Homo Analyticus

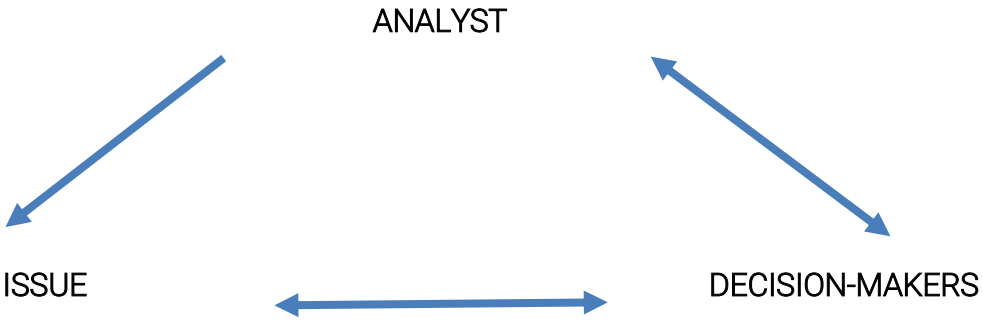
Profile of Skilled Humanitarian Analysts

June 2016

PROFILE

"It's not that I'm so smart, it's just that I stay with problems longer" (Albert Einstein)

Humanitarian analysts apply specific frameworks, structured techniques and analytical standards to review, evaluate and make sense of the often partial information available. They tailor their analysis to their end user's specific questions (e.g., who are the affected groups most in need of assistance after the earthquake), contributing to the design and implementation of more efficient humanitarian programmes.



Source: Pherson, Katherine Hibbs and Randolph Pherson, Critical Thinking for Strategic Intelligence, Washington, DC: CQ Press, 2012

The main characteristics of good humanitarian analysts are:

- Client Oriented: They seek high analytical value by tailoring outputs to respond to the key questions of their end users.
- Designer: They design their research and adapt their methods to fit into the magic triangle of cost, speed and quality.
- Describer: They summarize, compare and connect information to identify and explain meaningful patterns, trends, anomalies and relationships.
- Sense Maker: They interpret findings by separating the signal from the noise, providing actionable information and evaluating the strength of their conclusions.
- Adviser: They inform and assist consumers in taking decisions based on their analysis.

This document details the knowledge, skills and attitudes required for humanitarian analysts.

CONTENTS

KNOWLEDGE

Humanitarian System & Sectors: Knowledge of the humanitarian system, its mandate and architecture is required for an analyst working in the humanitarian sector. In depth sector-specific knowledge can be an asset, depending on the content being analysed. Knowledge of the key pillars of humanitarian practice and action; traditional humanitarian responses in disasters and conflict; the legal basis of humanitarian action; methods and processes involved for emergency needs assessment and strategic/programme planning; as well as some basic knowledge in each of the humanitarian sectors ensure a sound understanding of the humanitarian environment.

Way of thinking: An analyst needs to know the different ways of thinking and be able to implement and use these various mindsets in different contexts of their work:

Critical thinking: Thinking critically is about asking the right question; recognising and identifying **assumptions**; reaching out to other sources; evaluating the data for accuracy, relevance and completeness; assessing the data and forming hypotheses; **evaluating the hypotheses** and looking for conflicting data; **drawing conclusions** and presenting findings.

Logical thinking: *Logic* is the organised body of knowledge or science that **evaluates arguments**. The aim of logical thinking is to apply a system of methods and principles that are used as criteria for evaluating the strength of arguments. **Induction, deduction, abduction** and **retroduction** are forms of logical reasoning which are used to connect and generate ideas.

Whole-brain thinking: Different tasks require different mental processes, and each of us has preferred ways of thinking. This mode of thinking affects the way we take in and process information. Being aware of our own **thinking preferences** and the preferences of others, combined with the ability to act outside of one's preferred thinking preferences is known as *Whole Brain Thinking*.

Scientific thinking: The scientific method is a three-step process that starts with **observation** –having a clear sense of the facts surrounding the phenomenon, then explanation –introducing a set of factors (**hypothesis or theory**) that account for how and why the phenomenon in question has come to be the case, and ends with **experimentation** – testing of the hypothesis/theory to either shoot down the previously formulated explanation (falsify it) or support it (corroborate it).

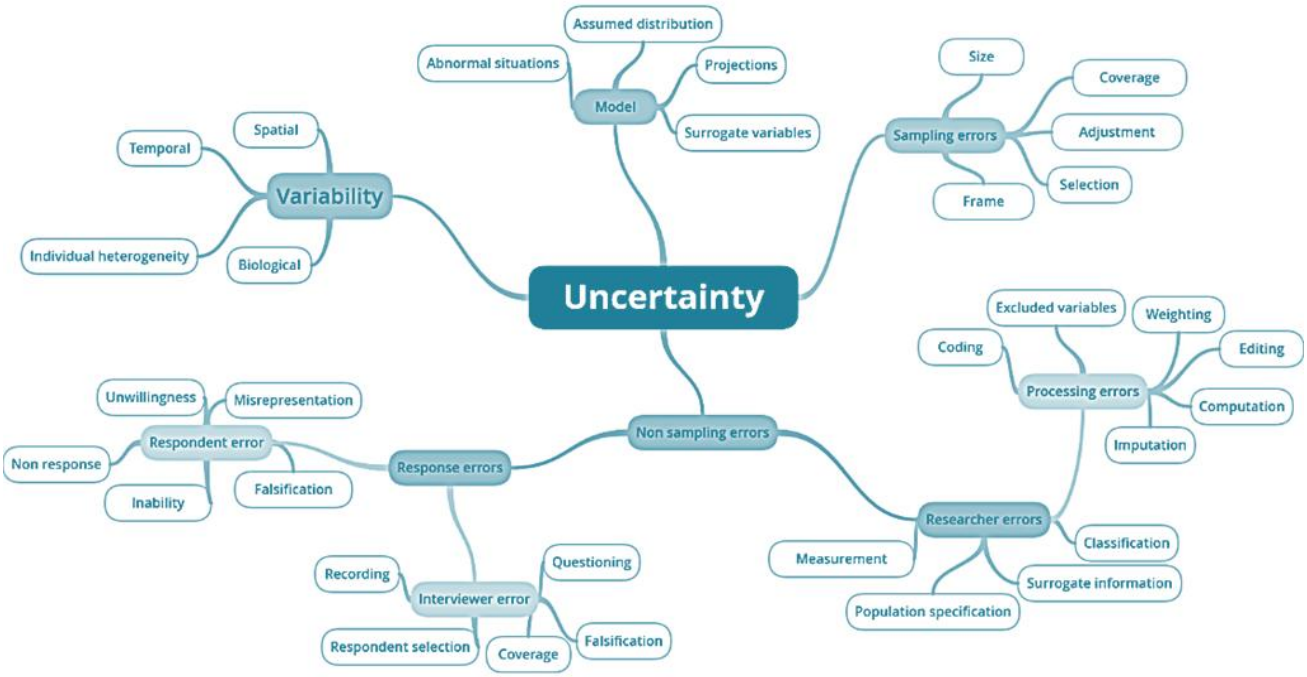
Statistical thinking: Key components of statistical thinking include **process thinking**; understanding and managing **uncertainty**; and using data whenever possible to guide actions and improve decision-making. Statistical thinking recognizes that **variation** exists in all processes, which causes uncertainty.

Systems thinking: System is defined as a set of elements that interact to produce behaviour. Systems thinking is a holistic approach to analysis that focuses on the way that **system's units interrelate** with each other and work over time and within the context of larger systems. Systems thinking enables us to deal effectively with complex problems that usually involve multiple actors.

Ethical thinking: Three types of ethical thinking exist: **ends-based thinking** (utilitarianism) – deciding to do whatever it takes to achieve good for the highest number of people; **rule-based thinking** – deciding what to do based on a rule that is believed should be a general principle to follow in any situation and **care-based thinking** (reversibility principle) – deciding what to do based on what we would want others to do in this situation.

Qualitative thinking: Qualitiative thinking uses different methods from various social science fields, such as anthropology, sociology and economy, to gain a **deeper understanding of how people talk and feel**, and how they locate topics within the context of their lives, aspirations and priorities. It identifies how to appeal to hearts as well as minds, and how to best frame a choice or argument.

Sources of errors: Analysts need to be concerned with assessing the accuracy and trustworthiness of their data. Understanding the sources of uncertainty and error can help reduce the risks of generating poorly informed conclusions and amplifying biased information.



ACAPS 2015, Sources of uncertainty and error

Cognitive biases: Even the best-trained analyst has to function with a human brain. Three categories of bias are especially dangerous to ignore for humanitarian analysts, depending if they are working in a group or individually. ***Selection biases*** are caused by choosing non-random data for analysis. Some information is unconsciously chosen or disregarded. ***Social biases*** are a result of our interactions with other people. The way we are processing and analysing information depends on our relations with those who provided us with information or hypotheses. ***Process bias*** is our tendency to process information based on cognitive factors rather than evidence. When we process information, we often display inherent thinking errors, which might prevent an analyst from accurately understanding reality, even when all the needed data and evidence are in hand.

Structured analytical techniques involve step-by-step processes that are expected to **reduce the risk of analytic error**. They allow problems to be broken down into smaller, examinable parts. These processes guide the analyst's thinking and improve how analysis is conducted. These techniques are especially needed when analysts have to deal with incomplete, ambiguous and/or falsified information. A systematic approach in evaluating alternative explanations and outcomes reduces the likelihood that analysts dismiss potential hypotheses. Structured techniques externalise internal thoughts or processes in order to share, criticise and expand upon ideas. Heuer[1] highlights a few structured analytic techniques, classified in eight categories:

- Decomposition and Visualization: techniques that enable the analyst to break things down into their component parts, so that each part can be assessed, compared and related carefully.
- Indicators, Signposts, Scenarios: we tend to see what we expect to see and hence to overlook the unexpected. These techniques prepare the mind to recognize change.

[1] A Tradecraft Primer: Structured Analytic Techniques for Improving Intelligence Analysis, Heuer, 2009

- Challenging Mindsets: techniques that allow a reframing of the question in a way that helps identify and evaluate new evidence, arguments and perspectives.
- Hypothesis Generation and Testing: Good analysis requires identifying, considering, and weighing the evidence both for and against all the reasonably possible hypotheses, explanations, or outcomes.
- Group Process Techniques: Analytical techniques that provide with a structure to the interaction of analysts within a team or group.
- Diagnostic Techniques: Techniques aimed at making analytic arguments, assumptions, or intelligence gaps more transparent.
- Contrarian Techniques: Techniques to challenge current thinking.
- Imaginative Thinking Techniques: Processes aimed at developing new insights, different perspectives and/or develop alternative outcomes.

Qualitative research: Qualitative research refers to methods of inquiry used in many different social and academic disciplines (social and natural science) that are primarily focused on exploration and gaining an understanding of underlying reasons, opinions, and motivations. It provides insights into the problem or helps to develop ideas or hypotheses for potential quantitative research. Qualitative data collection methods vary using unstructured or semi-structured techniques. Some common methods include focus groups (group discussions), individual interviews, and participation/observations. The sample size is typically small.

Quantitative research: Quantitative research is used to quantify the problem by way of generating numerical data or data that can be transformed into useable statistics. It is used to quantify attitudes, opinions, behaviours, and other defined variables – and generalize results from a larger sample population. Quantitative data collection methods are much more structured than qualitative data collection methods. Quantitative data collection methods include various forms of surveys – online surveys, paper surveys, mobile surveys and kiosk surveys, face-to-face interviews, telephone interviews, longitudinal studies, online polls, and systematic observations.

Visual perception: In order to convey messages effectively through charts and graphs, analysts should know and understand how information is being processed through the eyes, implying the way visual elements and cues are being acquired, interpreted, selected, and organised as sensory information. Visual perception and understanding can be boosted by an appropriate use and knowledge of sensory and working memory, pre-attentive attributes and the Gestalt principles of visual perception.

Context: A sound understanding of the context in which the analyst is working on is necessary to reach a certain depth in the analysis. Knowledge of the historical, economic and political background, as well as the cultural and social values and rituals of a population is necessary to get the right perspectives on, and interpretation of, a given situation.

SKILLS

This section presents the critical skills a good humanitarian analyst should have, listed by order by importance.

Inductive and deductive reasoning: The ability to combine separate pieces of information, or specific answers to problems, to form general rules or conclusions, and the ability to apply general rules to specific problems to come up with a logical conclusion. It involves deciding if the resolution makes sense.

Qualitative reasoning: The ability to express conceptual knowledge such as start and end of processes, causality, assumptions and conditions under which facts are true.

Quantitative reasoning: The ability to apply basic mathematical and statistical skills to the analysis and interpretation of real world quantitative information.

Pattern recognition: The ability to identify or detect patterns, anomalies, gaps or clusters hidden in other material.

Judging the strength of evidence: The ability to assess the strength of evidence, such as the quality of the information, the size of the body of evidence, the context in which the evidence is set and the consistency of the findings.

Analytical writing/editing: The ability to write, structure and communicate messages with clarity and ease to a large and non-technical audience. It also includes the ability to communicate uncertainty and limitations in ways that ensure conclusions cannot be misinterpreted or misused.

Visual literacy: The ability to evaluate, apply and visually present and represent the stories hidden in the data and to identify the most appropriate visual cues that will convey and communicate the main messages most effectively. Analysts should be able to evaluate advantages and disadvantages of visual representations; to improve their shortcomings; to use them to create and communicate knowledge; or to devise new ways of representing insights.

Foreign language(s): The ability to speak, write and read foreign language(s) allows the collection of information from direct sources and local perspectives and helps broaden the understanding of an issue.

Project management: The ability to plan and manage an analysis project (time and resources) as well as organise him/herself or a group of analysts towards a deadline. This includes the ability to choose, implement and document sound structured analytical techniques, ways of thinking, and methods successfully, as well as to lead analytical processes to counterbalance personal or group biases.

Networking: The ability to make connections and building sustainable and beneficial relationships in order to get access to information.

Information retrieval: The ability to obtain information resources relevant to an information need from a collection of information resources. Effective information retrieval skills can be demonstrated by the ability to evaluate various search strategies, select and justify the most relevant and appropriate search techniques, and the ability to critically evaluate search results.

Data manipulation: The ability to "play with the data" is a critical capability in analysis. The capacity to sort, rearrange and moving data without fundamentally changing it allow the analyst to look for patterns, trends and anomalies and discover messages hidden in the mass of information at hand.

ATTITUDES

This section presents the attitudes and intellectual standards a good humanitarian analyst should adopt and apply in their permanent search for the *best version of the truth*.

Key Attitudes

Organised

- Methodological - *systematic in the analysis approach*
- Attentive to details – *understands the nuances of the data*
- Autonomy
- Concise - *able to express ideas clearly, briefly and interestingly*
- Patient and perseverant
- Good memory
- Rigorous analysis that adds value

Creative

- Curious – *digs deeper into data*
- Eager to learn
- Imaginative –*always thinks of another way, brings a fresh vision to problems*
- Responsive to change
- Innovative
- Drive to identify novel solutions
- Open-minded and flexible – *able to adapt and work on different projects*

Observant

- Sense of what's worthwhile - *able to distinguish between essentials and non-essentials*
- An eye for meaningful patterns
- Confident
- Comfortable with uncertainties and ambiguity
- Knows how to deal with contradictory or inconsistent information

Enthusiastic

- Self-motivated – *proactive in the analysis*
- Hard-working
- Team player and collaborative
- Dedicated
- Likes problem solving and interested in data
- Passionate

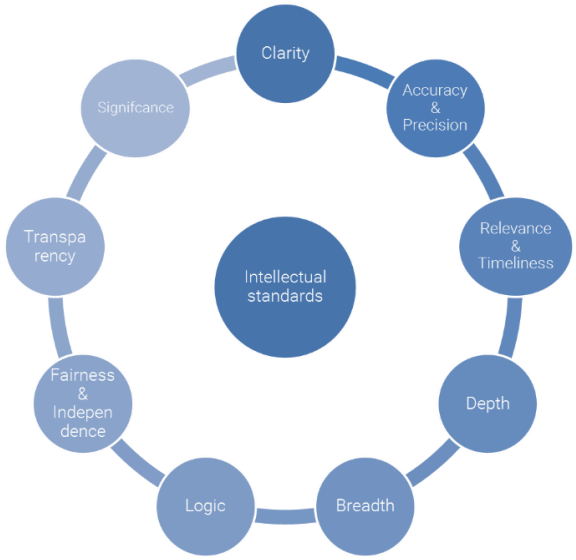
Ethical

- Honest - *acknowledges what they do not know as well as biases*
- Integrity - *avoids misrepresenting situations*
- Humility - *promotes the population's needs and not their own*
- Brave – *presses opinions where the evidence points out, even if unpopular*
- Objective - *Thinks independently and not afraid to disagree with group opinion*

Empathic

- Compassionate
- Sensitive
- Intuitive
- Active listener
- Easy to approach
- Strives to understand what motivates others

Intellectual standards are principles that must be applied to analysis and demonstrated during the process to ensure quality of reasoning about a problem, issue, or situation, and provides with credible results.



Clarity: The arguments are expressed clearly and are illustrated with details and examples.

Accuracy & Precision: The analysis relies on facts and research. The analysis is specific and exact. Expertise and logic have been applied to make the most accurate judgments possible given the information available and known information gaps.

Relevance: The analysis is directly related to the need of the client, problem or question.

Timeliness: The product is delivered in time to be actionable by customers. Analytic products that arrive too late to support the work of consumers weaken utility and impact. Analysts should be aware of the schedules and requirements of consumers.

Depth: Different possible outcomes have been considered and what could go wrong has been anticipated.

Breadth: Other points of view and perspectives have been considered. The analysis is informed by all relevant information available. Critical information gaps have been investigated.

Logic: The analysis is presented in a way that makes sense to others. The end product facilitates a clear understanding of the information and reasoning underlying analytic judgments.

Fairness & Independence: All facts, even the ones the analyst disagreed with, have been included in the analysis. Objective assessments informed by available information are provided without being distorted or altered by the intent of supporting or advocating a particular policy, political viewpoint, or audience.

Transparency: Specific information and sources have been linked to key analytical judgments. The end product highlights information gaps and contrary reporting. Analysts need to comment on the susceptibility of the information to error or on the source's motivations and potential biases. Analytic products should express a level of confidence in the judgments and explain a basis for ascribing to it.

Significance: Important facts to the problem or question have been included, as well as possible consequences.

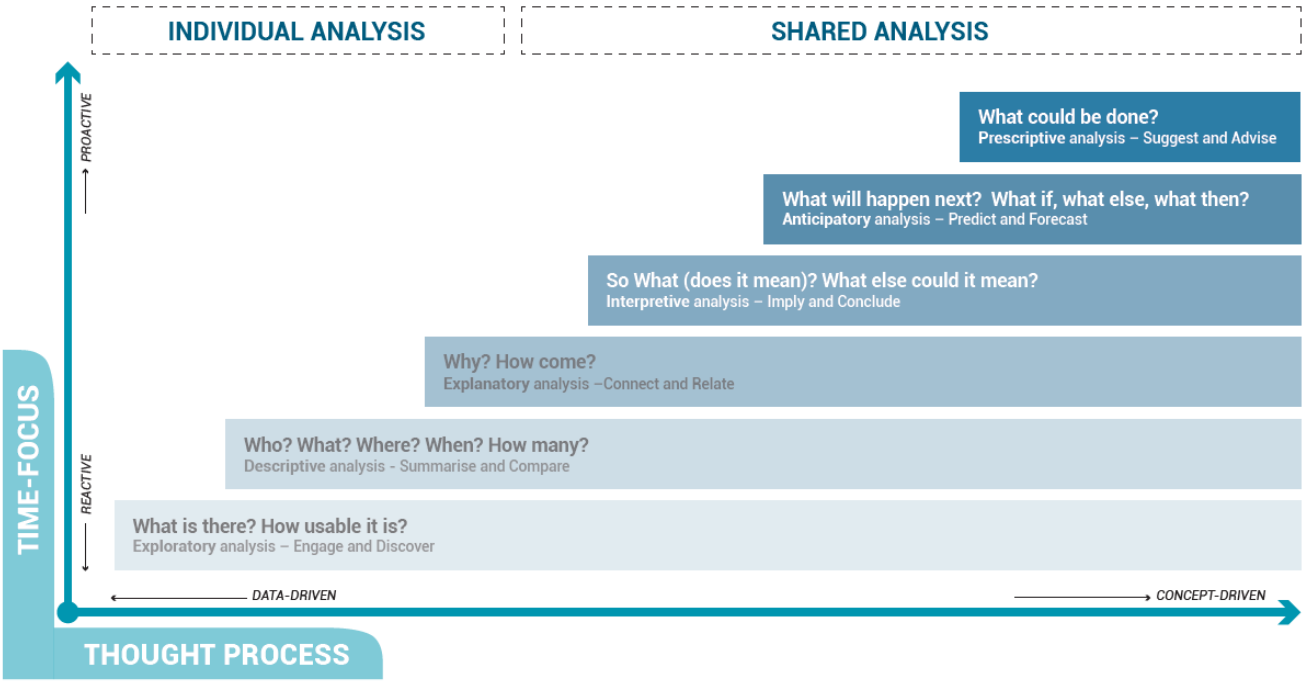
The Do's and Don'ts of humanitarian analysis

- Start with a good question. Raise important questions and formulate them clearly and precisely
- Use the best tool for the job
- Collect relevant data only
- Build a team of interdisciplinary experts
- Consult subject matter experts
- Use context and evidence through observation
- Gather and assess relevant information, using abstract ideas to interpret it effectively
- Identify key drivers
- Think open-mindedly, recognizing and challenging assumptions, implications, and practical consequences
- Balance differing points of view
- Get to the heart of an issue or problem without being distracted by details
- Develop alternative hypotheses
- Come to well-reasoned conclusions and solutions, testing them against relevant criteria and standards
- Provide the best possible answer given the time and information available
- Present a well-considered argument
- Communicate effectively with others in figuring out solutions to complex problems, without being influenced by others' thinking on the topic.
- Create informative charts
- Share your analysis and results with all concerned parties

- Start with the data
- Think one person can do it all
- Only use one tool
- Brag about the size of your data
- Ignore domain knowledge
- Base your analysis on unfounded or unacknowledged assumptions or value judgments
- Be close-minded and resist ideas that challenge your beliefs and assumptions
- Lack awareness of your own biases and preconceptions
- Be indifferent to truth and lack curiosity
- Engage in 'group think', uncritically following the beliefs and values of the crowd.
- Be easily distracted and lack the ability to zero in on the essence of a problem or issue
- Poorly structure your product
- Be descriptive only (i.e., structured around narrative, rather than interpretation)
- Be general, vague
- Pile up detail. Data dumps are not the way to show expertise
- Be historians
- Be wordy
- Pretend your audience knows more than they do and ignore their limitations
- Publish a table of numbers
- Keep all your findings to yourself

ANALYTICAL MATURITY PATH

Different combinations of knowledge, skills and attitudes are needed, depending on the level of analysis required:



ACAPS 2016, The analysis spectrum, adapted from Pherson 2010

1. Exploratory analysis is what analysts do to get familiar with the data and find potential signals and stories in it. It is an initial foray into new data sources, in expectation of more targeted analysis to come. Analysts performing exploratory analysis need method, rigor and wrangling skills to manipulate the data and look at it from different angles, transform, clean and code as the exploration goes on. Noticing and writing down interesting or strange observations and refraining judgment are important at this particular stage of analysis to avoid forming too early opinions. A sense of observation and intense concentration are required as well to ensure that details, patterns or anomalies will not be missed.

2. Descriptive analysis: Analysts performing this type of analysis need to be expert at handling and comparing data and information to report the facts. Critical reasoning skills, coupled with information ordering and summarizing, allows the selection and weighting of relevant data. Project management skills enable them to organize their work environment to make best use of their time. Analysts need to be highly self-motivated, as the process of describing facts can sometimes feel tedious and numerous comparisons are possible. Visual literacy and thinking are also required to graphically represent data and ease pattern recognition, using best tools and visualizations available.

3. Explanatory analysis: Analysts performing this type of analysis are expert at reasoning and argumentation. They combine deductive, inductive, and abductive skills with intuition, to order evidence and seek patterns that may explain why data is behaving a particular way. Both collaboration and critical reasoning skills are needed to ensure the work is minimally affected by the analysts' biases and that alternative hypotheses are taken into account. Project management skills help ensure the work is timely. The analysts draw on their communication skills to ensure their explanations are conveyed in the most effective manner. Explanatory intelligence requires greater knowledge of the issues, contexts and populations affected; foreign languages can therefore be useful to deepen the understanding of the local perspectives.

4. Interpretive analysis: Analysts performing this type of analysis need to be expert at applying structured analytical methods. Collaboration is essential to ensure that all possible interpretations are examined fairly and the less plausible ones eliminated. Advanced communicating and thinking abilities are also necessary to convey main messages and key uncertainties with transparency. Mastery of sources of error or uncertainty, reasoning and information processing skills ensure key evidence is most effectively handled and the results of analysis most persuasively disseminated. A very deep understanding of the contexts and populations guarantee that all the pertinent resources are reviewed.

5. Anticipative analysis: Analysts performing this type of analysis need to be expert at risk analysis and developing scenarios. This type of analysis requires strong analytical skills and the ability to project alternative ways in which a situation might evolve. The analysts must be comfortable with ambiguity and uncertainty. Collaboration is also critical to ensure that all possible outcomes for a given situation has been considered. A high level of organization is also required for predictive analysis. Communication skills are also very much needed to convey clearly the different assumptions, facts, information gaps and confidence in the data to the end users.

6. Prescriptive analysis: Analysts performing this type of analysis are expert in strategy and program design. They have knowledge of different response modalities or options and know how to weight them using criteria such as appropriateness, efficiency, do not harm, cost effectiveness, etc. They can compare and anticipate the benefits and risks of each intervention and suggest the ones that are the most likely to result in fast recovery.

The path to becoming an effective and mature analyst is not always intuitive. Some reasoning tasks require more experience than others as analysis become less *data* driven and more *concept or model* driven. Recent polling in ACAPS trainings about the difficulties of apprehension or comprehension of analytical tasks highlighted that being able to design for quality and credible analysis was the ultimate stage of analytical maturity.