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NATO LETTER OF PROMULGATION

17 June 2020

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CHAPTER	RECORD OF RESERVATION BY NATIONS
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ALLIED INTELLIGENCE PUBLICATION FOR INTELLIGENCE PROCESSING (STEP 3)

References

AJP-01	Allied Joint Doctrine
AJP-2	Allied Joint Doctrine for Intelligence, Counter-Intelligence and Security
AJP-3	Allied Joint Doctrine for the Conduct of Operations
AJP-5	Allied Joint Doctrine for the Planning of Operations
AJP-2.1	Allied Joint Doctrine for Intelligence Procedures
AJP-2.2	Allied Joint Doctrine for Counter-Intelligence and Security Procedures
AJP-2.3	Allied Joint Doctrine for Human Intelligence (HUMINT)
AJP-2.4	Allied Joint Doctrine for Signal Intelligence (SIGINT)
AJP-2.6	Allied Joint Doctrine for Imagery Intelligence (IMINT)
AJP-2.7	Allied Joint Doctrine for Joint Intelligence, Surveillance and Reconnaissance
AJP-2.8	Allied Joint Doctrine for Measurement and Signature Intelligence
AJP-2.9	Allied Joint Doctrine for Open Source Intelligence (OSINT)
AAP-47	Allied Joint Doctrine Development
AAP-32	Publishing Standards for NATO Standardization Documents
AAP-06	NATO Glossary of Terms and Definitions
AAP-15	NATO Glossary of Abbreviations used in NATO Documents and Publications

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Preface

Context

Processing describes the fundamental procedures and steps to produce required intelligence, that is necessary to support decision makers and the decision making process. To best support the decision makers and allow them to better envision the operating environment, it is important for commanders, command staffs, and other intelligence users to understand the processing stage of the intelligence cycle and how effective and actionable intelligence can help the command staff to achieve a better understanding of the operating environment and make informed decisions based on the needs and aims described in MC 0128/8, AJP-2 and AJP-2.1.

Scope

This document provides common agreed principles and processes allowing NATO to conduct step three “processing” of the intelligence cycle.

Purpose

The purpose of this publication is to improve interoperability by providing guidance for commanders and staff executing intelligence processing, step three of the intelligence cycle. It provides a basis for a comprehensive and clear-cut intelligence processing in NATO which can be used for the development of more detailed standard operating procedures (SOPs).

Application

This document is primarily intended for NATO forces, NATO headquarters and organizations providing a common baseline for intelligence support to planning and operations within the NATO framework. Focused primarily at the military operational level, the provisions of this document could be applied at all levels of command and by other NATO organizations, member states and partners supporting the achievement of their objectives, missions and activities. The publication is primarily written to support intelligence staffs, focusing on the analysts conducting intelligence processing.

Linkages

AIntP-18 is a Level-3 doctrine within NATO AJP-2-series intelligence doctrine, and sits under AJP-2.1 Intelligence procedures (Figure 01).

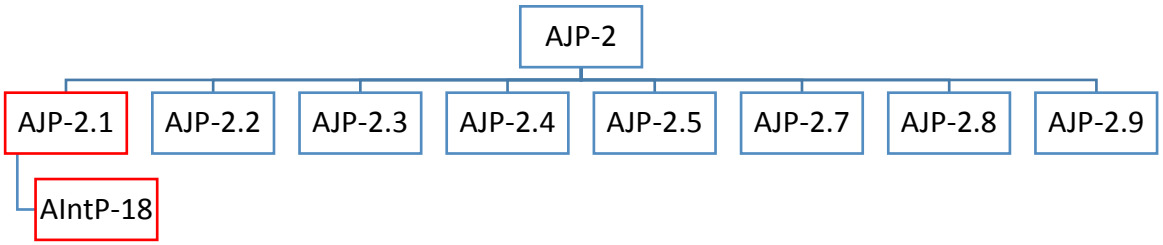

Figure 01: AJP-2 series

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Chapter 1 INTRODUCTION

1.1. Introduction

Major intelligence failures are usually caused by failures of analysis, not failures of collection. Relevant information is discounted, misinterpreted, ignored, rejected, or overlooked because it fails to fit a prevailing mental model or mind-set.

Christopher Brady, 1993

The abundance of data and information characterizing the 21st century increases the importance of the processing phase of the intelligence cycle. Intelligence processing transforms information into intelligence through the structured activities of collation, evaluation, analysis, integration and interpretation. Intelligence provides warning and informs planning, decision-making process and the conduct of operations. Intelligence provides planners and decision makers with a comprehensive understanding of the operating environment. A key outcome of processing is the intelligence estimate and other products answering the Commander's Priority Intelligence Requirements (PIR).

1.2. The intelligence cycle

Intelligence is the product resulting from the directed collection and processing of information regarding the operating environment, in order to identify threats and offer opportunities for exploitation by decision-makers. Intelligence contributes to a continuous and coordinated understanding of the operating environment (OE), to enable appropriate decisions. The intelligence cycle depicts the sequence of activities whereby information is obtained, assembled, converted into intelligence and made available for users. These activities are focused through the four phases of direction, collection, processing and dissemination shown in Figure 02.

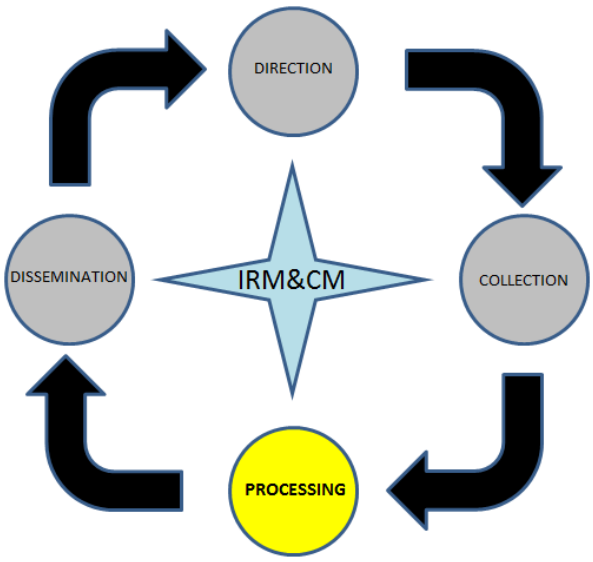

Figure 02: The intelligence cycle

Processing is the third phase in the intelligence cycle where information is converted into intelligence through a structured series of activities.[1] Through the processing phase information is evaluated, contextualized, explained and predictions are added, making this intelligence satisfying the intelligence requirements.

Intelligence aims to:

- Provide the commander and staff with a comprehensive understanding of the operational environment (OE) through answering the commanders´ PIRs and other validated intelligence requirements
- Indication and warning (I&W)
- Support joint planning
- Support current operations, including Joint Effects
- Support operations assessment

1.3. Intelligence processing and the JISR process

Processing inside the intelligence cycle and the steps “process and exploit” inside the JISR process are different but interconnected, mutually dependent activities. Intelligence processing is the conversion of information into intelligence through collation, evaluation, analysis, integration and interpretation, while the JISR process is the activity to provide data, information and single discipline intelligence to address an intelligence requirement (IR). The JISR process consists of five steps: Task, collect, process, exploit and disseminate (TCPED), and is the single discipline collection agency’s method of converting collection tasks to understandable single discipline JISR-results that can be processed in by an intelligence staff.
Intelligence processing is not exclusively a multidiscipline effort, but the full process as described in this document reflects how multidiscipline intelligence staffs conduct processing on processed and exploited data and information (JISR results) collected through the JISR process.
Intelligence processing should not be mixed up with federated production, as this is information from single discipline agencies compiled into a common result. It is not intelligence, as it has not been processed through the third stage of the intelligence cycle “processing”. This doctrine explains principles, procedures and techniques to produce intelligence based on all available data and information.
The framework for intelligence processing presented in this document, is applicable for single discipline collection agencies as well, however, with no focus on the predictive element of the intelligence production.

[1] Collation, evaluation, analysis, integration and interpretation (AJP-2.1 (B))

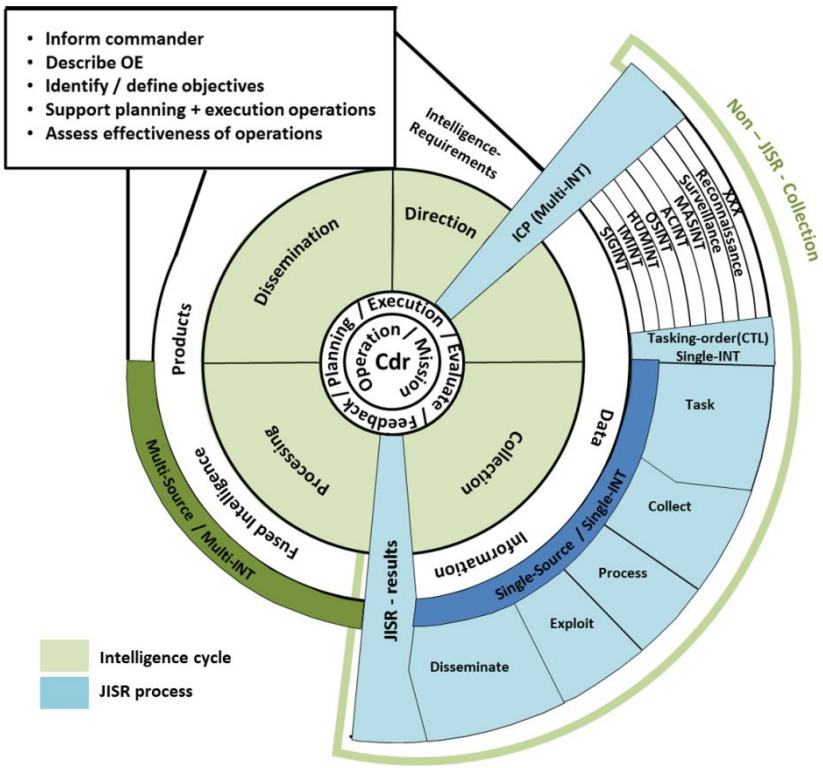

Figure 03: Relationship between intelligence cycle and JISR process

1.4. Structured methodology

The essence of intelligence processing is to reduce ambiguity and provide understanding in order to improve decision making and operating planning. Knowledge and insight, as in establishing facts, is not enough; intelligence analysts must also provide foresight, judgements regarding possible future outcomes. To do so, intelligence analysts have to provide estimates regarding a wide set of complexities, lack of accurate data and information and other intelligence problems that cannot be answered by intuition alone since the result often will be hasty conclusions based on inadequate data, suppressed evidence, unidentified assumptions, and obliviousness to biases.

Since intelligence to a large degree deals with human nature, chance, and free will, changes are inevitable in the long run. Intelligence analysts have to shift the focus from empirical data alone to work with scenarios, theories, assumptions, and models. Intelligence processing is based on a social science school of thought, including in varying degree induction, deduction, and abduction in the process of developing and falsifying hypotheses about the future. A structured approach to intelligence processing is required to forecast the future accurately. The structured approach also enables interoperable collaboration and sharing of information and intelligence.

One component of a structured approach is the use of structured analytic techniques. These techniques aim to challenge established orthodoxies in understanding and mitigate the fallacy of inductive reasoning and biases deriving from automated thinking. Using structured analytic techniques makes it easier to find the relevant indicators for

changes in the current situation and how the changes can affect the future. To facilitate a comprehensive understanding of the operational environment, analysts must combine the use of structured analytic techniques with creativity and critical thinking. Using a structured methodology will increase objectivity, traceability, and integrity, and thereby helps reducing decision makers' ambiguity by making estimates less uncertain.

Chapter 2 THE INTELLIGENCE PROCESSING FRAMEWORK

Intelligence analysts should be self-conscious about their reasoning processes. They should think about how they make judgments and reach conclusions, not just about the judgments and conclusions themselves.

Richard J. Heuer, 1999

"Gentlemen, I notice that there are always three courses [of action] open to an enemy, and that he usually takes the fourth"

Field Marshal General Helmuth von Moltke the Elder
Chief of the German General Staff
(1857-1888)

2.1. Overview

The nature of the operating environment can be very complex. To create a comprehensive understanding of the OE is one of the main challenges for the intelligence staff. To provide accurate and relevant intelligence it is necessary to structure and combine pieces of information to improve understanding.
Intelligence presents knowledge and predictions about the operating environment and actors, including their intent, capability and motivation. The intelligence staff should strive to put this intelligence into context, thereby enabling the commanders' understanding based on the commanders' critical information requirements (CCIRs), in order to make the presented intelligence actionable for the commanders´ decisions. Intelligence should be comprehensive in nature and should explain the inter-related elements of a complex operating environment in an unbiased and undistorted manner. It should also consider the situation from the perspective of key actors and include a predictive element for future developments.
The nature of complex environments means the fusion of all available data, information, JISR-results and other existing intelligence will be the only way that the commander can be provided with sufficient understanding to make decisions. Single-source information and single discipline results may answer separated and limited requirements (often without any confirmation) but cannot substitute all-source-intelligence that is to satisfy the intelligence requirements (IRs). To produce all-source-intelligence the step processing inside the intelligence cycle is crucial and therefore described within this chapter.

This chapter will present a framework on how to organize and structure the activities required to develop timely, relevant and accurate intelligence. Intelligence processing consists of two major parts; first there is a preparation part where information is collated, evaluated and made available for further processing. The second part is the analytical part, where the analyst through the activities of evaluation, analysis, integration and interpretation transform information into intelligence.

2.2. From information to intelligence

Intelligence processing utilizes all available data and information, including the information collected by various collection capabilities. Through a structured process, where information is externalized, decomposed and visualized, the relevant information is identified. This is transformed into intelligence by adding context, explanations and predictions.
The initial preparations to make information and intelligence available for further processing depends on an information management system to maintain the integrity and accessibility of the existing data, information and intelligence.
During the analytical process analysts strive to understand the current situation, why it has changed from the past and the impact it may have on the future situation. The latter being one of the key principles of intelligence; providing commanders with understanding of what the future may hold.

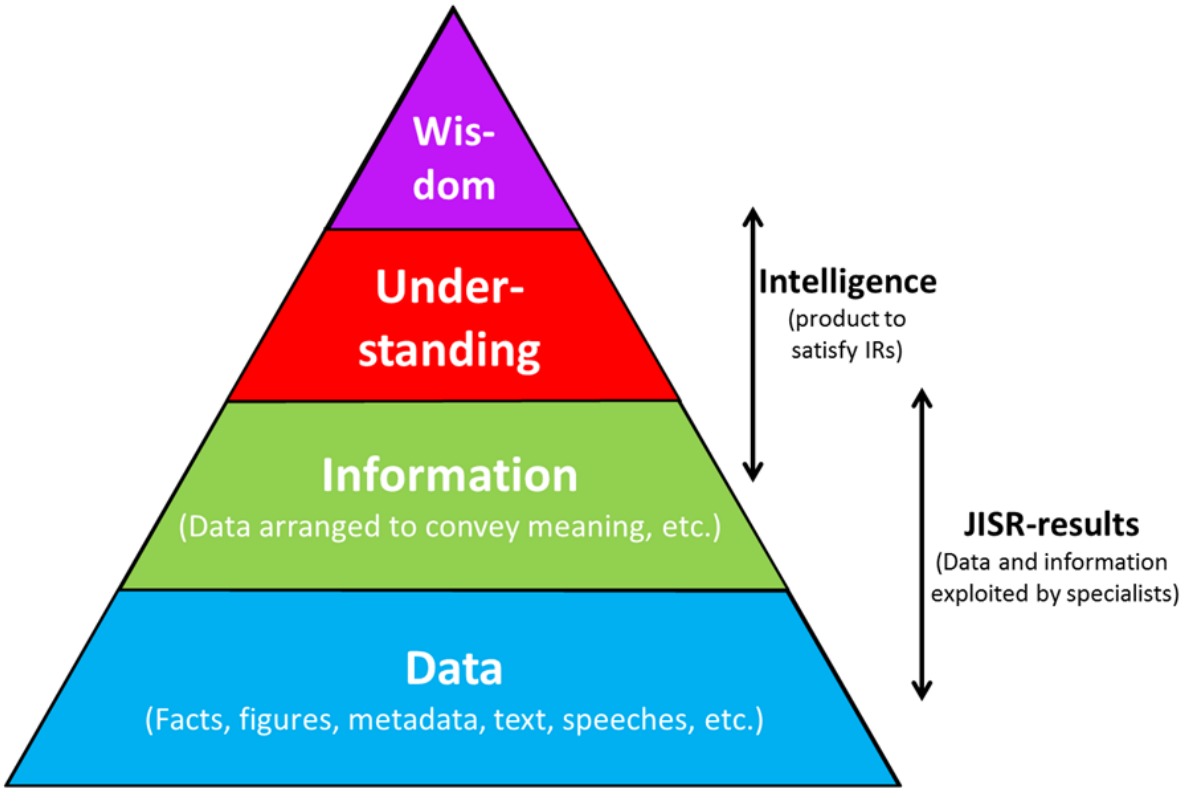

Figure 04: Data, information, JISR-results, intelligence, understanding and wisdom in information theory (See also AJP-2 for closer description)

2.3. Processing framework

To understand how the structured activities of the processing phase of the intelligence cycle interact, a processing framework is required. The framework follows a logic that emphasizes the importance of making information available, improving understanding of the current situation and encouraging imagination to develop hypotheses of

alternative futures. The following paragraphs will present the framework of the processing phase elements and their relations to the structured activities.

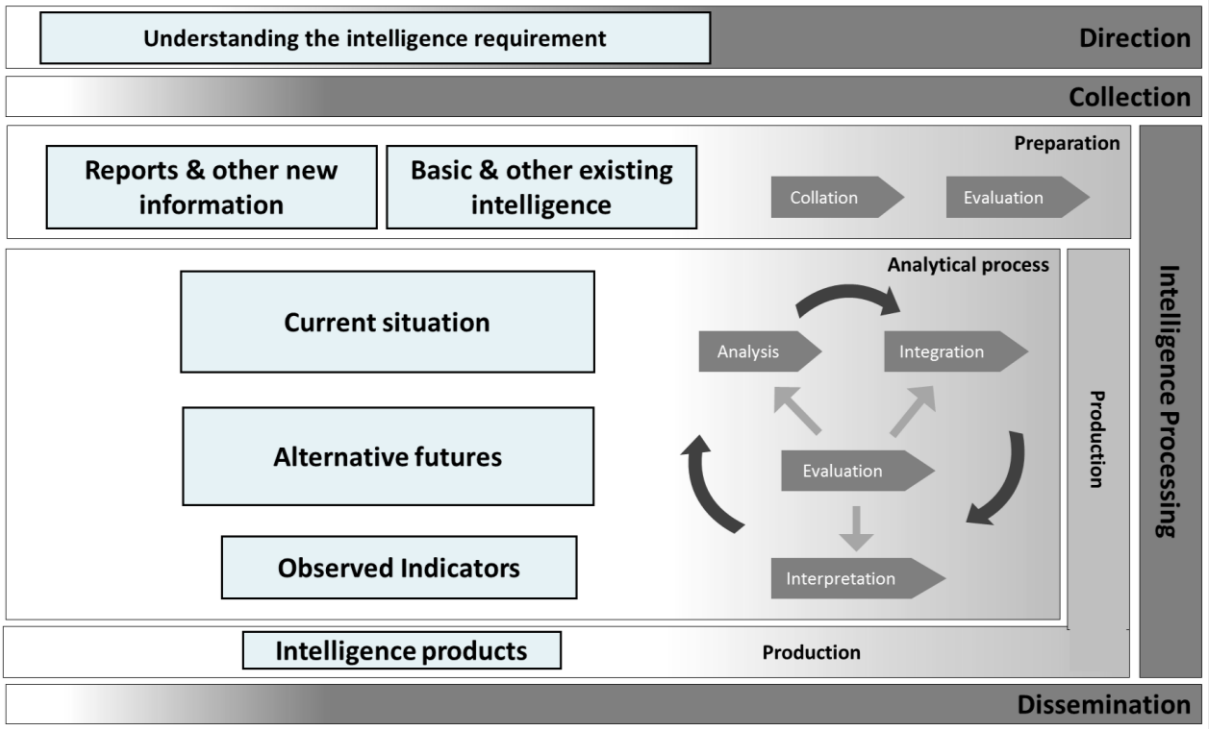

Figure 05: Processing framework

The starting point of intelligence processing is the understanding of the intelligence requirement. This will help the intelligence staff, including the analysts, to coordinate the process to produce timely and relevant intelligence.
In the preparation part, all data, information and intelligence are collated and evaluated. This will enable the analyst to sort and filter information based on topic, relevance and quality, or other preferred categories and identify intelligence gaps and new requirements.

In the analytical process, the intelligence analyst must establish and maintain an understanding of a holistic and collective picture of the current situation, both with regards to the actors and the operating environment covering all political, military, economic, social, infrastructural and informational (PMESII) factors. By filtering and sorting new information, and extracting relevant existing information and intelligence, the analyst will develop an understanding of the actors´ current status, organization, capacities and positions as well as the dynamics of all relevant factors and how these interact. A historic description of the actors and the situation will help the analyst to understand what has caused the current situation.
Based on this understanding the analysts will conduct evaluation, analysis and assessments of all source PMESII factors information and intelligence with the aim of developing actionable intelligence, conduct a joint intelligence preparation of the operating environment (JIPOE) during all phases of operations. Additionally, the analysts provide recommendations for IRs and coordinate their respective

development with IRM cell as well as create hypotheses of alternative futures together with describing indicators. IRs and indicators of these hypotheses will be assessed and monitored during a campaign or crises, in order to determine what courses of action (COA) or scenarios are evolving.
Finally, the analyst will produce and disseminate intelligence that reflects both the current situation and predictions of threats and opportunities relevant for the decision-maker.

2.4. Processing framework – step by step

Understanding the intelligence requirement

Understanding the intelligence requirement is the key to the processing phase and is a result of the intelligence dialogue. Developing a common understanding of the intelligence requirement is a part of the internal direction inside the intelligence staff. It leads to considerations about additional intelligence requirements, the need for resources and preferred techniques during processing.

Chief J2, chief intelligence requirements management and collection management (IRM&CM), chief production and analysts contribute to the common understanding of the intelligence requirements. This enables the intelligence staff to plan for how they will satisfy the intelligence requirements. Key considerations include efficient use of available time and resources, set priorities and requirements for the final intelligence product.

Preparation – making information and intelligence available
The initial part of the processing phase is all about making information and intelligence available for further processing by the intelligence staff. At one hand, one must structure and validate the quality of new information through the activities of collation and evaluation. Simultaneously, preparation is also about making existing information and intelligence available for the analytical process. Both these efforts are to facilitate for analysts to identify and extract information and intelligence relevant to the intelligence requirement during the analytical process.

1. Collation. Collation is an activity in the processing phase of the intelligence cycle in which the grouping together of related items of information provides a record of events and facilitates further processing.
Collation involves the actions of receiving, grouping and recording all new information by registering it in databases and tagging it with appropriate categories. In order to be efficient, collation must follow a common, standardized set of rules. The purpose of collation is to make it possible to sort, filter and group together available information and intelligence, which later in the analytical process can be extracted.
Collation is the key activity during the preparation part to make information and intelligence available for the analytical process.

2. Evaluation. Evaluation is an activity within the processing phase of the intelligence cycle constituting appraisal of the quality of the data and information reported. This activity is the key to determining the reliability of the originator or source and the credibility of the information used during processing. The alphanumeric

table A-F and 1-6 should be reserved for single discipline reporting as it refers to an evaluation of the reliability of sources and originators. For a multi-discipline staff it is less valuable to evaluate the reliability of the reporting agency, however, the credibility of the information is important through the whole processing phase and should therefore be done.
Evaluation is a continuous activity that is done for the first time together with collation to enable filtering and sorting information based on the quality.
Then, during the analytical process, evaluation is done both to determine what information and intelligence should be selected and integrated into new and current assessments and hypotheses, but also to weigh up different information and intelligence to develop accurate explanations and predictions.
The outcome of evaluation is a judgment of the quality of the information, based on reliability of the originator/source and credibility of the information.

Reliability of the originator/source is expressed by the letters A-F. Credibility of the information is expressed as a digit between 1-6:

	Reliability of the originator / source		**Credibility of the information**
A	Completely reliable	**1**	Completely credible
B	Usually reliable	**2**	Probably true
C	Fairly reliable	**3**	Possibly true
D	Not usually reliable	**4**	Doubtful
E	Unreliable	**5**	Improbable
F	Reliability cannot be judged	**6**	Truth cannot be judged

Figure 06: Reliability

3. Reports and other new information. As reporting and other new information comes in to the intelligence staff it has to go through preparation in order to be made available and easy to utilize later in the intelligence process. The intelligence staff also has to ensure that it can capture relevant information coming in to the other staff elements. The activity of collation is done to categorize the new information, while evaluation will determine the quality, both enabling filtering and sorting the new information based on relevant criteria and quality.
The purpose of preparation is the same at all levels, though its execution depends heavily on technology available. It could be done using advanced databases and software, which facilitate processing with automated processes and data transmissions. Or, reporting and new information could be recorded into simple spreadsheets and stored in basic folder structures, while heavily depending on search engines for filtering and sorting.

Modern technology is vital to collation, in some cases supporting it with automation. However, it is likely that a human element will remain to both evaluate the quality of the incoming information and for collating information, especially this not suited for automated processes.
In a wider perspective, the intelligence staff should, as part of preparation for analysis, make every effort to establish access to all relevant repositories.

4. Basic and other existing Intelligence. Basic and other existing intelligence is a key to add context to new information during the analytical process. However, in the same way as new information must be made available for the analyst, all basic and other existing intelligence utilized by the intelligence staff has to be collated and evaluated.

The information system that is used to organize the basic and existing intelligence depends on the technology available. However, the information system should make it easy to find relevant intelligence, by searching, sorting and filtering.

a. The analytical process – transforming information into intelligence. There are three elements of the analytical process, first, to understand and describe the current situation, then to create hypotheses of alternative futures, and finally to predict what the future will look like by using observable indicators. This logic is fundamental for all processing.
First, a complete understanding of the current situation demands an understanding of the operating environment including the historical situation and what has caused it to develop into the present. This will give a baseline to what driving forces are at play in the environment.
Second, the current situation is used to develop hypotheses of alternative futures that are based on both historic and present trends and patterns, as well as potential changes and assumed new developments in the operating environment.
Third, predicting the future is done by monitoring and testing all plausible alternative futures, based on observed indicators already identified. This approach will force the analyst to consider a wide set of hypotheses before any predictions are made.
During all of the analytical process new intelligence requirements to fill intelligence gaps may be identified and directed to the IRM&CM function.

The analytical process consists of four structured activities analysis, interpretation, integration and evaluation.

(1) Analysis. Analysis is an activity in the processing phase of the intelligence cycle in which information is subjected to review in order to identify significant facts for subsequent interpretation. Analysis also identifies and extracts the pieces of information relevant to the intelligence requirement.
In order to carry out analysis of quantifiable data, like pattern of life, relations, routines or events, access to available data sets is a precondition. This is done by filtering and sorting based on relevant

criteria, including information quality, before being integrated into a broader picture. In comparison, analysis of qualitative data like plans, intentions and ideas are normally more appropriate to handle individually, by identifying single pieces of information that are extracted piece by piece.
The structured activity of analysis must be understood as being closely related to collation and evaluation, and a precondition for integration.

(2) Integration. Integration is an activity in the processing phase of the intelligence cycle whereby analyzed information and/or intelligence is selected and combined into a pattern in the course of the production of intelligence. The activity of integration depends on valid and relevant pieces or sets of information that has been identified through evaluation and analysis, which can be integrated into the understanding of the current situation or hypotheses of alternative futures. Integration depends on thorough evaluation of the quality of the information.
Integration is a way of combining information that is considered relevant to the intelligence requirement. Integrated information can be visualized in order to highlight different perspectives such as geography, chronology, social relations, behavior, routines etc. In this way the information is put into a context that can be understood by the analyst during interpretation.

(3) Interpretation. Interpretation is an activity in the processing phase of the intelligence cycle and is where the significance of information or intelligence is judged in relation to the current body of knowledge. Interpretation is the activity that improves understanding of the current situation by explaining what has changed and why. Interpretation should predict future developments, by considering whether indicators are consistent or inconsistent with the hypotheses of the alternative futures.

The uncertainty in the prediction of future development is expressed by probability statements. Probability is an assessment of the likelihood of events to take place, and is an integrated part of interpretation. This assessment is based on the consistency and relevance of available information.
Probability statements are expressed by five levels from “highly likely” to “highly unlikely” that are facing a certain level of likelihood.

Probability statements for assessments	
More than 90%	Highly likely
60% - 90%	Likely
40% - 60%	Even chance
10% - 40%	Unlikely
Less than 10%	Highly unlikely

Figure 07: Probability statements2

As part of the products, the certainty of the assessments needs to be described.

"*Uncertainty is an uncomfortable position. But certainty is an absurd one*."

Voltaire

Analytical confidence is expressing the level of certainty for the assessments, and is an integrated part of interpretation. This is based on the quality of the information being used and the quality of the analytical process being applied. It communicates how sure the analyst is with the assessments inside the product.
This is based on:

- the quality of available information,
- the amount of data, information and intelligence,
- the diversity of collection disciplines supplying information,
- its coherence with other high confidence intelligence,
- the amount of assumptions used, and
- the time and resources available for processing.

Confidence levels are expressed by the three levels of "high", "moderate" and "low".

Confidence levels	
High	Good quality of information, evidence form multiple collection capabilities, possible to make a clear judgement.
Moderate	Evidence is open to a number of interpretations, or is credible and plausible but lacks correlation.
Low	Fragmentary information, or from collection capabilities of dubious reliability.

Figure 08: Confidence levels[3]

The four structured activities analysis, an accompanying evaluation, integration and interpretation are used iteratively in the

[2] See also AJP-2.1
[3] See also AJP-2.1

analytical process as required. The main elements of the analytical process are current situation, alternative futures and observed indicators, to predict which alternative future the current situation is moving towards.

(4) Current situation. The current situation provides a comprehensive understanding of the present context, including all actors and all PMESII factors of the operating environment.
I.e. at the operational level, it will consist of several displays and descriptions of all relevant perspectives of each actor, including desired end states, modus operandi, capacities, support and training level, and all relevant factors from the operational environment, like the impact of politics, social and economic considerations.
During the analytical process, analysis, integration, interpretation and evaluation is done to extract relevant information to explain the current situation, its dynamic, and changes from the historic situation.

Suggested techniques:

- ✓ Structured brainstorming
- ✓ Key assumption check
- ✓ Impact-probability matrix
- ✓ SWOT/TOWS analysis
- ✓ Causal-flow diagram
- ✓ Centre of Gravity analysis (COG)

(5) Alternative futures. To succeed in predicting the future development, the intelligence analyst will have to expand the spectrum of options and create hypotheses of all alternatives.
A thorough understanding of the current situation is the starting point for creating hypotheses of alternative futures. Such an understanding should be based on key driving forces, opportunities and restrictions in the operating environment and insight of the actors end state, strengths and weaknesses.[4]
Alternative futures can include both actor courses of action (COA) and situational scenarios[5]. The alternative futures should have associated indicators. These indicators will be nominated for

[4] Equivalent to the outcome of JIPOE step 1 and 2. See AIntP-17.

[5] The key difference between these two types of hypotheses is the timeframe and level of complexity. In a short term the future is normally attributed with less uncertainty and COAs will provide quite accurate descriptions of the future. However, in the long term things normally become a lot more complex and uncertain. If a situation that involves several actors with different end states and a wide set of highly influential socio-cultural factors, the long-term perspective is much more difficult to predict.

the IRM process to generate new reporting, and be vital in the next element; observed indicators.

Suggested techniques:

- ✓ Decision-event tree
- ✓ Operational design
- ✓ Alternative futures scenario matrix
- ✓ Morphological analysis

(6) Observed indicators

When intelligence analysts predict the future, they are crossing the line from the potentially observable/accessable to the unobservable/unaccessable data and information. To cope with this uncertainty, analysts must make estimates based on observable indicators in the present that they assume will determine future actions. Therefore, to predict which alternative future the current situation is moving towards, the analyst utilizes identified indicators. These indicators, when observed, are either consistent or inconsistent with the different hypotheses, improving assessments of the future.

Monitoring the situation for indicators, testing the alternative hypotheses and making predictions that address the intelligence requirements are continuous processes during a campaign.

Suggested techniques:

- ✓ Analysis of competing hypotheses (ACH)
- ✓ Challenge analysis
- ✓ Pro-con matrix

b. Intelligence production

All the relevant results of the analytical process are continuously structured and integrated into intelligence products based on the understanding of intelligence requirements. The specific processing task sets the required formats, classification levels and timelines.

When products are finalized, they undergo a quality control activity, and then the assigned authority approves them for release.

The products are then passed on for dissemination to satisfy the intelligence requirement, and at the same time made available in the repository of own products.
As this is finished intelligence, information systems that permit decision-makers to pull relevant intelligence themselves could be desirable.

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Chapter 3 CONSIDERATIONS AND DILEMMAS

3.1. Overview

The intelligence cycle and the processing phase as they are presented in doctrines and manuals are normative descriptions of the process. Applying these in analytic work requires judgment, as there are several considerations and dilemmas that intelligence analysts will have to deal with when producing intelligence. This chapter will explore a number of key issues influencing the processing phase.

3.2. Considerations

1. Comprehensive approach. The role of intelligence is to provide exclusive and relevant decision support to the commanders and their staff. It will provide warnings of threats and highlight opportunities, support planning and the execution of operations, and it will assess desired and achieved effects. Despite the specific nature of these means, they are all based on a comprehensive understanding of actors and the operating environment. In conflicts the armed forces and the battlefield are not isolated from the population, politics, economics, infrastructure and the information environment. These factors are all an integrated part of the same conflict.

To provide decision support in this context requires a wide-ranging effort by the intelligence staff in order to facilitate the understanding of the impact of all actors and environmental factors, like structured within the PMESII model, on the current conflict or crises. This understanding will enable the intelligence staff to make explanations and predictions addressing the whole spectrum of intelligence requirements.

> **PMESII** is an analytical methodology consisting of political, military, economic, social, informational, and infrastructural factors that should be considered when answering intelligence requirements. PMESII describes key factors in an operating environment that influence all actors operating within this area. The PMESII methodology is a comprehensive effort that generates a fundamental understanding of the dynamics of the operating environment, their impact on military operations, and identifies both threats and opportunities for the relevant actors in the area (see AIntP-17).
>
> **ASCOPE** is another analytical methodology consisting of area, structures, capabilities, organizations, people and events that should be considered when answering intelligence requirements. ASCOPE is a method that intelligence staff can use at any level to see the environment through the eyes of actors and population. ASCOPE helps an analyst find the who, what, when, where, why, and how of the operating environment. It is a method that can be used to analyze the cultural and human environment and to show a view of the environment from the perspective of the populace. It can be used together with PMESII in a socalled PMESII/ASCOPE matrix (See AIntP-17).

2. Collating all relevant incoming information. All incoming information that is deemed relevant must be collated, evaluated and registered so that it can be utilized in further processing. This includes information that comes in by non-traditional

channels, such as through personal networks or similar. Such information can sometimes be sensitive, and the sources must be protected accordingly. Nevertheless the information has to be made available in order to have the chance to be used.

3. Releasability and classification. During the processing phase, the analyst needs to consider the target audience and the maximum classification of the end product. In order to meet the intelligence requirement and ensuring the most benefit of the intelligence to the overall mission while balancing need-to-know with the responsibility to share, versions of the same product may be created, for example using tearlines. This consideration may affect what information can be utilized in the end product and whether sanitization is necessary.

4. Balancing current and basic intelligence. Understanding the current situation and predicting the future situation is not possible without an updated basic intelligence archive. Basic intelligence is an archive depicting the intelligence staff's knowledge of relevant topics that adds context and understanding to new information, as well as historic references to identify changes and developments in the current situation.

However, during an intense campaign or developing crises, the continual updating of the understanding of the operating environment must be balanced with the updating of basic intelligence. In a tense situation, explaining recent events, tracking adversary units and updating the current threat level are likely to trump the routine of updating basic intelligence. Accurate intelligence processing requires basic intelligence for context and reference material. As the situation unfolds, basic intelligence must be updated accordingly to maintain its accuracy and relevance, as is the case for order of battle or human network analysis.

5. Insight and foresight. There are many types of intelligence requirements that the intelligence staff will be tasked to satisfy. The answer to some questions is possible to uncover through collection and subsequent processing. Requirements that fall into this category focus on issues in the past or present, where detailed observation could potentially confirm the answer. However, even if the answer can be given based on collection and processing, it may change over time.

The answer to other questions is not possible to uncover through collection and subsequent processing, for example future actions of an actor. Intelligence requirements that fall into this category focus on matters that have not yet taken place, hence no solid observation can be made to settle the issue. Intelligence scholars name these problems secrets, mysteries and complexities or puzzles, problems and wicked problems.[6]

Understanding the intelligence requirement at hand helps the analyst organize the processing; solvable/unsolvable, one correct answer, many potential estimates, what techniques are most suitable, how much uncertainty should be expected, timeframe and preferred intelligence collection disciplines.

6. Processing variations. Intelligence contributes to a continuous and coordinated understanding of a complex operating environment in support of decision-

[6] Include reference that points to a relevant scholar or publication.

making.[7] Some decisions require insight in the present context, to understand why an event has happened or is happening, other decisions require foresight to identify and anticipate what may happen.[8]

a. **Insight –** intelligence requirements relevant to the current situation could be addressed primarily by looking into the past and present in order to provide explanations of patterns, trends, dynamics, chain of events and relations, etc. Insight is primarily about establishing a situational understanding, and not focused on predictions.

b. **Foresight** – intelligence should be able to support decision making relevant to the future, by providing foresight into the alternative futures. That will support exploitation of opportunities and mitigation of threats.

7. Analytical principles. There are four key principles that will help analysts in the conduct of processing. They are not rules to follow, but if applied, they will improve the outcome of the process.

a. **Externalize**
All information, causation and ideas should be structured, captured and made available outside the analyst's brain, to make it explicit and traceable. This will allow external input and facilitate for a multidisciplinary effort, teamwork and common models.

b. **Decompose**
A problem must be broken down and (re)categorized in manageable parts.

c. **Measure**
The parts of the problem must be measured in order to rank them.

d. **Visualize**
Transforming available data and information into graphical models may support analytical process. This enables new understanding by identifying patterns, trends and key features.

8. Information management. An information management system is necessary for an intelligence staff to facilitate the reception, management and dissemination of information and intelligence. The technical specifications of such system will determine the details for how to collate and maintain the integrity of the information and intelligence. As a minimum intelligence staffs must have an information architecture that makes a distinction between the following categories:

[7] See also AJP-2.0 (3-2)
[8] See also AJP-2.1 (1-1)

a. **Received information –** all data, information and intelligence received from own sensors, partners or units. This category contains data, information and intelligence that is not processed by the intelligence staff.

b. **Work in progress –** all files and documents used during processing - for internal use only.

c. **Products –** all intelligence products disseminated by the intelligence staff. This folder contains processed information and intelligence.

All received information should be collated in a way that makes it possible to filter and group together information relevant to the intelligence requirement. As a minimum the collation that is done should tag the information with key content.
Work in progress should contain drafts, models, ideas and notes that are meant for internal use only. It may also serve as a record of the processing phase. Depending on the character of the work in progress, the information may need to be collated (for example well developed hypotheses or indicators).
Products contain everything that the intelligence staff has processed, produced and disseminated. This category can be divided into both current intelligence and basic intelligence. Current intelligence includes traditional reporting of INTSUMs and INTREPs, but also briefings and injects to operational planning processes and targeting processes. Basic intelligence includes products reflecting a comprehensive understanding of the situation. All products are processed and approved by the intelligence staff, but not necessarily disseminated directly to a receiver through a push concept. Finished products should be collated in order to make the information searchable and retrievable.
If appropriate, the intelligence staff should consider the opportunity to make their basic intelligence archive available for dedicated functions at a Headquarters, in order to reduce the number of requests and satisfy e.g. planners and targeting personnel's need for basic intelligence.

3.3. Intelligence dilemmas

1. **Circular reporting.** The flow of information to an intelligence staff is likely to be complex, and will include information and intelligence from organic and or external sensors and agencies. Circular reporting is when data, information and intelligence originate from the same source without that being clear to the receiver. This creates a risk of confirming a report with another report originating from the same source, which will lead to an incorrect perception of the credibility of the information being assessed. In a military campaign at the tactical and operational level there should be routines in place to establish appropriate lines of communication and avoid circular reporting. However, intelligence staffs that build on fused intelligence that lack proper traceability or organizations operating outside the military hierarchy and at the strategic level do not apply to this system, increasing the risk of circular reporting.

Reference Sources in order to mitigate circular reporting:

- ✓ Use source references in all intelligence products
- ✓ Open dialogue with all agencies and organizations providing information, in order to sort-out potential conflicts and issues
- ✓ Use an integrated intelligence network of systems
- ✓ Establish a robust function for source deconfliction

2. Challenges to processing. Processing is dependent on the quality of data, information and intelligence available, and the people involved in the process. However, the nature of intelligence makes it vulnerable to both internal and external influence and manipulation. Our targets are likely to restrict our access to new information or distort other information, and at the same time our mind is not designed to naturally maintain objectivity.
Furthermore, using a structured methodology will fight the fundamental limitation in human mental processes, meaning the multi- kind cognitive biases, in every step of cycle of intelligence. A cognitive bias does not result only from an emotional or intellectual predisposition toward a certain judgment, but rather from subconscious mental procedures for processing information. So cognitive bias is a mental error that is consistent and predictable and it can be eliminated by being evaluated, in every step of analytical process, through structured analytic techniques / principles:

- Make strong and not sensitive, in evaluation (sensitivity test) the analytical product
- Answer to multi-questions of intelligence-users who also deal with their mind-set biases that sometimes make them disagree with the result of the analytical product.
- Create cycle of trust between collection – analysis – intelligence-user
- Create obvious and separated steps, that analysts and intelligence-users can recognize and accept indicators, hypothesis, scenarios, criteria and all other analytical tools might be used in one analytical product.
- Can measure every judgment, assumption and generally every analytical product, by given a rank that can be compared or continuously observed. Structured analysis will always be a tool that will force both analyst and intelligence-user to think how a judgment or a result has been produced

a. External challenges

(1) Lack of information. The main challenge in todays conflicts is normally not the lack of information, but relevant and valid information. To make intelligence assessments with high confidence, require relevant and high quality data, information and intelligence available. However, there will always be pieces of information that is missing when assessments are made. This is something intelligence analysts must accept.

(2) **Denial** – all organizations will make an effort to protect its secrets. They will apply both physical and technological barriers, to limit the amount of information available for adversary intelligence agencies, in order to increase the level of uncertainty during processing.

(3) **Deception** – is another way to protect its secrets, by misleading your adversaries to believe something else. This is another challenge the analyst has to solve, by always making a thorough evaluation of all incoming information to determine its analytical confidence.

b. Internal challenges

(1) **Biases.** Humans sense, perceive, think, judge, decide and make choices all the time, and due to limited capacity in short term memory this is usually done automatically by intuition. However, intuition is based on mental models created by our experience. As history will not repeat itself, some decisions we make will then be based on wrong mental models, causing faulty judgements.

Most common biases:
Availability – when you assess/judge something by the ease with which instances can be brought to mind.
Representativeness – assess/judge something by the degree it is similar to other categories/stereotypes
Anchoring and adjustment – assess/judge something with a bias towards the initial value

(2) **Lack of imagination.** Imagination is the capability that expands the awareness of different plausible futures. This is critical to avoid surprise and be able to provide early warning of what alternative of the future that is most likely to take place. Lack of imagination can be mitigated using scenario building techniques or COA generation techniques. Additionally, making this a group effort with a wide spectrum of experts is also beneficial.

(3) **Mental capacity.** We have limited processing and storage capacities. As indicated above, intuition mitigates this by automated processes, though with a high risk of cognitive biases. To use structured analytical techniques is a way to reduce the impact of bias, by externalizing, decomposing and visualizing information and intelligence.

(4) **Cultural understanding.** We are likely to view the world through our own cultural lenses, and judge behavior based on our logic and rationality. People from different cultures have different preferences and values, which affects their way of living. If analysts neglect this, it would lead to faulty judgements and surprises.

(5) Analytical routine. A low operational dynamic in the area of intelligence responsibility (AIR) may make analyst susceptible to the risk of missing the facts and new trends. The awareness of analytical routine, permanent critical thinking approach and imagination should mitigate this hazard improving overall quality of the intelligence product.

3. Intelligence gaps. Unlike scientists, intelligence analysts are heavily restricted by the timeliness to maintain its relevance. Scientist normally have the privilege to gather more data if they have critical information gaps, on the other hand, intelligence analysts are often forced to add assumptions to complete their assessment, as there is no time for time consuming collection. Though, both branches are guided by a wish for objective knowledge, the key role of intelligence is decision support, which have to be provided in time to be relevant.

Suggested techniques:

- ✓ Key assumption matrix

4. Processing dilemma – Quality vs. Resources vs. Time

Intelligence is by nature time sensitive; its relevance is closely related to decision-making and its value will normally diminish over time. Therefore, intelligence must be provided to the commander prior to the decision, and it should be based on new and updated information and assessments.

At the same time, available resources will always be a scarce capacity that must be exploited properly to address the most prioritized intelligence requirements.

Both these elements, time and resources, will affect the quality of the final intelligence product. To provide timely, relevant and exclusive intelligence to the commander, the intelligence analysts must balance these elements to optimize the outcome.

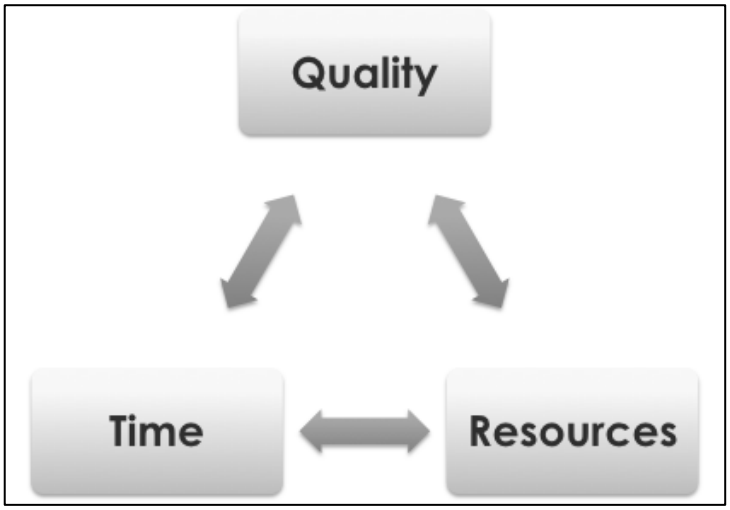

Figure 09: Processing dilemma

Resource management considerations include:

- Allocation of tasks to the intelligence planning staff (Is the staff already engaged in other activities relating to another operation?);
- Allocation and resourcing of analytical staff (Are there a sufficient number of analysts?);
- Access to information (What systems, tools, databases, and experts are available and what is the quality of information that can be provided?);
- Specialist resources/analysts required (For example: other staff branches; geospatial, meteorological and oceanographic (GEOMETOC) analysts; industry partners; academia; and other external communities of interest);
- Capacity of echelons to contribute to intelligence processing (Determine what could be federated to component commands or conducted in collaboration);
- Timeline and synchronization;
- Horizontal and vertical integration.

Chapter 4 **ROLES AND RESPONSIBILITIES**

4.1 Overview

The intelligence cycle and the processing phase as they are presented in doctrines and manuals are normative descriptions of the process. Applying these in analytic work requires judgment, as there are several considerations and dilemmas that intelligence analysts will have to deal with when producing intelligence. This chapter will explore a number of key issues influencing the processing phase.

4.2 Roles and responsibilities

1. J2 – head of the intelligence unit All intelligence units must have one dedicated chief to maintain command and control. This function is key to maintain good relations to other staff functions or neighboring or higher units.
Key tasks:
Maintain direction and guidance according to the intelligence cycle, and maintain a good intelligence dialogue with the commander.

2. Deputy J2 – COS – chief of staff Any large intelligence staff will normally need a chief of staff to coordinate all internal processes. This function also acts as 2-i-C.
Key tasks:
Coordinate all internal processes within J2.

3. Processing staff

a. Chief production - head of production
This function is the hub of all intelligence produced by the intelligence staff, and is responsible for the recognized intelligence picture.
Key tasks:
Produce intelligence in accordance with the production plan.
Coordinate a common understanding of the current situation and the likely alternative futures with all J2 functions (plans, TGT, current operations).

b. Senior analyst – branch chief
An operational HQ will normally have several senior analysts or branch chiefs responsible for certain topics, geographic areas or actors. They operate in support of chief production. They will lead a group of analysts or subject matter experts to cover their responsibilities.
Key tasks:
Coordinate all processing and production of intelligence on a designated topic, area or actor.
Coordinate related topics, areas and actors, in order to achieve a comprehensive understanding of the operational environment

c. Analyst - subject matter expert (SME)
Specialist, with deep insight on certain topics.
Key tasks:
All processing and production of intelligence in accordance with its field of expertise.
Supports all other functions when needed as a SME.
Contributes to the development of the ICP by identifying intelligence gaps.

4. Information acquisition

a. Intelligence requirement manager
Managing the IRM process.
Key tasks:
Refine, validate and prioritize IRs.
The development of the Intelligence Collection Plan in close cooperation with the analysts > nomination for collection.

b. Collection manager
Managing the CM process
Key tasks:
Coordinates the intelligence requirements with collection resources.
Produces the collection task list.

c. RFI manager
Manages the RFI system.
Key tasks:
Validates and disseminates RFIs to external units.
Receives and distributes incoming RFIs.
Tracks both RFIs going out and coming in, until completion.

d. Information manager
Manages an information system that maintains the integrity of all information and intelligence.
Key tasks:
Design and maintain an information management system.
Collation.
Make information available at the system.
Facilitates for sharing.

5. J2 Plans. J2 representative in all planning groups, i.e. joint operations planning group (JOPG).
Key tasks:
Act as a liaison with a planning group. Supports with intelligence, and receive new requirements and feedback in return.

6. J2 TGT. J2 representative in all targeting processes.
Key tasks:
Act as an liaison to targeting processes.
Supports with intelligence, and receive new requirements and feedback in return.

7. J2 current operations.. J2 representative in the situation centre
Key tasks:
Act as an liaison to the situation centre. Main task is to maintain a common situational understanding within all functions in HQ that is represented in the situation centre.

8. GEOMETOC Joint Headquarters GEOMETOC capacity of geospatial, meteorologic and oceanographic subject matter experts is essential to the production of intelligence, as it provides information and insight into factors shaping the operating environment.
Key tasks:
Produce special products addressing GEOMETOC perspectives.
Support processing staff as a subject matter expert (SME)

4.3 Intelligence staffs and units

1. All source intelligence cell (ASIC). The main task of ASIC is to produce intelligence product based on data, information and intelligence to support the planning process and operations. An ASIC is primarily a production element in support or integrated into an intelligence staff. It will normally have analysts capable of processing information from all collection disciplines and subjects matter experts of a wide sets of topics. Chief ASIC is equivalent to Chief Production.

2. Management of intelligence staffs. The intelligence process is a complex, dynamic and social activity, where personnel in management functions must have a comprehensive understanding and a wide set of skills to coordinate the intelligence process and align the effort to produce timely, credible and relevant intelligence. These senior functions should not be primarily good at leadership, but primarily high skilled intelligence personnel with decent leadership abilities.

4.4 Interaction between processing and other phases of intelligence cycle

It is hard to isolate processing from the rest of the intelligence cycle. Though, it has its dedicated function to convert information to intelligence, but to accomplish this, close coordination and dialogue is necessary.

1. Direction. A key part of the Direction phase is to understand the intelligence requirements, which is done by conducting the intelligence dialogue. These activities are key to the processing phase, but they are common for the whole intelligence cycle, therefore, intelligence analysts must contribute with insight and clarifications in this process.
IRM is a key element in direction, and the main injects to this process is nominated by intelligence analysts, as the processing reveals intelligence gaps and indicators of alternative futures. The intelligence gaps identified by the analysts are also the basis

for the development of an intelligence collection plan (ICP). The ICP is the starting point for developing collection tasks.

2. Collection. Processing is heavily dependent on the outcome of collection, therefore a close dialogue and coordination are often required to verify the relevance and clarify details important for processing.

3. Dissemination. Production, dissemination and communication of intelligence are the outcome of the intelligence cycle, if this fails, all effort so far has been needless. The assessments developed during processing must be communicated in a way that is understood by the receiver. This communication is not processing, but the foundation to succeed is established during processing, implying the complexities of the intelligence cycle.

Chapter 5 STRUCTURED PROCESSING TECHNIQUES

'The trick is in using structured techniques and approaches … in a way that eliminates biased intuitive forecasts and predictions without also discouraging, delaying or even eliminating the intuitive insights that true expertise provide.'

(Babetski, 2011)

5.1 Overview

This chapter will give an overview of different techniques that can be applied in the processing framework. The chapter will focus on a brief overview on relevant techniques; what they are, and when and how to use them.
None of these techniques preform magic, they are all just in support of the intelligence analyst to externalize, decompose and visualize cognitive processes, which hopefully reduces biases and improves the collective effort.

5.2 Description of structured techniques used during processing

Following techniques will be presented. This is not an exclusive list:

- Structured brainstorming (nominal group technique)
- Impact/probability for change analysis
- SWOT/TOWS analysis
- Causal loop diagram
- Decision-event tree
- Operational design
- Alternative futures scenario matrix
- Analysis of competing hypotheses
- Devils advocacy
- High impact/low probability analysis
- What if analysis
- Structured self-critique

1. Structured brainstorming: Nominal group technique

What is it?
Nominal group technique (NGT) is a type of brainstorming. The purpose of a brainstorm is to generate a large number of ideas, thoughts, assessments and assumptions about an actor or situation, drawing on the different mindsets, experiences and ways of thinking of a group of individual analysts. NGT is designed to get as many ideas as possible out of the group, in a way that encourages creativity and opens up for suggestions from all participants.

When to use?
Brainstorming is normally used in the beginning of the analytic process to get an overview of the specific intelligence requirement. NGT is a useful form of brainstorming for groups if there is difficulty getting the whole group to participate equally, due to different levels of rank, experience, or personality traits, or if the topic for the brainstorm is controversial and may lead to unproductive debate. Even without these concerns, NGTs structure is useful to encourage thorough and broad output of the brainstorm.

Requirements:

- Understanding the intelligence requirement is key to every activity inside processing

How to do it?

a. One person in the group should be selected to be a facilitator for the process. The facilitator asks an open-ended question, usually a restatement of the intelligence problem.

b. The participants spend a few minutes writing down their initial thoughts and ideas about the question in silence. The facilitator may also write down own ideas. It is advisable to use mnemonics such as ASCOPE (Areas, structures, capabilities, organizations, people, events) and PMESII (Political, military, economic, social, infrastructural, informational) to reduce the possibility of overlooking a relevant category of factors.

c. The facilitator calls on one person at a time to present one idea. The facilitator writes the idea down on a flip chart, whiteboard, or a shared screen. This process continues around the table until all ideas are exhausted. There is no discussion until all ideas have been presented.

d. When all the ideas have been presented and written down, the facilitator initiates a group discussion to ensure a common understanding of the ideas.

e. Sort the ideas into overarching categories, merge ideas that are duplications of each other, expand, combine and link ideas to form a

mind map. Using an Ishikawa diagram is a possible way to achieve this (see figure).

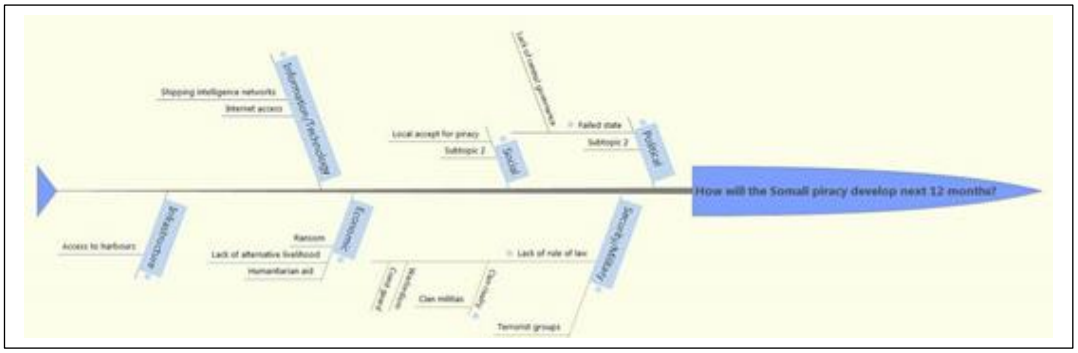

Figure 10: Ishikawa diagram

Remarks:
Factors, elements and considerations identified during a brainstorming sessions, will constitute the starting point for many other techniques.

2. Impact/probability for change analysis

What is it?
Impact/probability for change is a type of impact/probability analysis. It is a technique for examining the impact of factors on a situation, and the probability for those factors to change within the relevant time frame.
It helps analysts structure their assumptions about which factors affect a situation the most and the least, and which of them are the most likely to change within the relevant time frame.

When to use?
Impact/probability for change is especially useful early in the analytic process, as a technique for sorting and structuring the component factors of a current situation. It is more useful for getting an overview of a complex situation, and less useful for structuring more specific courses of events or actors' courses of action. It is also a useful technique for the analysts to get familiar with a new topic or situation, or to get a fresh look at a well-known situation.
Sorting the analysts' assumptions about the component factors of a situation by using impact/probability for change can be a useful first step for other analytic techniques, such as high-impact/low-probability, scenario development, or constructing causal loop diagrams. The technique is adapted for intelligence processing from similar techniques used for risk management.

Requirements:

- Understanding the intelligence requirement is key to every activity inside processing
- A form of brainstorming should be carried out in advance of impact/probability, in order to ensure all relevant factors are included.

How to do it?

a. Impact/probability for change: use a diagram with two axes. One for Impact and one for probability for change (see figure 10).

b. Sort factors according to analysts' assessment of their impact on the situation, and probability for change within the relevant time frame. A factor's impact should be assessed before its probability for change. The resulting matrix is the main output of the impact/probability for change technique.

c. Use factors from the matrix as input for other techniques. High impact/high probability for change factors are useful for modeling a broad range of future outcomes. High impact/low probability for change factors are useful to identify potential outcomes that may be overlooked as they are unlikely to change, but may lead to significant risks or opportunities if the unlikely does happen.

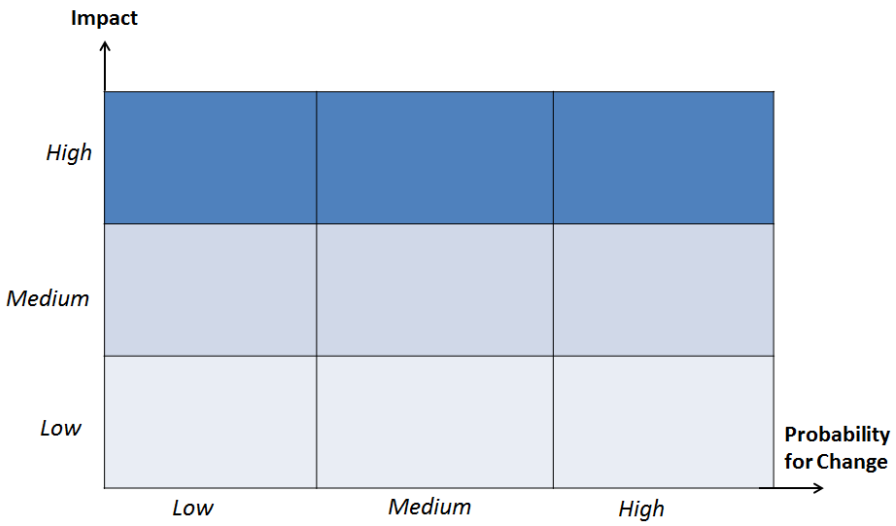

Figure 11: Impact/Probability for Change matrix

Remarks:

The outcome of a impact/probability for change analysis is vital for creating hypotheses of alternative futures.

3. SWOT/TOWS analysis

What is it?
SWOT/TOWS analysis is a technique for analyzing an actor. The technique is a tool to sort analysts' information and ideas about an actor's strengths and weaknesses, and what threats and opportunities the actor perceives in their environment. This is the SWOT (Strengths, weaknesses, opportunities, threats) part of the technique. The TOWS part of SWOT/TOWS is an addition to the original SWOT, where the analysts use the factors they have identified in the SWOT to generate possible actions, tactics and strategies that the actor may utilize. SWOT/TOWS analysis originates from strategic planning in business.

When to use?
SWOT/TOWS is useful as part of an initial analysis of an actor. The sorting of the actors internal (Strengths, weaknesses) and perceived external (Opportunities, threats) traits, and the generation of possible strategies is a useful foundation for further analysis. However, SWOT/TOWS is rarely sufficient as a stand-alone technique, as it does not aid the analysts in assessing the actor's specific course of action.

Requirements:

- Understanding the intelligence requirement is key to every activity inside processing
- A form of brainstorming should be carried out in advance of SWOT/TOWS, in order to ensure all relevant factors are included
- JIPOE step 1 area evaluation – opportunities and threats
- JIPOE step 2 actor evaluation – strength and weaknesses

How to do it?

a. Assess the actor's desired end-state (DES) or goal.

b. Using a SWOT matrix, identify strengths and opportunities that may help him reach his goal, and weaknesses and threats that may hinder or prevent him from reaching his goal (see figure 11).

c. Using TOWS, pair the different factors together where possible. Attempt to answer these questions for every factor:

(1) How can strengths be used to take advantage of opportunities? (Obvious offensive acts)
(2) How can strengths be used to reduce threats? (Potential defensive acts)
(3) How can weaknesses be corrected to take advantage of opportunities? (Potential offensive acts)

(4) How can weaknesses and threats be minimized? (Obvious defensive acts)

Figure 12: TOWS matrix

Figure 13: SWAT matrix

Remarks:
SWOT/TOWS analysis is a technique that links the output from JIPOE step 1 (area evaluation) and 2 (actor evaluation), with JIPOE step 3 (threat integration).

4. Causal loop diagram

What is it?
Causal loop diagram (CLD) is a technique for making representational models of complex situations. It is a foundational tool in the science of system dynamics, it is a method of analysis to understand complex systems, such as an operational environment that includes several actors and influential PMESII factors.

When to use?

In intelligence processing, CLD is used to visualize how different factors of a complex situation affect each other, cause-and-effect relationships, and reinforcing or balancing loops. It is useful for highlighting relationships between actors, the flow of resources and communication, as well as how external factors such as terrain or infrastructure affects an actor's operations.

How to do it?

a. Identify relevant factors of the situation.

b. Assess how the different factors affect each other. It is recommended to use simple relationships (negative/hindering, or positive/strengthening), in order to achieve a CLD which is easy to read. Identify reinforcing or balancing loops. For instance, conflict and poverty are two factors which can be linked in a mutually reinforcing loop. Supply and demand is an example of a balancing loop.

c. Visualize every relationship between factors in a diagram with nodes and links in order to model the complete.

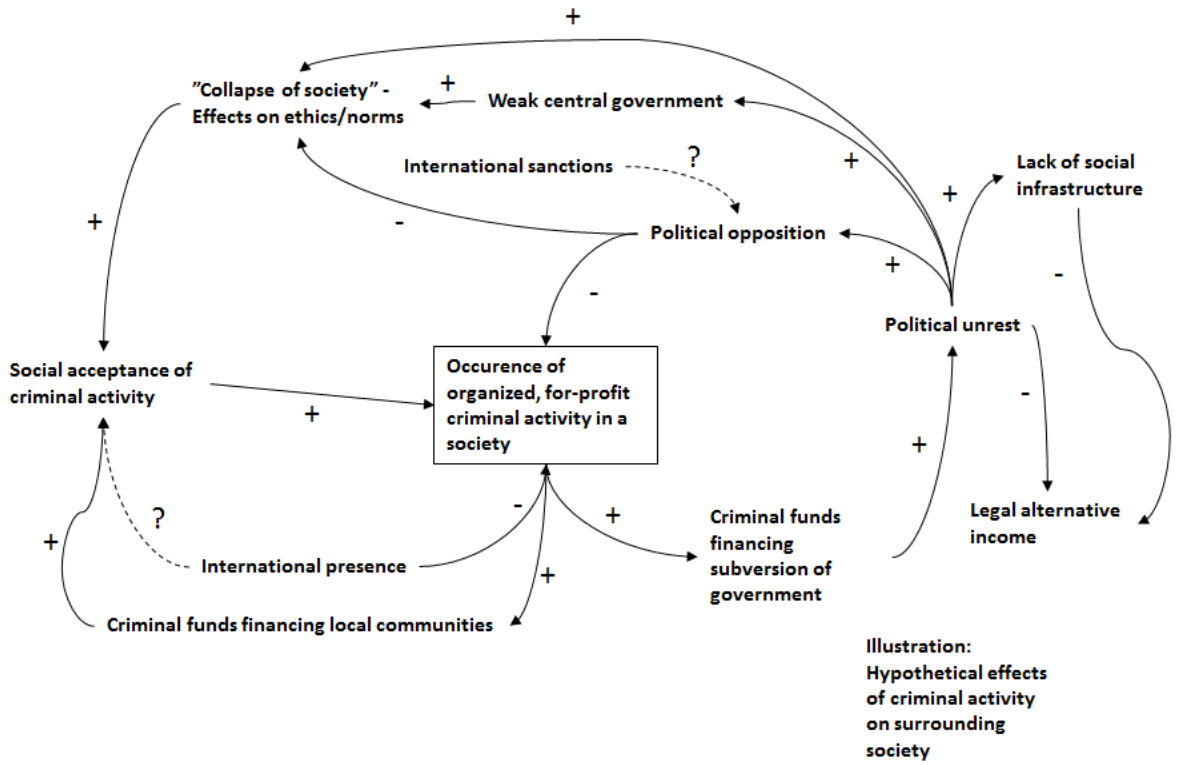

Figure 14: Causal loop diagram

Remarks:
A CLD depicts dynamics in a situation, however, conclusion and effects must be identified and made explicit. The technique is a valuable way to visualize both the current situation and alternative futures.

Alternative futures
Following techniques will be presented:

- Decision-event tree
- Operational design
- Scenario-cross
- Morphological analysis (not developed)

5. Decision-event tree

What is it?
It is a technique to identify possible courses of action of an actor. It consists of a few key factors influencing how an actor will operate to go from the present situation to accomplish its desired end state.
The outcome are broad, but mutually exclusive actor courses of action (COA).

When to use?
Decision-event tree is a time efficient technique, used to expand the number of alternative futures of single actors. It is applicable to a wide set of intelligence problems, but works best when you have a well-defined problem, with one actor and two-three key factors. The technique can be done using very short time.

Requirements:

- Understanding the intelligence requirement is key to every activity inside processing
- Have identified what key factors influencing actors desired course of action (e.g. use

  Impact/Probability for change matrix)

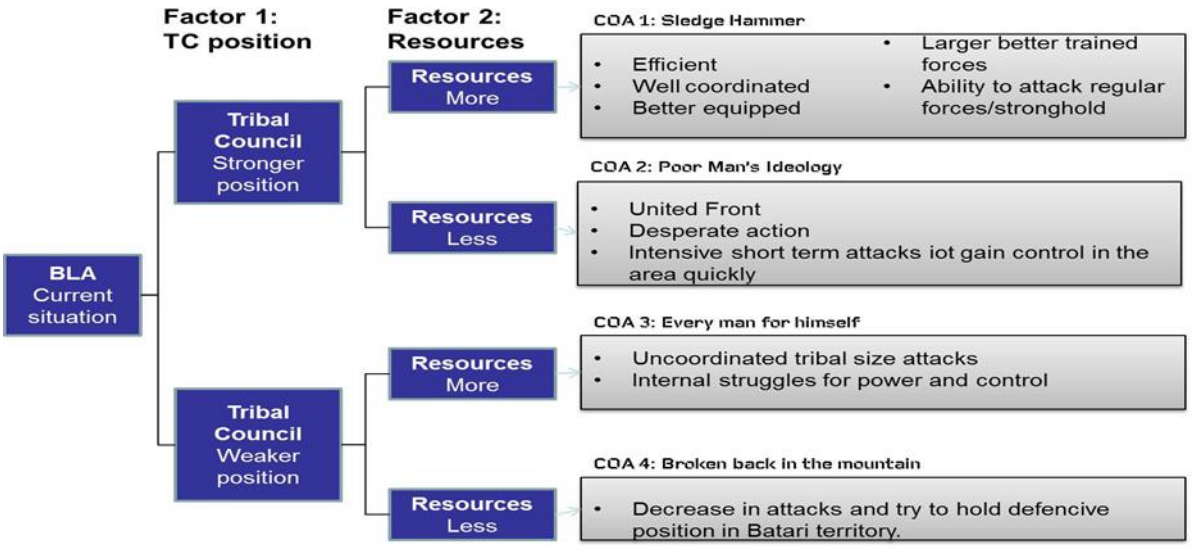

Figure 15: Decision-event tree

How to do it?

a. Define the scope of the task. i.e. COA to gain independence.

b. Define what options or actions that are available for the key factors you have identified. i.e. stronger vs weaker tribal council and more or less resources.

c. Combine the different options to mutually exclusive courses of action.

d. Write down a few sentences on each COA and give them informative names.

Remarks:

- the branches are mutually exclusive
- the branches are collective exhaustive
- can be combined with other techniques
  - to elaborate on actors COAs during scenario building
  - starting point to develop actor's COAs in an operational design.
  - In combination with SWOT/TOWS, it depicts a good overview of actor options.
- Next step: Develop more detailed COAs including indicators.

6. Operational design

What is it?
A matrix depicting an actor's courses of action (COA). It consists of several lines of effort that links an actor's tasks, effects, decisive conditions, objectives and end-state.

Key elements in this technique are decisive conditions and lines of effort:
Decisive conditions is 'a combination of circumstances, effects, or a specific key event, critical factor, or function that when achieved allows commanders to gain a marked advantage over an opponent or contribute materially to achieving an operational objective.[9]
Lines of effort aka lines of operations is a set of logical lines linking effects and decisive conditions in time to an objective.[10]

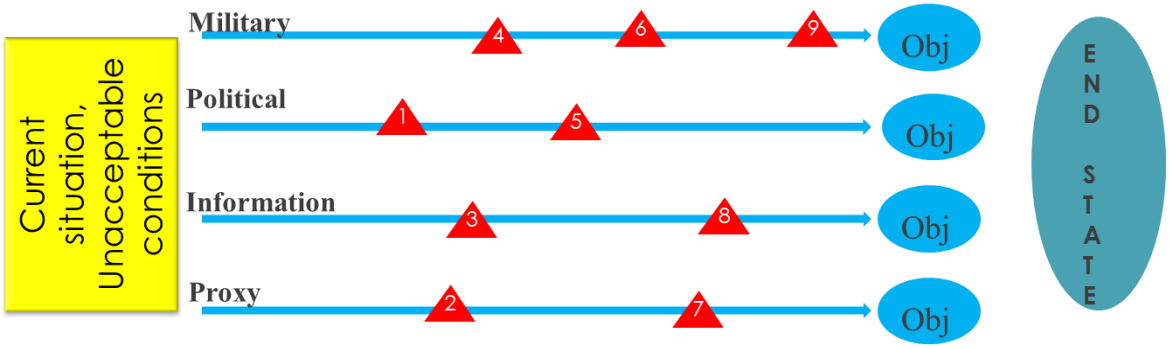

Figure 16: Operational design

When to use?
The technique is used to synchronize and visualize an actor's COA. It will explain how the actor will aim to move chronologically and along different efforts towards desired objectives and end-states.
It is used depict complex COAs with parallel events, and is useful when lines of effort and decisive conditions are hard to find on a map.

Requirements:

- Knowledge of the actors current situation (Causal loop diagram, SWOT/TOWS, JIPOE step 2)
- Actors end-state and objectives
- Actors preferred strategies and actions (SWOT/TOWS)
- Actors main line of effort/line of operations (main strengths/key capabilities)

How to do it?

a. Sketch up the operational design

b. Fill inn lines of effort, objectives and end-state

[9] COPD 4-56 / AJP-01(D)
[10] COPD 4-56

c. Develop decisive conditions along the different lines of effort (strategies and actions from TOWS analysis are a good starting point)

(1) Logic: actions leads to effects, which in sum results in decisive conditions.

Remarks:
Military commanders know this display from own planning, and will easily understand the logic.
Next step: Develop indicators reflecting the COA (normally tasks/actions that give effects which lead to an achieved decisive condition).

7. Alternative futures scenario matrix

What is it?
Alternative futures scenario matrix is a technique to expand the spectrum of opportunity for a future situation. It is a comprehensive approach that includes not only actors, but also key elements from the operational environment. The technique is an excellent planning tool, as it identifies potential future conditions, risks and opportunities.
Alternative futures scenario matrix models different futures by changing the effects of key driving forces with a high impact on the situation and with a high probability for change within a set timeframe, to develop four different comprehensive scenarios.

When to use?
The technique will expand the number of alternative futures by helping the intelligence analyst to consider other options than the most likely ones. It is most suitable when looking into complex situations with several actors and highly influential environmental factors on a medium to long-term perspective.
It is not a way to make predictions directly, however, creating alternative futures are necessary in order to identify all plausible outcomes of a situation that can be monitored and tested later in the intelligence process.

Requirements:

- Understanding the intelligence requirement is key to every activity inside processing
- Two key driving forces with a high impact on the situation and high probability for change within the time frame in accordance with intelligence requirement (e.g. use Impact/Probability for change matrix)
- An understanding of the current situation, including driving forces and actors potential actions (e.g. use Causal loop diagram and impact/probability for change matrix)

How to do it?

a. Draw up an alternative futures scenario matrix

b. Define the extremities of the key driving forces, and place them in opposite ends of both the vertical axis and horizontal axis.

c. Model the changes in effect of the two key driving forces in your causal loop diagram. This will result in four different scenarios.

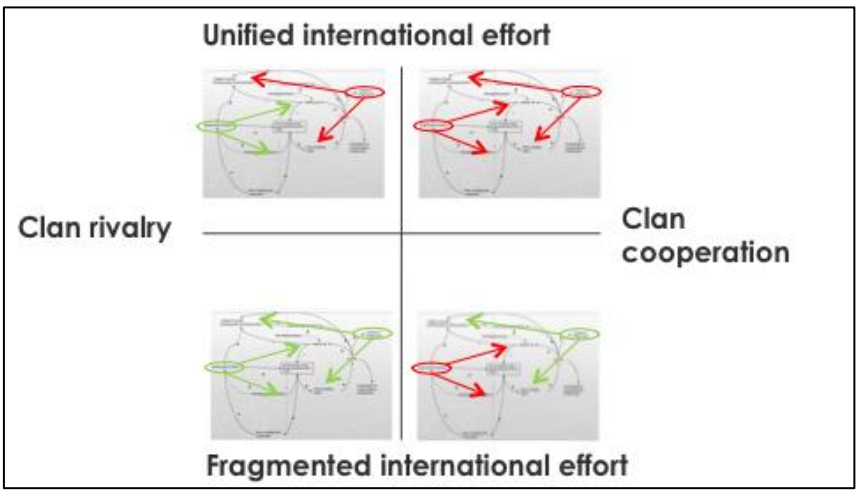

Figure 17: Scenario cross example

Write down some key features of each scenario, including an informative name.

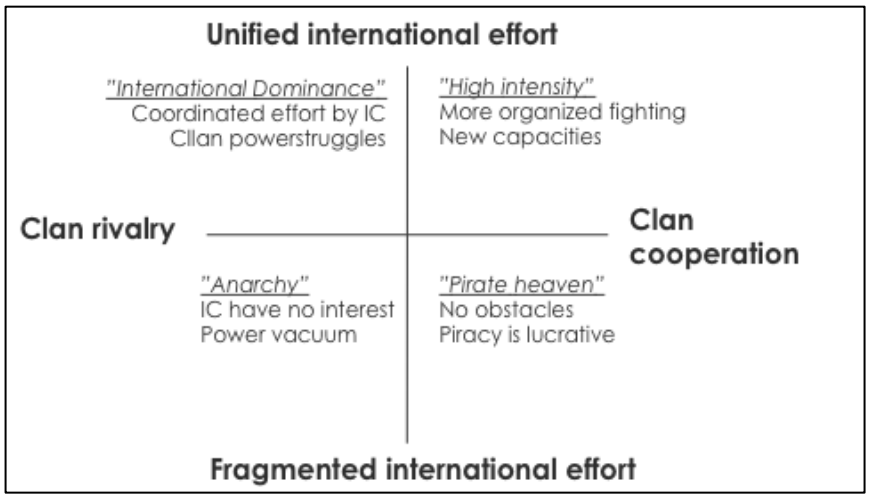

Figure 18: Scenario cross example

Write down the full scenario text, starting in the end of the timeframe, and explain the development from now until the future situation.

Remarks:

- Be explicit when defining the extremities of the key driving forces, do not state just high or low.

- if more explicit actor COAs are required in each scenario, use a backcasting technique, and i.e. display this in an ops design matrix to synchronize several actors in the same scenario.
- If you would like to develop more scenarios, you can make several scenario matrixes with other key driving forces.
- The purpose of this technique is to broaden the number of plausible futures, if the technique inspires you to develop a fifth one that is no problem.
- Next step: identify indicators that is both consistent and inconsistent with each scenario and use ACH to monitor and test the scenarios/hypotheses

Monitoring: Indications & warning
Following techniques will be presented:

- Analysis of competing hypotheses (ACH)
- Challenge analysis
    - Devils advocacy
    - High impact/low probability analysis
    - What if analysis
    - Structured self-critique

8. Analysis of competing hypotheses

What is it?
Analysis of competing hypotheses (ACH) is an analytic process that uses a complete set of alternative hypotheses, systematically evaluates data that are consistent or inconsistent with each hypothesis, and proceeds by rejecting hypotheses rather than trying to confirm what appears to be the most likely hypothesis. ACH is used to identify the hypotheses that are the least inconsistent with observed data.

When to use?
ACH is useful for almost any analysis where there are alternative explanations for what has happened, is happening, or is likely to happen. It is a useful technique for identifying areas where there is disagreement between analysts, and identifying information gaps that can be turned into indicators for collection and monitoring. It is particularly effective for situations where a lot of data is received and needs to be interpreted into a framework of hypotheses.

Requirements:

- Understanding the intelligence requirement is key to every activity inside processing.
- ACH requires a set of mutually exclusive hypotheses to test. Alternative futures scenario matrix, decision event tree or operational design or combinations of these techniques are options for creating a set of hypotheses for ACH.

How to do it?

a. List all significant evidence and arguments relevant to all the hypotheses

b. Make a matrix with hypotheses across the top and each piece of evidence on the side (see figure). Determine whether each piece of evidence is consistent, inconsistent, or not applicable to each hypothesis.

c. Add new hypotheses if necessary.

d. Sum up the consistent and inconsistent pieces of evidence for each hypothesis to see which explanations are the weakest and the strongest. Focus on disproving hypotheses, rather than proving one.

e. Identify information gaps which need to be filled to further strengthen or weaken hypotheses.

		Type	H: 1	H: 2	H: 3
	Inconsistency Score ⇨		-1	-1	-0
	Enter Evidence				
E12			I	C	N
E11			C	I	C
E10			NA	NA	NA
E9			NA	NA	NA
E8			NA	NA	NA
E7			NA	NA	NA
E6			NA	NA	NA

Figure 19: Hypotheses example

Remarks:
N/A

9. Devils advocacy

What is it?
A contrarian technique to challenge existing views or opinions. It is a safeguard against "satisficing", bias and method error, and will ensure the promotion of diverse views.

When to use?
The technique is useful both during and just before the release of any intelligence product, to check alternative explanations, increase confidence and as preparations before a presentation.

Requirements:

- Point out at least one individual to take on the role as the devil's advocate

How to do it?

a. Let one or more individuals come with critical inputs, opposing viewpoints and pessimistic predictions, in order to better shed light on a case.

Remarks:

- Let it be a discussion of “evidence”, confidence and hypotheses, not personal views.
- Next step: Review assessments and products.

10. High impact/low probability analysis

What is it?
A contrarian technique to sensitize analysts to the potential impact of seemingly low probability events that would have major repercussions.

When to use?
It is advisable to use this technique to examine unlikely, yet plausible, events, by mapping their potential impact and consequences. It will alert analysts to oversight in the mainstream analytic line.

Requirements:

- List of plausible events/actions

How to do it?

a. Sketch up an impact-probability matrix

(1) Traditional: Impact vs. Likelihood
(2) Modern: Frequency vs. Severity

b. Evaluate events/actions in accordance with impact and probability

c. Conclude

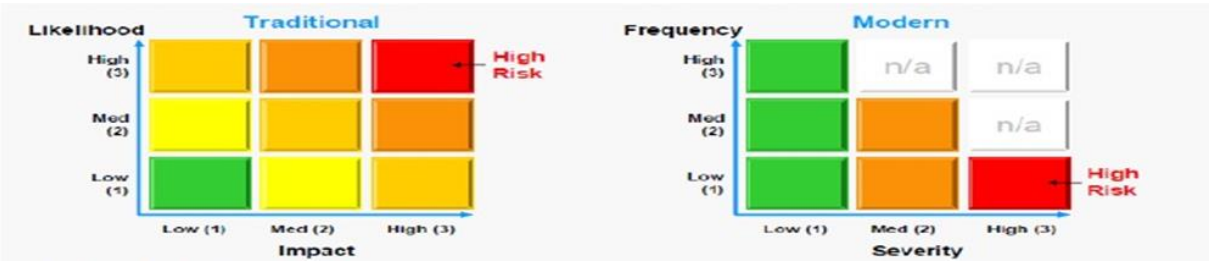

Figure 20: High impact/low probability analysis

Remarks:

- Highlights events with major consequences
- Next step: Develop indicators that may provide early warning of a these events.

11. What if analysis

What is it?
A contrarian technique that will suspend judgement about the likelihood of the event and focus more on what developments – even unlikely ones – might enable an outcome. It will free analysts from arguing about the probability of an event to considering its concequences and developing some indicators or signposts for its possible emergence.

When to use?
To challenge a strong mind-set that an event will not happen or that a confidently made forecast may not be entirely justified.
What-if analysis is especially important when a judgement rests on limited information or unproven assumptions.

Requirements:
N/A

How to do it?

a. Assume the event has happened

b. Find triggering events that would permit the scenario to unfold

c. Develop a chain of argumentation – “Think backwards” from the event in concrete ways

d. Generate a list of indicators

Remarks:
N/A

12. Structured self-critique

What is it?
A technique to identify defects in own processing.

When to use?
Works best if it is used as part of a group process, or it can be suitable for a leader that has not been part of the whole process.
The technique will be useful when assessing analytic confidence.

Requirements:
N/A

How to do it?

a. Understand the intelligence requirement

(1) Have we addressed the correct intelligence requirement(s)
(2) A secret, mystery or complexity?
(3) Stable or rapidly changing situation?

b. Evaluate the analytic process

(1) Is the chosen approach the best answer to the intelligence requirement?

c. Evaluate critical assumptions

(1) What if the most critical ones are wrong?

d. Evaluate identification of hypotheses and information

(1) Identify all alternative hypotheses
(2) What evidence has been included/discounted? Absence of evidence?
(3) On what sources is the conclusion based? Weighing of the evidence?
(4) A case of deception?

e. Is another conclusion possible?

f. Finally, ask yourselves So What and Who Cares?

Remarks:
Next step: Depending on the outcome of so what and who cares.

- Product ready for release?
- Or continue processing and production?
- Ask for a delay?

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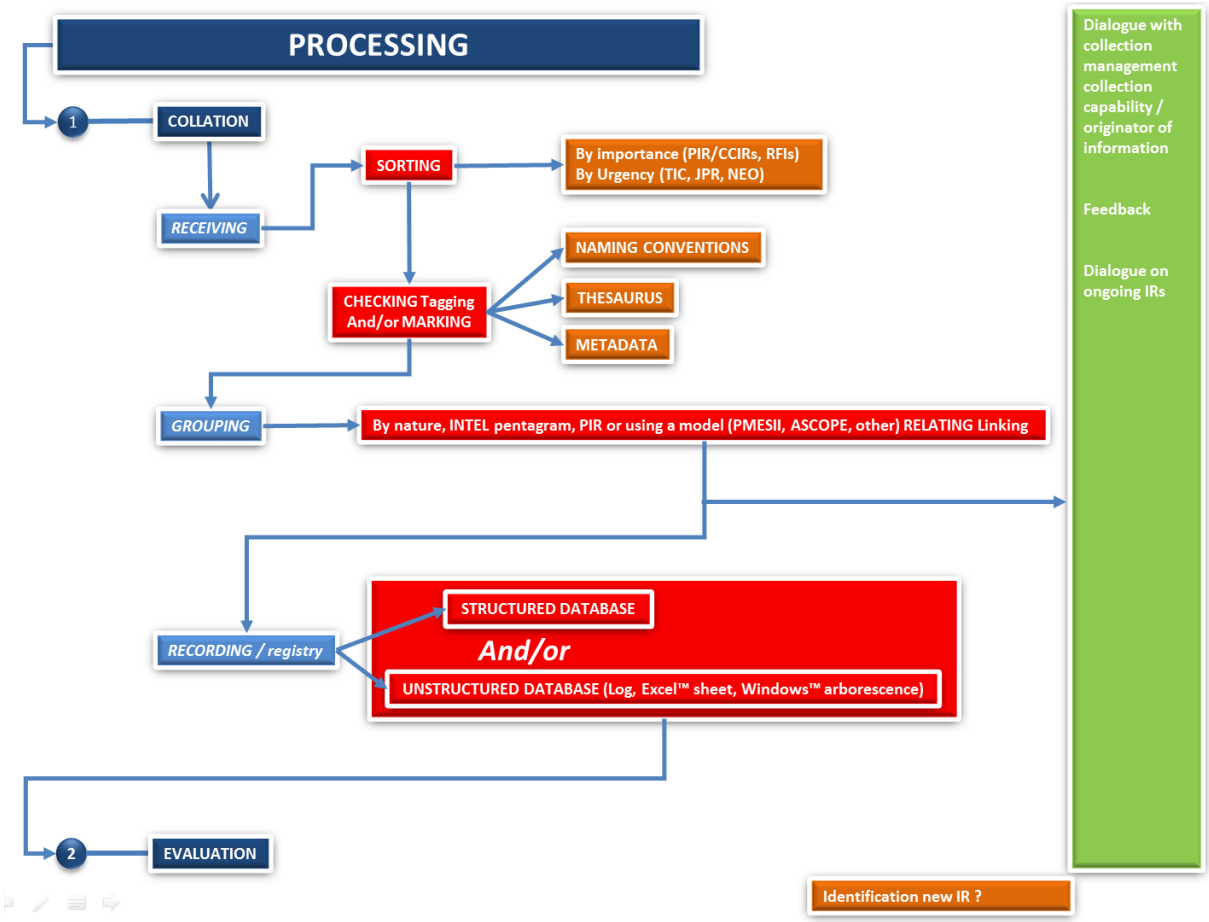
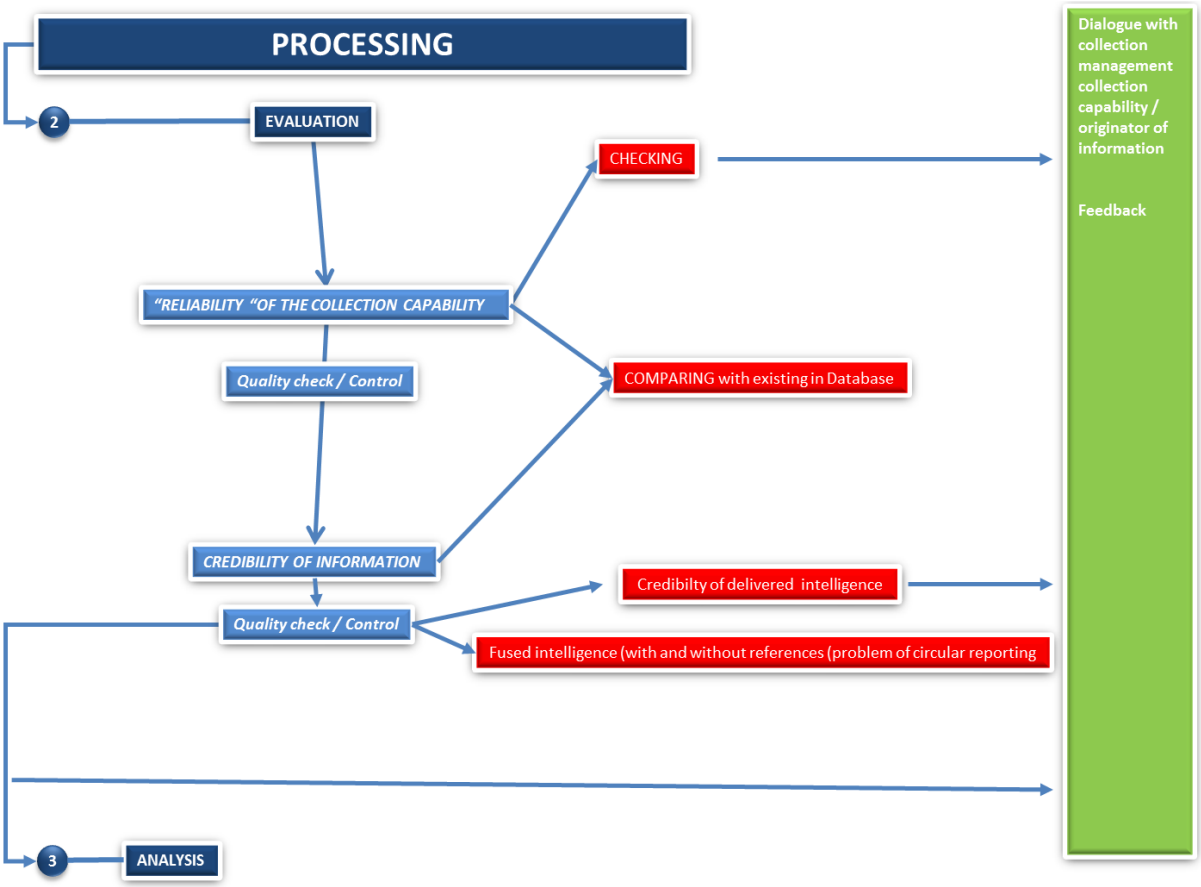
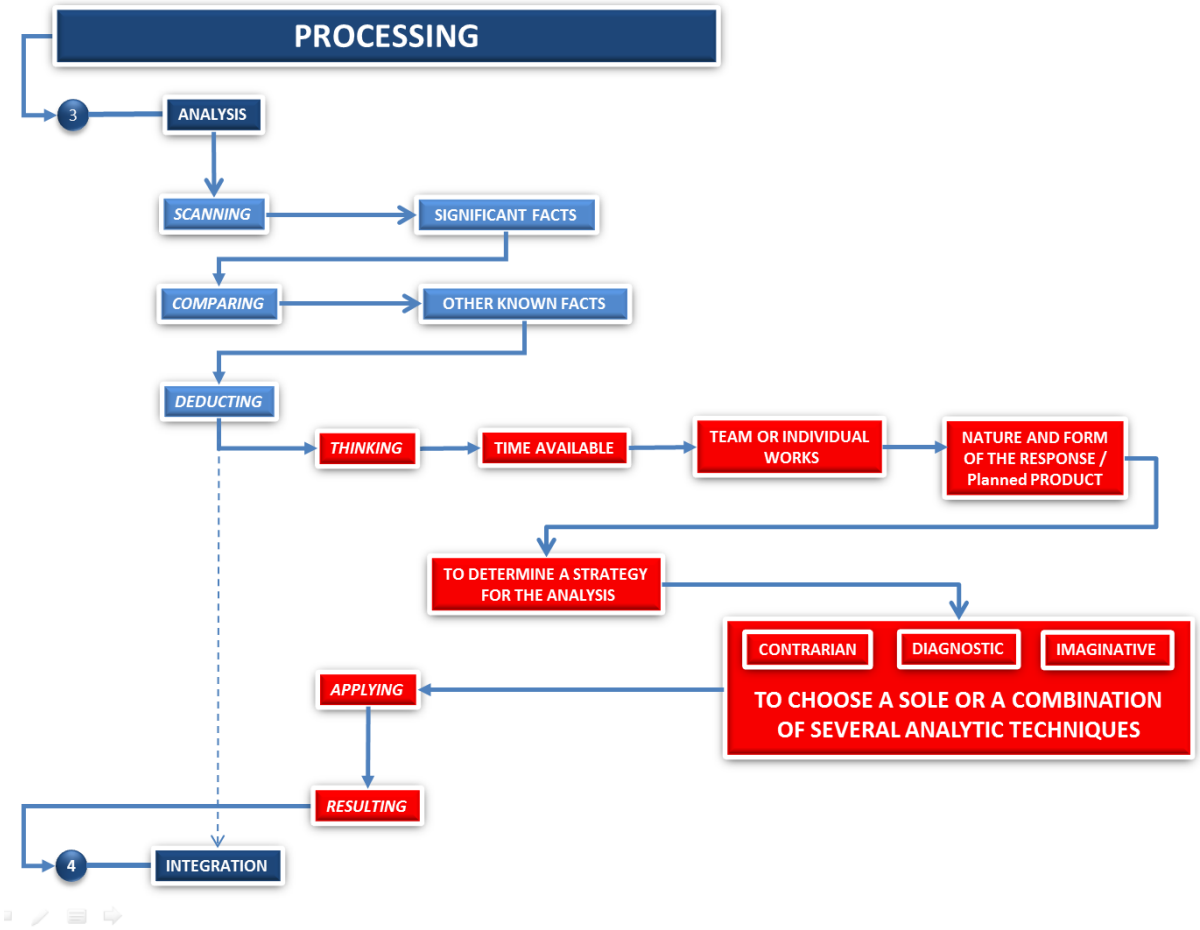
ANNEX A

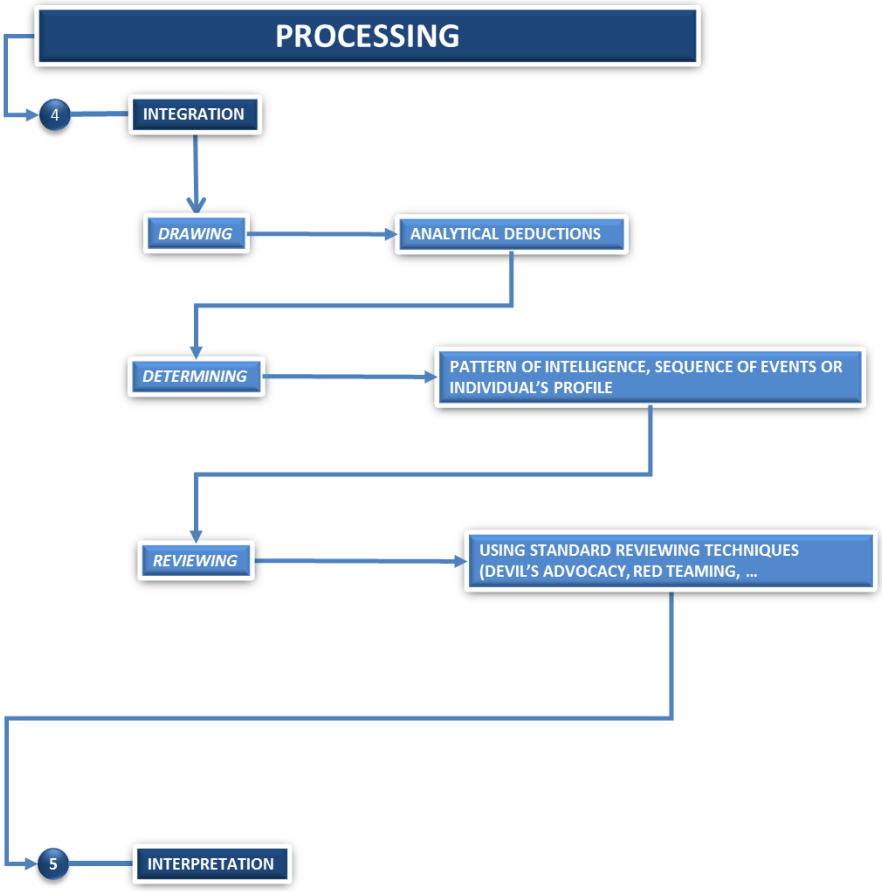
A.1. Processing workflow

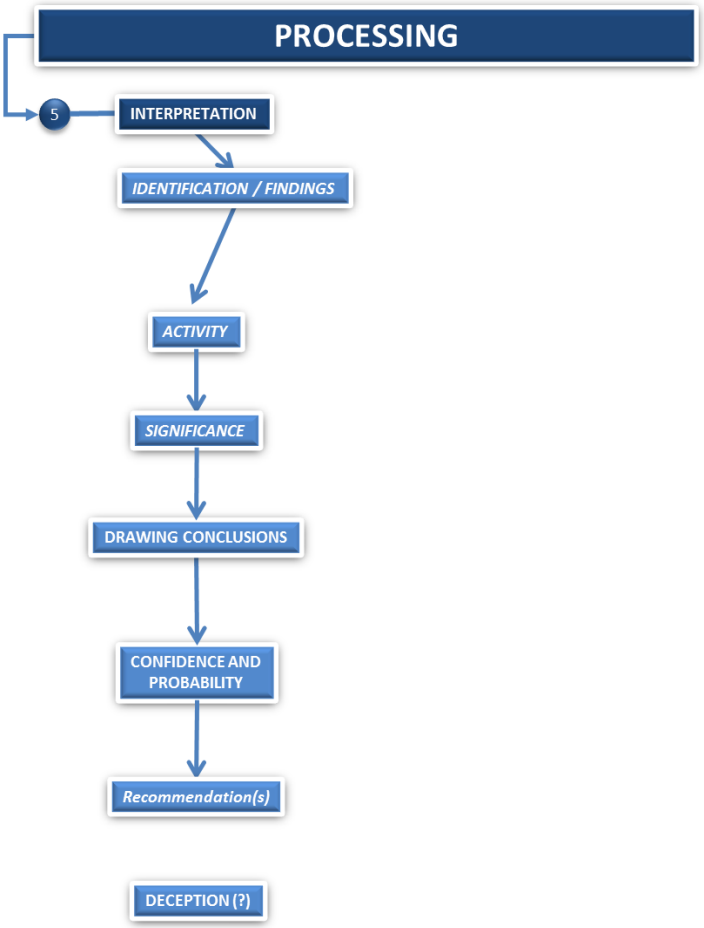
The following workflow consist of a chart that may be applied to process single pieces of data and information or single JISR-results within the processing phase of the intelligence cycle in order to integrate this single piece of information into an existing or growing product.




PROCESSING
2
EVALUATION
CHECKING
"RELIABILITY "OF THE COLLECTION CAPABILITY
Quality check / Control
COMPARING with existing in Database
CREDIBILITY OF INFORMATION
Credibilty of delivered intelligence
Quality check / Control
Fused intelligence (with and without references (problem of circular reporting
3
ANALYSIS
Dialogue with collection management collection capability / originator of information
Feedback


PROCESSING
3
ANALYSIS
SCANNING
SIGNIFICANT FACTS
COMPARING
OTHER KNOWN FACTS
DEDUCTING
THINKING
TIME AVAILABLE
TEAM OR INDIVIDUAL WORKS
NATURE AND FORM OF THE RESPONSE / Planned PRODUCT
TO DETERMINE A STRATEGY FOR THE ANALYSIS
CONTRARIAN
DIAGNOSTIC
IMAGINATIVE
TO CHOOSE A SOLE OR A COMBINATION OF SEVERAL ANALYTIC TECHNIQUES
APPLYING
RESULTING
4
INTEGRATION


PROCESSING
4
INTEGRATION
DRAWING
ANALYTICAL DEDUCTIONS
DETERMINING
PATTERN OF INTELLIGENCE, SEQUENCE OF EVENTS OR INDIVIDUAL'S PROFILE
REVIEWING
USING STANDARD REVIEWING TECHNIQUES (DEVIL'S ADVOCACY, RED TEAMING, ...
5
INTERPRETATION


PROCESSING
5
INTERPRETATION
IDENTIFICATION / FINDINGS
ACTIVITY
SIGNIFICANCE
DRAWING CONCLUSIONS
CONFIDENCE AND PROBABILITY
Recommendation(s)
DECEPTION (?)

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LEXICON

Lexicon – Part 1 Abbreviation and Acronyms

AAP	Allied administrative publication
ACINT	acoustic intelligence
ACH	analysis of competing hypotheses
AII	area of intelligence interest
AIR	area of intelligence responsibility
AOO	area of operations
AJP	Allied joint publication
CBRN	chemical, biological, radiological and nuclear
CCIR	commander's critical information requirement
CI	counter-intelligence
CICA	counter-intelligence coordinating authority
C-IED	counter-improvised explosive device
COA	course of action
COMINT	communications intelligence
DES	desired end-state
EEI	essential elements of information
EEFI	essential elements of friendly information
ELINT	electronic intelligence
FFIR	friendly force information requirement
GEOINT	geospatial intelligence
HoIS	hostile intelligence services
HUMINT	human intelligence
ICP	intelligence collection plan
IMINT	imagery intelligence
INTREP	intelligence report
INTSUM	intelligence summary
IRM&CM	intelligence requirements management and collection management.
ISR	intelligence, surveillance and reconnaissance
JIPOE	joint intelligence preparation of the operating environment
JISR	joint intelligence, surveillance and reconnaissance
MASINT	measurements and signatures intelligence
METOC	meteorological and oceanographic
NATO	North Atlantic Treaty Organization

NCIA	national counter-intelligence adviser
NCIR	national counter-intelligence representative
NIC	national intelligence cell
OE	operating environment
OPSEC	operations security
OSINT	open source intelligence
PIR	priority intelligence requirements
PMESII	political, military, economic, social, infrastructural and informational
RFI	request for information
SIGINT	signals intelligence
SME	suspect matter expert
SUPINTREP	supplementary intelligence report
SWOT	strengths, weaknesses, opportunities, threats
TECHINT	technical intelligence
TESSOC	terrorism, espionage, sabotage, subversion, organized crime

Lexicon – Part 2 Definitions and Terminology

actionable intelligence: Intelligence usable without delay as situational information available in due time and appropriately processed especially for the tactical level. Note: It can be used directly by commanders for the planning and execution of operations and so helps meet commanders' information needs immediately. Actionable intelligence is produced through a permanent dialogue between those who use situational information in the planning and conduct of operations and those who generate relevant situational information and make it available. Consequently, actionable intelligence differs from often descriptive and retrospective intelligence products which contain neither predictions nor recommendations worth mentioning. But actionable intelligence can be of both categories – basic and current intelligence.
(This term is a new term and definition and has been processed for NATO Agreed status)

actor: A person or organization, including state and non-state entities, within the international system with the capability or desire to influence others in pursuit of its interest and objectives agency: In intelligence usage, an organization or individual engaged in collecting and/or processing information.
(This term is a new term and definition and has been processed for NATO Agreed status)

analysis: In intelligence usage, a step in the processing phase of the intelligence cycle in which information is subjected to review in order to identify significant facts for subsequent interpretation.
(NATO Agreed)

area of intelligence interest (AII): A geographical area for which a commander requires intelligence on the factors and developments that may affect the outcome of operations.
(NATO Agreed)

area of intelligence responsibility: The area for which a commander has the responsibility to provide intelligence with the means available.
(NATO Agreed)

area of operations (AOO): An area within a joint operations area defined by the joint force commander for conducting tactical level operations.
(NATO Agreed)

intelligence: The product resulting from the directed collection and processing of information regarding the environment and the capabilities and intentions of actors, in order to identify threats and offer opportunities for exploitation by decision-makers.
(NATO Agreed)
Note: The term is also applied to the activity which results in the product and to the organizations engaged in such activity

information: Unprocessed data of every description which may be used in the production of intelligence.
(NATO Agreed)

current intelligence: Intelligence which reflects the current situation at either strategic or tactical level.
(NATO Agreed)

basic intelligence: Intelligence, derived from any source, that may be used as reference material for planning and as a basis for processing subsequent information or intelligence.
(NATO Agreed)

collation: In intelligence usage, a step in the processing phase of the intelligence cycle in which the grouping together of related items of information provides a record of events and facilitates further processing.
(NATO Agreed)

computer network attack (CNA). Action taken to disrupt, deny, degrade or destroy information resident in a computer and/or computer network, or the computer and/or computer network itself.
(NATO Agreed).
Note: A computer network attack is a type of cyberspace attack

counter-intelligence (CI): Those activities which are concerned with identifying and counteracting the threat to security posed by hostile intelligence services or organizations or by individuals engaged in espionage, sabotage, subversion or terrorism.
(NATO Agreed)

deception: Deliberate measures to mislead targeted decision-makers into behaving in a manner advantageous to the commander's objectives.
(This term and definition modifies an existing NATO Agreed status)

geospatial: Of or related to any entity whose position is referenced to the earth.
(NATO Agreed)

geospatial intelligence (GEOINT): Intelligence derived from the fusion of layered geospatial information with other intelligence. Note: The layered geospatial information is quality assured.
(This term and definition modifies an existing NATO Agreed status)

indicator: In Intelligence usage, an item of information, which reflects the intention, or capability of a potential adversary to adopt or reject a course of action.
(NATO Agreed)

integration: In intelligence usage, a step in processing phase of the intelligence cycle whereby analyzed information and/or intelligence is selected and combined into a pattern in the course of the production of further intelligence.
(NATO Agreed)

intelligence cycle. The sequence of activities whereby information is obtained, assembled, converted into intelligence and made available to users. This sequence comprises the following four phases:

1. Direction - Determination of intelligence requirements, planning the collection effort, issuance of orders and requests to collection agencies and maintenance of a continuous check on the productivity of such agencies
2. Collection - The exploitation of sources by collection agencies and the delivery of the information obtained to the appropriate processing unit for use in the production of intelligence
3. Processing - The conversion of information into intelligence through collation, evaluation, analysis, integration and interpretation
4. Dissemination - The timely conveyance of intelligence, in an appropriate form and by any suitable means, to those who need it.

(NATO Agreed)

intelligence requirement: A requirement for assessed information about any aspect of a situation needed to develop a commander's understanding.
(This term is a new term and definition and has been processed for NATO Agreed status)

intelligence requirements management and collection management (IRM&CM): A set of integrated management processes and services to satisfy the intelligence requirements by making best use of the available collection, processing, exploitation, dissemination (PED) and processing capabilities.
(This term is a new term and definition and has been processed for NATO Agreed status)

joint intelligence preparation of the operating environment (JIPOE): The analytical process used by joint intelligence organizations to produce intelligence assessments, estimates, and other intelligence products in support of the joint force commander's decision-making and operations planning process.
(This term and definition modifies an existing NATO-agreed term and/or definition and will be processed for NATO-agreed status)

joint intelligence, surveillance and reconnaissance (JISR): An integrated intelligence and operations set of capabilities, which synchronizes and integrates the planning and operations of all collection capabilities with the processing, exploitation, and dissemination of the resulting information in direct support of the planning, preparation, and execution of operations.
(NATO Agreed)

joint intelligence, surveillance and reconnaissance (JISR) process: A coordination process through which intelligence collection disciplines, collection capabilities and exploitation activities provide data, information and single source intelligence to address an information or intelligence requirement, in a deliberate, ad hoc or dynamic time frame in support of operations planning and execution. The joint intelligence, surveillance and reconnaissance (JISR) process consists of five steps: Task, Collect, Process, Exploit and Disseminate, referred to as task, collect, process, exploit and disseminate (TCPED).
(This term is a new term and definition and has been processed for NATO Agreed status)

joint intelligence, surveillance and reconnaissance (JISR) capability: An asset supported by organizations, personnel, collectors systems, supporting infrastructure, processing, exploitation and dissemination (PED) processes and procedures to achieve a designated joint intelligence, surveillance and reconnaissance JISR result.
(This term is a new term and definition and has been processed for NATO Agreed status)

joint intelligence, surveillance and reconnaissance result (JISR result): The outcome of the intelligence, surveillance and reconnaissance process disseminated to the requester in the requested format.
(This term is a new term and definition and has been processed for NATO Agreed status)

measurement and signature intelligence (MASINT): Scientific and technical intelligence derived from the exploitation of data obtained from sensing instruments for the purpose of identifying any distinctive features associated with the source, emitter or sender, to facilitate the latter's measurement and identification.
(NATO Agreed)

operating environment (OE): A composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander.
(NATO Agreed)

scenario: A knowledge representation that uses predetermined sequences of events to determine the results of interactions between known entities

sensor: An equipment which detects, and may indicate, and/or record objects and activities by means of energy or particles emitted, reflected, or modified by objects.
(NATO Agreed)

surveillance: The systematic observation of aerospace, surface or subsurface areas, places, persons or things, by visual, aural, electronic, photographic or other means.
(NATO Agreed)

target (Tgt): A target is an area, structure, object, person or group of people against which lethal or non-lethal capability can be employed to create specific psychological or physical effects. Note: person includes their mindset, thought processes, attitudes and behaviors.
(NATO Agreed)

targeting: The process of selecting and prioritizing targets and matching the appropriate response to them, taking into account operational requirements and capabilities.
(NATO Agreed)

technical intelligence: Intelligence concerning foreign technological developments and the performance and operational capabilities of foreign materiel, which have or may eventually have a practical application for military purposes
(NATO Agreed)

AIntP-18(A)(1)