analyst working alone could do this filtering faster. Filtering helps you structure your thinking on an issue and get some quick insights. The output of a filtering exercise can also help you present data and insights drawn from it coherently and quickly in a report or presentation.

How to do it

1 Identify all the items (e.g. indicators or key assumptions depending on the question and approach you are using) that are to be filtered. Use filtering criteria appropriate for the intelligence question at hand. If bespoke, ensure the filtering criteria and associated scoring systems are simple, well thought through and clearly defined (see the scoring system in the WMD indicator example below).

2 Enter the items to be filtered on the vertical axis (i.e. the left hand column) of a matrix and the filtering criteria along the horizontal axis (i.e. the top row). See notional example below. Starting with the first item, filter it applying all the criteria and carry on until you have worked through all the items. Keep referring to the scoring definitions to try to ensure your approach is consistent throughout.

3 Review the results to draw conclusions about which of your items are the most useful, the most important, most reliable or most likely etc. See what insights the results provide with regard to the question at hand.

4 Below is an example of a filtering exercise which was used to assess indicator ideas (generated by brainstorming) that might be useful in alerting analysts to a state's decision to restart a WMD programme. The following set of criteria (and associated simple scoring system) was used to ascertain the most useful indicators to monitor:

- Timeliness – A measure of how early an indicator relevant to RED's decision to restart WMD work would appear. On a scale of 0 – 3, with 0 denoting that the indicator would arrive too late and 3 denoting that it would appear very early.
- Diagnosticity – A measure of how much an indicator reveals only uniquely WMD work by RED. On a scale of 0 – 3, with 0 denoting that the indicator is totally ambiguous and 3 denoting that it is unique only to renewed WMD work by RED.
- Observability – A measure of how likely we would be to observe an indicator given collection capabilities and priorities. On a scale of 0 – 3, with 0 denoting will not be seen/cannot collect against it and 3 denoting collectable with reasonable effort.

FILTERING (cont.)

The results of the filtering exercise show that indicators:

- B, E, G, H and I are not useful as they are simply not observable, diagnostic or timely (i.e. score 0) and can therefore be discarded;
- A and F may be useful as they score highly on some criteria but not very highly on others; and
- C, D and J are most useful as they score quite highly on a combination of the criteria.

INDICATOR	TIMELINESS	DIAGNOSTICITY	OBSERVABILITY	USEFUL ?
A	1	3	3	Maybe ?
B	2	2	0	No
C	3	2	2	Yes
D	2	3	3	Yes
E	0	1	0	No
F	2	3	1	Maybe ?
G	3	0	2	No
H	1	1	0	No
I	2	0	1	No
J	3	2	3	Yes

For workshops empty matrices (including the items to be filtered and the filtering criteria) can be printed onto A1 paper or drawn onto whiteboards in advance. The matrices can then be placed where all participants can see them during the filtering. They provide helpful structure keeping both facilitators and analysts focused and systematic in completing the exercise.

Make sure that definitions of the filtering criteria and corresponding scoring systems are also on posters where all can see and refer to them as required.

On your own you can create simple tables or – if there is a lot of data which needs to be filtered – a spreadsheet. Work through the items and the filtering criteria as described above.

COMMUNICATING UNCERTAINTY

"I told him that my personal estimate was on the dark side, namely that the odds were around 65 to 35 in favour of an attack. He was somewhat jolted by this; he and his colleagues had read "serious possibility" to mean odds very considerably lower. Understandably troubled by this want of communication, I began asking my own colleagues on the Board of National Estimates what odds they had had in mind when they agreed to that wording. It was another jolt to find that each Board member had had somewhat different odds in mind and the low man was thinking of about 20 to 80, the high of 80 to 20. The rest ranged in between".

Words of Estimative Probability (Sherman Kent, 1964)

Introduction

The accurate communication of uncertainty is one of the most important elements of good intelligence assessment. When considering a course of action, policymakers must set its likely benefits against its likely costs: if they do not have a clear idea of the probability of various outcomes, the wrong decision might be made. Below are issues you should consider and guidance you should use when expressing probability and uncertainty.

THE PROBLEM OF COMMUNICATING UNCERTAINTY

There are two key challenges to the analyst when communicating uncertainty: misinterpretation and misrepresentation.

Misinterpretation

A significant challenge to communicating uncertainty is the risk of misinterpretation as there are no widely-understood common definitions of probabilistic terms. One study showed that among a group of NATO military officers – with experience of reading intelligence reports – interpretations of the word 'probable' varied from 25% to 90% in terms of their understanding of the likelihood of an event taking place. This kind of finding, which has been replicated on a number of occasions, exposes a serious risk of misunderstanding by readers of intelligence assessments.

Misrepresentation

In the absence of a common definition, readers of intelligence assessments may go on to re-draft or re-represent the assessment (for example, to abbreviate it for a more senior consumer or indeed the general public) and thereby lose or misrepresent the sense of the original assessment.

> "If intelligence is to be used more widely by governments in public debate in future, those doing so must be careful to explain its uses and its limitations".
>
> The Butler Review

In response to the challenges set out above, DIAS mandates the use of a standardised lexicon of terms – the Uncertainty Yardstick – expressing probability and uncertainty. It assumes familiarity with the basic concepts of probability and uncertainty (i.e. what it means to say something like 'it is 25% likely that RED has an active nuclear programme'). It also assumes that the analyst has arrived at a probabilistic judgement using a robust method.

As this table suggests, if you believe that a certain hypothesis is 75% likely you should describe it as 'very probable' or 'highly likely'. Clearly, a standardised approach to probabilistic language is only useful so long as readers of our assessments understand it. Consequently, all DIAS products which use the Yardstick should reproduce it, ideally near to the 'Assessment Base' and 'Methodology' boxes.

You will note that the Yardstick appears to have gaps ('what about 72%?'). This is a deliberate decision to avoid a false impression of accuracy. If your assessment is robust enough to make a fine-grained distinction between 70% and 72%, then it probably makes sense simply to state the figure itself.

Professional Head of Defence Intelligence Analysis

Probability Assessment

THE 'UNCERTAINTY YARDSTICK'

Qualitative Statement	Associated Probability Range
Remote or Highly Unlikely	<10%
Improbable or Unlikely	15-20%
Realistic Possibility	25-50%
Probable or Likely	55-70%
Highly Probable or Highly Likely	75-85%
Almost Certain	>90%

For further guidance see the Technique Guidance Notes on the Analytical Training, Development and Tradecraft Web Site

Assessment first, language second

You should ensure that your assessment of probability comes first, and then the language is chosen (from the Yardstick) to align with that assessment. Doing it the other way round – in other words, deciding that something 'feels like' a 'realistic possibility' and deciding it's therefore 25-50% likely – is not a robust method of arriving at a probabilistic judgement.

Alternatives to the Yardstick

There are only a few circumstances in which use of the Yardstick is inappropriate. These would include, for instance, an assessment in which the conclusion is sensitive to the difference between 'one in three' and 'one in two' (or 33% and 50%), in a way that the Yardstick cannot capture (both would be described as 'realistic possibilities'). If the Yardstick is not sufficiently gradated to capture the details of your assessment, then it is very important to state what alternative lexicon you are using in its place.

Probabilistic language in non-DIAS product

The Yardstick is not based on any external standards of probabilistic language. Instead it is a standard that aligns to some extent with survey data on how readers tend to interpret such terms. Although other organisations sometimes use standardised interpretations of probabilistic terms, there is no guarantee they will correspond to those on the Yardstick.

Precision about time-frame

Another important aspect of communicating judgements concerning uncertainty is to make sure the parameters of the judgement are stated explicitly. Statements about the future should clearly state the time-frame of the judgement (e.g. say '2020' rather than the 'long term')

Conditional probabilities

You also need to be very clear when you are expressing conditional probabilities – in other words, probabilities of an event occurring given that some other event has already occurred. For example:

> If RED invades ORANGE, there is a realistic possibility that retaliation will involve the use of chemical weapons

makes clear that the judgement about ORANGE's use of chemical weapons only applies to the circumstance of an invasion by RED, leaving open the possibility of other circumstances in which chemical weapons might be used.

Modal language

You should always avoid so-called 'modal' language in the context of a probability judgement. This includes terms such as 'can', 'could', 'might' and 'may', but also 'possible' (except in the form 'realistic possibility'). These are sometimes used as the probabilistic equivalent of 'weasel words': they appear to make a judgement about probability, but all they do in fact is state that something is not impossible, which could imply a probability of 1% or 100%.

Of course, terms such as 'may' and 'could' do serve an important purpose by reminding the reader that something is possible. For example:

> RED could withdraw from the NNPT within four months

There is no reason to avoid them in this context. But analysts should avoid disguising statements about mere possibility as probability judgements, for example:

> RED could choose to mount punitive operations against ORANGE facilities, which might prompt an escalation to non-conventional warfare, possibly involving…

Avoiding false precision

One common argument against the use of a standardised interpretation of probabilistic language is that it is impossible to be sufficiently precise when making judgements about inherently unpredictable events in the political or military sphere. But this is an argument in favour either of improving our methods of making such assessments, or of being explicit about our lack of information. If you have no idea of the probability of an event then making statements such as:

> President Jones will probably try to extend his term of office in 2010.

These will give a misleading impression of precision. It would be more accurate in these circumstances to say:

> President Jones might try to extend his term of office in 2010, but we do not have sufficient insight into his decision-making to judge how likely this is.

'Confidence' and probability

The relationship between confidence and probability is a minefield of possible confusion. The word 'confidence' is sometimes used as a synonym for probability when making judgements about the likelihood of hypotheses, as in:

> We are very confident that RED has an active nuclear programme.

This probably means no more than:

> RED is highly likely to have an active nuclear programme.

However, 'confidence' is sometimes also used to express an analyst's judgement about the overall robustness of their assessment, as in:

> We are moderately confident in our judgements about RED's technical capabilities, but less so in our judgements about their intentions

The possibility of confusion is compounded by the fact that other organisations actively recommend using confidence-based terms to express probabilities. However, DIAS recommend that 'confidence' is *never* used as a term expressing probability, whether it is the probability that a hypothesis is true, or the probability of an event occurring: instead, the Yardstick terms are the preferred lexicon. In addition, if analysts recognise that the information underlying an assessment has flaws, it is better to *incorporate* this into their stated probabilities (essentially by downgrading them) and to outline the reasons either in the text or the Assessment Base and Methodology Boxes. So, for example, we do *not* recommend having statements that discuss confidence and probability separately such as:

> We have very limited confidence in our judgements about President Jones's intent and decisionmaking.

and

> President Jones is almost certain to amend the constitution this year to extend his term of office.

Instead, you should consider that, if our knowledge of Jones's desires is indeed limited, the term 'almost certain' is probably misleading. You might therefore want to consider something closer to the following:

> Our knowledge of Jones's intent and decisionmaking is based on fragmentary intelligence from sources on the periphery of his network of advisers.

and

> President Jones is likely to amend the constitution this year to extend his term of office.

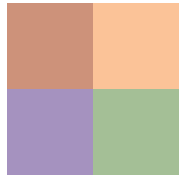
This better reflects our lack of knowledge about Jones.

Avoiding institutional biases

Your assessments should be guided only by the strength of the evidence. You should never change your assessments because of pressure to make something more readable or attention-grabbing, or to compensate for a perceived lack of interest among customers. Similarly, do not describe something as more uncertain than it actually is, in response to a concern that you may be subject to scrutiny if it does not occur, or proves to be false. For example, if the evidence suggests that an outcome is almost certain, there is still potentially a one-in-ten chance that it won't occur. You should not therefore change your assessment from 'almost certain' to (for example) 'probable' on the basis that if the event does not occur they will appear 'less wrong'.

The Professional Head of Defence Intelligence Analysis (and ultimately the Professional Head of Intelligence Analysis in the Cabinet Office) will strongly defend analysts' impartiality in matters such as these. For the analyst's part, it is essential that the evidential basis for all assessments is available, either in released products, or in an evidential audit trail that can be called upon if necessary.

CAPTURING EXPERT JUDGEMENT



"An expert is someone who has succeeded in making decisions and judgements simpler through knowing what to pay attention to and what to ignore."

Edward de Bono

Introduction

Capturing expert judgement in order to answer an intelligence question can be done in a variety of different ways: in an event or workshop, offline (i.e. remotely) or a presentation and discussion format.

TOP TEN TIPS FOR SUCCESSFUL ANALYTICAL EVENTS

Nail the question down

Make sure you are absolutely clear about the intelligence question you are tackling. Selecting the methodology before the question is clear is likely to give you a confused and unsatisfactory output.

Prepare a workshop plan

This should be developed once the question is clear and the analytical approach is selected. The checklist overleaf shows you what your plan should cover.

Keep the event simple

Activities always take longer than you think because most people love to talk about their subject area, and free discussion is important. Prioritise and limit the number of tasks to the one or two most important analytical questions, and do detailed collation or follow-up work offline before or after the event.

Limit the number of participants

Limit participants to those best-equipped to help answer the question at hand. Avoid 'observers', hangers-on and people new in post as they are a hindrance. Your event is for focusing effort on producing an output, and not for networking or easing people into their subject. Lots of participants make for a long, complex event with sub-groups and plenary sessions. See overleaf for some realistic timing guidelines.

Manage the type and mix of participants

Select the right mix of people to answer the question at hand. The majority should be SMEs with core experience such as DIAS colleagues, representatives from other government departments and intelligence collectors (particularly when specific intelligence reports are to be discussed such as in ACH or KAC exercises) . Balance sub-groups by expertise and personality prior to the event. This will produce better results than just making an arbitrary decision on the day, or worse still, inviting people to choose their own subgroup.

Maximise the use of time and expertise

This can be done by dividing up participants and tasks. People always generate more ideas than you expect. Have a strategy in place to get them to agree quickly which ideas are most important or require further exploration. Use simple voting systems to identify the top five or ten subjects (e.g. issues, drivers, countries) out of many. Give each participant three silent votes and then add them up to create a ranking order.

Prepare props

These save a lot of time and help both facilitators and participants stay focused. They can be hand written on flipchart paper or pre-printed onto large posters for high profile events. The following props are useful for nearly all events: the question to be answered and sub-questions; definitions; workshop timetable; environmental scanning categories (e.g. STEMPLES); and pre-printed matrices for completion.

Hold a pre-meeting

Give your event plan to the customer and facilitators to consider. Then hold a meeting to discuss every aspect of it to clarify and iron out potential problems. For example: establish the role of any seniors attending; ensure it is clear which participants are in which group; clarify the role of facilitators and scribes; and run through all the plan elements to test them.

Prepare participants

Prior to an event, send participants a background note laying out: the background to and rationale for the event; the event aim; how the event fits into any wider analytical project; an explanation of the techniques and approaches to be used; how the event will be run; what will be expected of participants; and information about the event output.

Produce a tangible event output

To ensure that useful insights are captured and can be used to inform your analysis, write up the workshop discussions in a report. Circulate a draft to participants to check whether it is an accurate reflection of the event. Using analytical techniques to tackle an analytical question provides a clear intellectual audit trail for judgements reached and a useful framework for producing formal DI or informal reports.

ANALYTICAL EVENTS

Analytical workshops can generate useful insights by bringing together a group of mainly SMEs to work as a team to tackle a clear intelligence question in a focused, structured and systematic fashion. However, even simple events need to be thought through properly and some key principles followed, otherwise the output will be less than satisfactory and valuable time will be wasted. These principles, which are laid out below, should speed up and ensure event preparation is thorough. Use them in conjunction with the 'How to do it' guidance relevant to each technique or approach. The guidance was developed for a range of analytical events (from short and simple to long and complex), and the vast majority of it is applicable across the board regardless of event type (e.g. Nail down the question).

Event planning rules of thumb

All events have some common elements, such as introductions, main work, wash ups. As participant numbers increase and more than one sub-group is required, further workshop elements (brief-back and discussion) become necessary. The planning rules of thumb aim to make analysts aware of these issues and give them a rough idea of how long an event is likely to take. This is important as analysts commonly underestimate the time required to tackle an intelligence question in a workshop environment.

The references to a group or groups of 6 – 8 participants in the diagram directly below (and throughout this guidance booklet) reflects DI FAM's experience that this number of SMEs in a single group works best. More than 8 becomes very hard to facilitate effectively and is not recommended, whilst fewer than 8 can mean a less dynamic event with fewer ideas. However, if time is really short running a quick informal workshop with a few colleagues (no fewer than four) is better than not running one at all.

WORKSHOP ELEMENTS	1 GROUP OF 6–8 PARTICIPANTS	2 OR 3 GROUPS OF 6–8 PARTICIPANTS
Facilitators required	1 – 2	2 – 4 (short events) 5 – 7 (long events)
Intro, break, wash up	30 – 45 mins	30 – 45 mins
Main work	60 – 105 mins	90 – 120 mins
Briefs-back and discussion	–	45 – 60 mins
Total time	90 – 150 mins	165 – 225 mins

Event preparation checklists

Even simple events require the analyst to make a range of preparations, including preparing a workshop plan. The checklists below will help you do this quickly and efficiently.

TO PUT IN YOUR WORKSHOP PLAN

- Purpose of event
- Location
- Start time and length
- Participant list
- Composition of sub-groups
- Event structure
- Analytical techniques to be used
- Ground rules for discussion
- Facilitation requirements
- Role of lead facilitator
- Scribing requirements
- Time-keeping responsibilities
- Responsibility for briefing back results
- Role of sponsor / customer

TO DO PRIOR TO THE EVENT

- Select and book suitable rooms
- Organise refreshments
- Complete visitor forms and bookings
- Decide who is to meet and escort visitors
- Test the plan at a pre-meeting
- Send background note to participants
- Prepare facilitators
- Prepare back-briefers
- Prepare rooms in advance

OFFLINE

Instead of running an analytical event you may decide to seek the views of other internal and external SMEs remotely by email. Such offline work has the benefit of allowing SMEs to be more considered in their inputs and saves the analyst the effort of organising a workshop. Set against this is the fact that the inputs may take time to trickle in, will need to be collated, interpreted and de-conflicted and may not generate all the insights that can fall out of an analytical event involving lively discussion and debate.

Much depends on the nature of the question and the technique, but DI FAM recommends seeking any input in a clear, structured and consistent way from the selected SMEs. This includes laying out for the SMEs the intelligence question, the background to it, an explanation of the techniques or approaches and the task you have set them (including any definitions, scoring systems etc). A questionnaire may be appropriate or a matrix with boxes to complete. For example, you may have generated indicators for a particular warning problem in a workshop and you wish to have a range of SMEs filter them offline to ascertain those that are most useful. See the example under Filtering on page 52 under Data Organisation Techniques.

PRESENTATION AND DISCUSSION

A well thought through presentation and discussion - based on the interim or final results of an analytical exercise to tackle a question - can be a good half-way house between an analytical event and offline work. This format can be really useful for soliciting the views of SMEs without the responsibility of organising and facilitating an analytical workshop and can mitigate the common problem of unfocused discussions (e.g. during conference sessions) that generate few or no new insights. It can allow analysts to delve deeply into an issue in a structured way and thus be productive and enjoyable for all involved. Application of a technique also provides the analyst with a clear framework to help explain to other SMEs how they reached their conclusions.

For analysts wishing to adopt this kind of approach for conferences or other fora, DI FAM recommend using a suitable technique to explore a question of interest and then generate some conclusions to form the basis for a discussion. For example, conduct a SWOT analysis on an organisation's situation with regard to a particular objective or use the Cone of Plausibility to generate some scenarios on a topic of interest and then present the findings to SMEs with a view to seeking their insights on your results.

The results could be presented quite formally (e.g. using Powerpoint) or informally (e.g. hand drawn on flipchart paper or a whiteboard). Depending on the time you have available and the importance and complexity of the question, you may wish to share your results with the SMEs prior to the presentation/discussion to give them additional time to consider your conclusions. When presenting your results by email or in person make sure that you clearly identify the question and the background to it. You also need to explain the techniques, approaches and any definitions used, and lay out what you wish the SMEs to consider (e.g. any key uncertainties or the intelligence gaps).

Defence Intelligence
Futures and Analytical Methods Team
Project and Workshop Breakdown of Responsibilities

Introduction

DI's Futures and Analytical Methods Team (FAM) provide different levels of support to analytical projects. This document defines those levels of support, to ensure effective collaboration between the customer and the FAM Team. The appropriate level of support is determined by the nature of the analytical project, the knowledge and experience of the customer, the FAM Team's capacity and DI FAM's responsibility to build analytical capability throughout DIAS.

Definitions

CUSTOMER	The official from MoD or an OGD, who will be the end reader and has comissioned the work via the intelligence analyst.
SPONSOR	The individual or individuals who commission the analytical project. This is usually a DIAS analyst, but in some circumstances will be the customer for the work.
ANALYTICAL PROJECT	A discrete piece of analysis, conducted using a structured approach, which will answer an explicit intelligence question to support a decision by a specified customer. An analytical project should always result in a written output of some kind.
WORKSHOP	An event involving multiple subject matter experts, which provides all or some of the input to an analytical project.

Levels of Analytical Support

TYPE OF SUPPORT	DESCRIPTION	SUITABILITY
Consultative	The FAM Team will provide advice to the sponsor about the analytical project, usually focussing on planning and running a workshop.	**Consultative support** is available to any sponsor.
Collaborative	In this model the FAM Team and the sponsor will jointly run any workshops. The FAM Team are more involved in designing and facilitating the analytical project, but the sponsor retains responsibility for capturing the output of the workshop and administering it.	**Collaborative support** is provided to sponsors who are less confident about running an analytical event. It is designed to build the confidence of the sponsor, so that they will be able to run analytical projects more independently in the future.
Comprehensive	This is the most intensive level of support provided by the FAM Team. In this model, we help the sponsor to design the analytical workshop, provide raw output from the workshop and provide advice on the presentation of the output.	**Comprehensive support** will be provided only for analytical projects of the highest organisational priority or policy sensitivity.

Division of responsibilities for workshops

An analytical event involves considerable preparation and it is important not to leave things to the last minute or you will put your event at risk. To ensure your preparation is thorough, you should work through the following checklist with FAM and agree on the division of responsibilities. Depending on the nature of FAM's involvement, the list of responsibilities associated with a project and any events is shown below.

STAGE	TASK	LEVEL OF SUPPORT		
		CONSULTATIVE	COLLABORATIVE	COMPREHENSIVE
ANALYTICAL STRUCTURE	Refine key project questions	Sponsor and FAM	Sponsor, Customer and FAM	Sponsor, Customer and FAM
	Decide how to structure any event	Sponsor and FAM	Sponsor and FAM	Sponsor and FAM
	Decide on length and size of any event	Sponsor and FAM	Sponsor and FAM	Sponsor and FAM
EVENT PREPARATION (if necessary)	Identify and book suitable room(s)	Sponsor	Sponsor	Sponsor and FAM
	Identify and invite attendees	Sponsor	Sponsor	Sponsor and FAM
	Draw up a detailed workshop plan	Sponsor	Sponsor and FAM	FAM
	Produce and circulate background note	Sponsor	Sponsor and FAM	FAM
	Organise refreshments	Sponsor	Sponsor	Sponsor
	Produce supporting materials	Sponsor	Sponsor and FAM	FAM
	Prepare the room(s) in advance	Sponsor	Sponsor and FAM	FAM
	Host event pre-meeting	Sponsor	Sponsor	FAM
	Book in visitors	Sponsor	Sponsor	Sponsor
EVENT FACILITATION (if necessary)	Introduce Event	Sponsor	Sponsor	Sponsor
	Lead facilitation	Sponsor	Sponsor and FAM	FAM
	Escort visitors	Sponsor	Sponsor	Sponsor
	Identify and provide assistant facilitators	Sponsor	Sponsor and FAM	FAM
	Time-keep and capture output	Sponsor	Sponsor and FAM	FAM
	Design subgroups	Sponsor	Sponsor and FAM	Sponsor and FAM
	Identify backbriefers	Sponsor	Sponsor and FAM	Sponsor and FAM
FOLLOW-UP WORK	Transcribe raw output	Sponsor	FAM	FAM
	Produce workshop report	Sponsor	Sponsor	Sponsor and FAM
	Produce and review resulting product	Sponsor	Sponsor and FAM	Sponsor and FAM
	Provide feedback on project	Sponsor	Sponsor	Sponsor

All assessments have the following basic structure:

Facts A, B, C... are true (Evidence base)

If facts A, B, C... are true , then conclusions X, Y, Z are true (Argument).

Therefore conclusions X, Y, Z are true (Key judgements)

One simple test to see whether an assessment holds water is to ask yourself if it's possible for the evidence base to be true, but for the key judgements to be false. If you can think of a way this could happen, then the conclusions are too strong for the evidence

Date of issue: Nov 2016

v2.0