Viking 08 Experiment Report
Exploring Sense Making Activities to Support Campaign Planning

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Sammanfattning

Föreliggande rapport presenterar resultat och slutsatser från det svenska fristående experimentet som genomfördes inom ramen för Viking 08. Experimentet var ett upptäckande experiment som fokuserade på Försvarsmaktens (FM) effektbaserade filosofi och metod. Experimentet genomfördes som två separata men koordinerade aktiviteter – *Campaign Planning* och *Knowledge Support* (KS). Dessutom testades tekniker för profilering av centrala aktörer (som en del av *Red & Green (R&G) Teaming* i det svenska EBAO-konceptet) som stöd för planeringsprocessen. Experimentet fokuserade på de initiala delarna av kampanjplaneringsprocessen. Ett operativt militärt högkvarter använde nya mekanismer för att testa FM EBAO-filosofi. Ett av syftena med experimentet var att undersöka nya sätt att stödja kampanjplanering i komplexa miljöer samt utvärdera hur KS och R&G kan stödja operativ planering. Vi kan dra slutsatsen att integreringen av koncepten fungerade till viss del men det var inte möjligt att fullt ut utvärdera KSs och R&Gs stödjande potential. De olika koncepten hade till viss del motstridiga experimentmål vilket försvårade genomförandet av experimentet. Experimentet påverkades dessutom av tidsbegränsningar och antalet deltagare (samt deras profil). Viktiga resultat och erfarenheter har dock framkommit som kommer att utgöra en bas för fortsatt konceptutveckling inom ramen för EBAO, KS och R&G. Den teknikplattform som användes i experimentet visade på möjligheterna att med hjälp av KS-metodik att stödja den operativa planeringen på ett nytt sätt. Resultaten och slutsatserna presenteras i detalj under respektive konceptkapitel.

Nyckelord: Upptäckande experiment, Viking 08, kampanjplanering, Knowledge Support, Red and Green Teaming, scenariobaserad planering

Summary

This report presents the outcomes in terms of results and conclusions from a Swedish Stand Alone Event (SAE) of VIKING 08. The SAE was a Limited Objective Discovery Experiment (LODE) focusing on the Swedish Armed Forces Effects-based Philosophy and Methodology. The experiment was conducted as two separated but coordinated activities - Campaign planning and Knowledge Support (KS). In addition to that, profiling techniques were tested (as a part of Red & Green Teaming in the Swedish EBAO concept) to support the early stages in Campaign planning. The experiment focused on the initial parts of a Campaign Planning process where the Operational Military HQ used new mechanisms to reinforce the Swedish Armed Forces EBAO philosophy. One of the main objectives for the experiment was to explore ways to support campaign planning within complex operating environments; and also; to evaluate how KS and R&G teaming can support operational level planning. We can conclude that the integration of the concepts worked on some level but it was not possible to fully explore how this should be executed. The different concepts had somewhat competing objectives which made the execution of the experiment difficult. Further more, several factors such as time constraints and also profile and the number of participants affected the experiment. However, important discoveries were made that will be used as a base for continued concept development of EBAO, KS and R&G. The technical platform that was used during the experiment showed the possibilities of utilising KS-methods to support operational planning in a new way. The results and conclusions are presented in detail in the results and conclusions chapters for each concept.

Keywords: Discover experiment, Viking 08, Campaign Planning, Knowledge Support, Red and Green Teaming, Sense-Making, Scenario Based Planning

Content

1 Introduction

This report presents the outcomes in terms of results and conclusions from a Swedish Stand Alone Event (SAE) of VIKING 08[1]. The SAE was a Limited Objective Discovery Experiment (LODE) focusing on the Swedish Armed Forces (SwAF) Effects-based Philosophy and Methodology.

The experiment was conducted as two separated, but coordinated, activities, Campaign planning and Knowledge Support (KS). In addition to that, profiling techniques were tested (as a part of Red & Green Teaming in the Swedish EBAO concept) to support the early stages in Campaign planning.

The experiment focused on the initial parts of a Campaign Planning process where the Operational Military Headquarter used new mechanisms to reinforce the Swedish Armed Forces EBAO philosophy. The mechanisms were based on a scenario based planning method that is designed to better handle risks and uncertainties in the future. In parallel, KS and Red & Green Teaming explored and tested issues of importance within their frameworks but they also interacted closely with the EBP team[2] to support the planning process. The experiment was carried out (as an isolated part) in the framework of VIKING 08 exercise and within the context of Multinational Experimentation Series 5 (MNE5).

1.1 Reading instructions

This report presents the design, procedure, results and conclusions from the Viking 08 experiment. The chapters are structured to be stand-alone, i.e. they are written so that the reader can choose to either read the entire report or to focus on one specific concept or chapter.

Chapter 1 (*Introduction*) describes the concepts in short, the over all objective of the experiment and the aims for the different concepts.

Chapter 2 (*Method)* describes the overall design of the experiment, the participants, data-collection and procedure. The chapter describes the overall method but also the specifics for the different concepts.

[1] VIKING 08 was a multinational and multifunctional distributed Command Post Exercise/Computer Assisted Exercise executed 3-14 November 2008. The exercise was conducted in the frame of the NATO/PfP and was the fifth in the VIKING Exercise series which started in 1999.

[2] In the experiment this part of the Mil HQ was named Effects Based Planning team (EBP team). In the SwAF EBAO Concept, EBP consists of campaign/deliberate planning and dynamic re-planning. During this experiment the focus was on campaign planning prior to the mission in theatre.

Chapter 3 (*Results)* describe the findings for the different concepts. The results are based on observations, surveys, workshops, interview and loggings from the technical systems.

Chapter 4 (C*onclusions)* are based on the obtained results and describe the conclusions that can be drawn from this experiment for the different concepts.

References, provides a list of references and *Annex A*, a list of acronyms.

Each concept, i.e. Campaign Planning, Knowledge Support and Red & Green teaming, has its own concept lead and main author. The main authors are responsible for the content of their chapters. However, it should be noted that the concept leads have helped interpret the results and contributed to the conclusions. For further information about the concepts or results obtained, please contact the persons specified below:

- Campaign Planning: Major Joakim Marklund (concept lead, SwAF), Jenny Lindoff & Claes Nilsson (main authors, FOI)
- Knowledge Support: Captain Alexandra Larsson (concept lead, SwAF), Per Wikberg (main author, FOI)
- Red & Green teaming: Claudia Baisini (concept lead, Generic), Cecilia Hull (main author, FOI)

As the KS experiment generated a vast amount of detailed data and conclusions, it was not possible to give a full detailed account of this outcome in the present report. An in depth description of background, procedure, obtained results and conclusions of the KS part of the experiment is presented in a separate report[3].

1.2 Acknowledgements

A lot of persons have been involved in the planning and execution of this experiment. The authors would like to acknowledge everyone who participated with their knowledge and experience and made this experiment happen. The authors also would like to thank Annika Parkdal, Niclas Ljung and Thomas Grevholm for their help with the data collection during the experiment and input to the experiment report. The authors would also like to acknowledge the lead concept developers who gave feedback and input to the report.

[3] Wikberg (Ed) (2008)

1.3 The Swedish Campaign Planning concept

The Swedish Armed Forces (SwAF) are developing a generic *Campaign Planning* concept[4] for dealing with the challenges posed by the increasing uncertainty and complexity in modern operating environments at the operational level. This Campaign Planning[5] concept concerns those activities, military-led and conducted within a Military Operational HQ, which translates Strategic Direction into Tactical Action.

The Effects Based Approach to Operations (EBAO) method is intended to help planners to deal with increasingly complex and uncertain environments, and harmonize planning with non-military and other military partners in the intervention. This concept seeks to develop a shared understanding of the risks and uncertainties that must be addressed in planning. By doing so, it seeks to identify conditions that must be supported/avoided in realizing the strategic aims, and thereby *'planning for success whilst planning against failure'.* The concept covers four developing areas:

- Interpretation of Strategic Direction & formulation of Operational Command intent in the context of Inter-agency planning.
- 'Sense-making' activities that serve to support all Campaign Planning and Execution activities.
- Campaign Formulation (Operational Design) in harmony with non-military and other military partners in the intervention.
- Campaign Development & Evaluation that serve to generate and evaluate Operational Plans prior to Execution; and to manage the transition between, and iterations of, Planning & Execution

1.4 The Swedish Knowledge Support Concept

The Swedish Knowledge Support (KS) concept sets out to broaden joint intelligence analysis and integrate that with knowledge and information management. The goal is to achieve better understanding of dynamic and complex conflict environment while at the same time improve use and reuse of all information and skills in a modern operational HQ.

[4] Marklund & Svanerholm (2008)
[5] Campaign Planning corresponds to Deliberate Planning in the SwAF EBAO Analytical Concept.

The Swedish KS concept is based on the experiences from Multinational Experimentation series 4 (MNE4) and developed into a unified concept using DEMO 06H (Swe EBAO Experiment 2006 autumn) and Swe KS LOE 2007.

The concept is based on the notion that there is a need for a more comprehensive approach to peace-support operations where all aspects of national power need to be utilized. The concept seeks to integrate that knowledge with a set of complementary methods and procedures which will prove both the analytical capability as well as the ability to store, find and reuse the information assets that the analysis rests on. It has its influences from traditional well proven approaches based on classical manoeuvre warfare as well as the newer concept of effects-based approach to operations.

The concept rests on advanced technology for enterprise content management, collaboration and search technologies together with procedures for knowledge management and knowledge integration. The use of real technology both provides a mean to conduct experiments but also serves in itself as mean to understand the character of information and the possibilities of new technology. The concept does not make a sharp distinction between enabling services such as information management and the analytical process.

The concept stresses the diversity in the analytical process. The foundation of diversity lies on access to a wide variety of sources which provide multiple ways of understanding the situation. The concept recognizes the need for a very conscious manning policy which sets out to recruit people of a variety of backgrounds that not only provide different skills to the analysis team but also provide different viewpoints based on their professional and personal background. Consequently, there is a need for multiplicity in analytical methods which will provide tools to approach the problems from different perspectives.

The concept suggests the introduction of analysis based on systems thinking as a complement to existing intelligence procedures. Systems thinking allows for a way to handle complexity without a need to represent all the details to understand the bigger picture. A specific characteristic of complex system is the existence of self-amplifying phenomena which has a non-linear development. That means that this kind of analysis focuses on the underlying processes and our perception of the trend rather than spending a lot of time establishing the exact current state. This also allows a better consideration of delayed effects when things are changing. Another important point is that while the analytical products can look technical in nature the aim is not to create a model of the real world but rather to depict our perception of it. Instead of relying only on written summaries and presentations with bullets, graphical representations such as influence diagrams will be introduced.

In order to make the concept more concrete procedures and processes have been divided into six basic components.

- Knowledge Request Management (KRM) establishes a mechanism to access and generate new information and knowledge, which does not currently exist in the Knowledge Base. KRM will do that by providing two main functions. First, handle the operational level management and optimization of all available assets for collection, processing and dissemination. Second, provide internal management of the KS organization and provides internal coordination between processes and elements/cells in the organization.
- Knowledge Production (KP) is a term for all different analytical activities that create or add new knowledge about non-friendly phenomena. Currently focused mainly on analysis based on System Dynamics and running a Joint Intelligence Preparation of the Battlespace (JIPB) process.
- Knowledge Management (KM) is an enabling process that facilitates collaboration and governs structure but does not alter content. KM deals with both people and technology.
- Knowledge Integration (KI) aims to provide pre-processing of data and information when it is imported or created in the repository. The goal of this pre-processing is to make the information available to analysts as well as other staff members for further utilization.
- Knowledge Acquisition (KA) is an activity in charge of executing standardized and ad-hoc requirements of external information. It will cover everything from subscriptions of government database updates, open source information as well as formalized access to experts throughout the government and the society in general.
- Knowledge Visualisation (KV) deals with how we communicate our knowledge to the recipient or consumer. Thus it matters not only *what* we try to communicate but also *how* we do it.

1.5 Red & Green Teaming

The changes in the Operational environment that characterize 4th generation warfare (well described in concepts such as War Amongst the People, Three Block War, and Irregular Warfare) underline the strategic importance of actors that are apparently non-important and non-strategic. Examples come from Afghanistan, Iraq, and Chad; although very different situations they have in common the fact that these types of conflicts require attention on more than defeating the enemy. As stated in the principles of the SwAF EBAO concept, a complex operational environment calls for an approach that attempts to understand such complexity and its dynamics (as suggested by Ashby with the *law of*

requisite variety)[6], rather than one which tries to simplify complexity into linear models.

Red & Green Actors:

- *Red Actors*: are those belonging to the opponent force, actively engaged or supporting what is identified as enemy.
- *Green Actors:* are all actors who are not actively engaged in the conflict, nor supporting a particular side of it, so called neutral. Green actors spans from international organizations (UN, Red Cross, NGOs) to other relevant figures who are somehow affected by the conflict or who have some relation to it: they might live in, or close to, the Operational Area, they might do business with actors in the Operational Area, or perhaps they exist as countries or tribes within or neighbouring to the Operational Area, etc. Such relations can affect them and their attitude towards the conflict and the Blue force.

The idea behind the concept:

In order to reach a better understanding of the operational environment, it can be useful to try to "map" R&G actors to gain a deeper understanding of their personality, drivers, interests, and history and as a result be able to provide the HQ with living profiles of these actors. In the R&G concept this is called to "gather multiple world views". The way we, as Blue, interpret and even analyze the conflict can be very different from the way our opponent – e.g. a local businessman, or the head of a neighbouring country – looks upon or understands it. How we make sense of the world is not universal, each actor makes sense of things according to a number of variables that are specific to the context (e.g. where we come from and where we live at the time). We all look at the world through lenses that are influenced and formed by our own values, experiences, family, culture, habits, etc. The R&G Teaming concept tries to:

- Understand what such lenses are made of and how they affect our thinking; that is, both those lenses worn by the R&G actors as well as our own (to create awareness of how we have perceive these actors, and why);
- Once this is done, attempt to picture the world through the lenses of the R&G actors to get as close as possible to the actor's thinking and be able to spread this understanding of the actor to the blue planners by personifying the actor "live".

[6] Morgan (1998)

It is crucial to bring such critical actors' world views in the planning process, in order to gain a better understanding of the dynamics behind the conflict and within the operational environment. Some things are obvious to us and absolutely nonsense to others who live and come from another context; we need to gain awareness of such things in order to act more appropriately in the operation.

The method and activities planned for R&G teaming are developed taking inspiration from the work and procedures of crime investigation and profiling (developed in cooperation with FBI Behavioural Science Unit (BSU) and Behavioural Analysis Unit (BAU), Quantico Virginia, and Swedish Police), combined with the principles behind organizational theories of learning and knowledge creation (see Heuer, Kotter, Weick, and Morgan in particular[7]).

The R&G teaming concept comprehends also a specific training method, which was not part of the experiment and will therefore not be discussed here.

1.6 Campaign planning mechanisms

Within the Swedish Armed Forces EBAO, a mechanism is a well-defined and repeatable element of military Operational Headquarter 'business', see Figure 1. Mechanisms serve to translate the EBAO concept into descriptions of the 'business'. Although any individual mechanism can be understood and implemented in isolation from other mechanisms, it can only realise the benefits of EBAO as part of a system of mechanisms – that is, the 'business' of a Swedish military Operational HQ. In this experiment a number of mechanisms for campaign planning were tested. The mechanisms were developed with inspiration from Scenario Based Planning[8] and Assumption Based Planning[9].

[7] Heuer (2006), Kotter (1996), Morgan (1998), Weick (1995, 2003),
[8] Van der Heijden (2005)
[9] Dewar (2002).

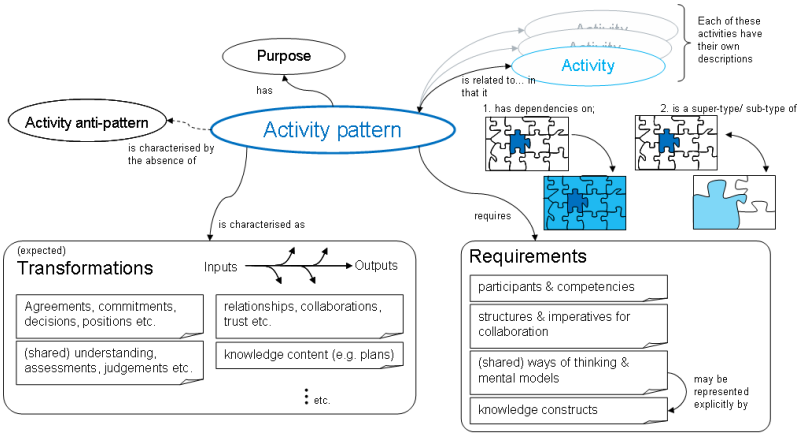

Figure 1: Mechanism format.

1.7 Experiment Objectives

The purpose of the experiment was to learn about the possible utility of novel planning techniques and 'ways of thinking' for future exploitation within operational level campaign planning.

Specifically, the experiment aimed at exploring ways to:

- "make sense" of the environment
- support campaign planning within complex operating environments
- better facilitate the effective engagement of the commander in planning
- evaluate the effective exploitation of Red and Green teaming
- exploit the Knowledge Support capability to support operational level planning
- better collaborate in order to support all above

1.7.1 Campaign planning objectives

Campaign Planning in this experiment was scoped to cover 'Sense-making activities' that serve to support subsequent planning and execution activities. Through the exploration of the Campaign Planning mechanisms the experiment tried to answer some of the questions outlined below:

- Do the mechanisms support generation and maintenance of multiple 'lines of inquiry'?

- Do the mechanisms help the HQ organize around collaboration rather than information sharing?
- To what extent does the HQ recognize the importance of iterative (dynamic) planning and assessment?
- How can 'biases' in HQ activities be recognized and addressed?
- How does the HQ handle complexity, i.e., do they adopt appropriate ways of thinking about complexity?
- How should the HQ organize around learning/Purposeful Assessment?
- To what extent do the mechanisms help the HQ consider problems from a diverse set of perspectives (not just the military perspective)?
- To what extent do the mechanisms help the HQ maintain holistic and dynamic interpretations of actions and interactions within the environment?
- To what extent do the mechanisms help harmonise military actions with those of actors engaged in the conflict?

1.7.2 Knowledge Support objectives

The main objectives for KS were:

- To exploit the Knowledge Support capability to support operational level planning
- Develop and use methods for formal and informal requirements of collection, processing and dissemination of knowledge to planners in EBP. The goal was to show how overall strategic guidance, formal guidance and interaction between KS & EBP can create implementable guidance to the analytical efforts in Knowledge Production.
- Introduce, develop and use methods for system thinking and JIPB (**Joint Intelligence Preparation of the Battlespace)** in a multi-disciplinary analysis team with experience from intelligence. The aim was to create examples of different products which are usable in the planning process.
- Continued development of Knowledge Integration in support of KP as well as EBP. The aim was to show that KI activities will contribute to an effective information management and that the effort support analytical efforts in KP and planning within EBP.
- Continued development of Knowledge Management with a focus on usable business rules which can be used in KI, KP and EBP. The aim was to show that guidance from the Chief of Staff based on the current focus and priorities within the staff can be applied to a technical and infological configuration.

1.7.3 Red and Green teaming objectives

In this experiment the R&G teaming activity exercised and explored profiling techniques in order to learn more about suitable methods that can enrich the views on relevant actors in the 'Sense-making' activities that serve to support all Campaign Planning and Execution activities. Specifically, the objectives were to:

- Show the importance of R&G actors to achieve an understanding of the complex dynamics in the operational environment
- Draw attention to the R&G actors' point of view in HQ activities
- Test if profiles and active role playing of R&G actors is beneficial to HQ
- Discover how to interact with KS in order to create synergies
- Test whether the suggested method is beneficial to profiling
- Test the suggested training method and discover possible alternatives
- Test whether the concept is successful in fostering learning

The main R&G research questions were:

- Do the mechanisms used for profiling actually support the concept of R&G teaming?
- To what extent does the concept of R&G teaming help broaden the blue planners' view of the operational environment and create relevant knowledge?

2 Method

2.1 General design of the experiment

The Limited Objective Discovery Experiment (LODE) was conducted at the SwAF Joint Concept Development & Experimentation Centre (JCDEC) in Enköping, Sweden, as part of the VIKING 08 exercise. Participants were prepared for the experiment in a one week training session. The actual experiment was comprised of two sequential one-week experiments. During Week 1 (3 - 7 Nov 08), the Military HQ focused on *analysis of the operating environment*, i.e. review the situation, mission analysis, analysis of conflict dynamics and evaluation of factors that were of importance for the intervention. The second week (10 – 14 Nov) focused on *generation of future scenarios*, i.e. identify driving forces for the conflict and the intervention, identify key driving forces, develop possible scenarios and analyse conditions. The Military HQ consisted of an Effects Based Planning (EBP) team, a Knowledge Support (KS) team and a Red and Green (R&G) team. KS and R&G focused on supporting the EBP team with different perspectives and specific information that were of importance for the Sense-making and planning processes as well as supporting the management of information generated in the process.

2.1.1 Experiment organisation

- *Experiment manning:* The experiment manning consisted of 43 persons who were divided into two teams – the EBP team and the KS team (R&G teaming participants were organised under the KS team). The experiment manning were the active players in the experiment who worked with the different mechanisms and concepts. Out of these people, a command group was created consisting of a Force commander, a chief of staff, a chief of EBP and a chief of KS. The command group were white-cell players, that is, they were members of the experiment manning but they got some extra education and training on the concepts to ensure that the experiment was run in accordance with the concept ideas.
- *Experiment control:* Thirty-two persons were part of experiment control. The purpose of the experiment control function was to monitor the progress of the experiment to make sure that the experiment objectives could be achieved. The experiment control consisted of an experiment lead (1 person), a Joint Operations Command director (1 person), Joint Action Team (2 persons), manning/Real Life Support (1 person), scenario representatives (4 persons), concept representatives for all three concepts (6 persons), analysis team (8

persons), role-players (6 persons), Visitors' and Observers' Bureau (2 persons) and security (1 person). The Role-players were "character actors" that helped establish the environment for the experiment by representing friendly, hostile and/or neutral entities (both military and civilian actors). The analysis team was tasked to help design, monitor, evaluate and document the experiment.

- *Experiment command:* The role of experiment command was to direct the experiment control. The Experiment command consisted of Lead Concept Developers, lead Analyst, Experiment Control lead and White-Cell players.
- *Infrastructure:* The Infrastructure consisted of 26 persons. The purpose of the infrastructure was to give technical support (to ensure that the infrastructure and technology fulfilled the needs of the experiment and to help the participants in the usage of the technical system) and real life support (transport of participants, in and out processing, coffee, and lodging) during the experiment.

2.1.2 Data collection

The purpose of the data collection and analysis was to gather data to gain insights into the concept development of Campaign Planning[10] and Knowledge Support and the utility of Red and Green Teaming. In general, two basic methodological approaches for analysis were applied.

On issues where the concepts had well developed procedures and assumptions, these were tested in case study designs. The case research method is based on the logic of analytical generalization and the experimentation isolation paradigm rather than on statistical generalization and the randomized-assignment-to-treatments model. The design included a set of factors to measure which were compared to the expected hypothetical pattern of behaviour for each concept. In practice, that meant that the prescribed methods of the concepts were utilized and data collection and analysis focused on whether the expected outcome, in terms of effects (behaviours etc) were obtained.

On issues where the concepts were more immature and procedures still had to be developed, the methodological approach focused on hypothesis generation in terms of identifying plausible ideas and alternatives to include in the concepts. During the experiment the methods for identifying and documenting such ideas varied between situations. Consequently, the aim was to generate practical solutions for the concept to be tested, and further developed, in future concept development and experimentation.

[10] Should be referred to the SwAF EBAO Analytical Concept as Deliberate planning.

Different methods were used to collect both quantitative and qualitative data:

- Systematic *observations* were made in each location (Mil Operational HQ, KS and R&G). The observations focused on the overall research questions as well as some specific issues for the different mechanisms.
- *Surveys* were distributed to the participants on several occasions throughout the experiment. At the beginning of the experiment a background survey was distributed to gather data about the participants' experiences and expectations on the experiment. During the experiment, at the end of each session/day surveys were given to the participants. A final survey was also distributed at the end of the experiment to give the participants the opportunity to give feedback on the entire experiment. Most survey questions were targeted to specific participants based upon their roles and responsibilities in the experiment. All participants and observers were also encouraged to submit additional comments and recommendations beyond what is asked in the surveys to facilitate discovery learning.
- Focused *interviews* of selected experiment participants were conducted in order to clarify participant actions, comments or survey responses.
- *Workshops* were conducted in order to collect data and also to discuss and validate obtained results.
- *System loggings*. Outputs from automated data collection from network services and applications usage logs were analyzed to identify patterns of usage during conduct of the experiment. The logs identified who used the systems, how long the system was accessed, and what functions were performed.
- *Video recording.* The work in some of the staffs was recorded by video and audio for later analyses.

The major part of the analysis work was conducted during the experiment weeks. Collected data was successively compiled and analysed on a daily basis.

Data collection was as far as possible based on triangulation. Thus, data on each identified factor and variable was obtained from different, independent data sources. Consequently, the characteristics of each indicator were based on several different data inputs. Furthermore, the documentation of the KS data collection and analysis was done successively and the KS participants were given the opportunity to validate the documentation.

At the end of the experiment (Friday week 46) participants received a short summary of preliminary experiment results.

2.2 Participants

In total, approximately 100 persons participated in the experiment. Thirty-two persons were part of experiment control (concept developers, role-players, analysts etc.), 26 persons were part of Infrastructure (facility and technical support), and the rest, 43 persons, were part of experiment manning (command group, EBP team, KS team and R&G team).

2.2.1 EBP team

On the onset of the experiment the EBP team consisted of 13 participants[11], including Force Commander (FC) and Chief of Staff (CoS). The team was multidisciplinary with mainly military participants from the HQ, JCDEC, all military branches and two researchers from FOI. One participant was from the Finnish Defence Command. The military personnel consisted of four Lieutenant Colonels, two Colonels, two Majors, two Captains (army) and one Commander. Years of service in their organization varied highly between a few months to 22 years.

Eight of the participants had worked in an operational level military HQ before the experiment. Four of them stated that they had a lot of experience from operational planning - the rest had limited or very limited experience. With a few exceptions they only had some, or very limited experience of Campaign Planning, Effects Based Planning, Knowledge Support and Red & Green teaming. However, a majority of the participants (85%) had experience from situations where military HQ and civilian organizations work closely together.

In general, participants also had other experiences that they judged to be of value for their role in the experiment. These varied between participants and included division staff, tactical command, joint forces command, MNE, Joint Forces demo project and Finnish EBAO.

None of the participants were native English speakers but they judged their skill in general to be fluent (3 persons) or functional (9 persons). Only one participant judged his/her ability to be poor. Most participants (8 persons) stated that they sometimes get more easily stressed when working in an English speaking environment (two stated often, two seldom and one never). Similarly, four participants stated that they often or very often become more reserved about

[11] Not all participants filled out the initial survey so the actual number of EBP participants was higher than 13, however the number of participants varied slightly over time. The description of the EBP team participants is based on the 13 survey answers.

presenting their point of view in English, six stated that they sometimes become more reserved and three stated that they seldom or never become more reserved.

2.2.2 KS team

On the onset of the experiment, the KS team consisted of 19 participants organized in cells according to the concept components (except the knowledge acquisition and knowledge visualization cells). However, the number of participants varied slightly over time. The team was multidisciplinary with mainly military participants including personnel from the HQ, military intelligence, all military branches. Two of the military participants were reserve officers. In addition, the KS team also incorporated four civilian personnel including two researchers from FOI.

The military personnel consisted of two Lieutenant Colonels, five Majors, one Captain, three 1st Lieutenants and two sub Lieutenants. Years of service in their organizations varied highly - between a few months to several decades. The civilian personnel's' experience in their organizations varied in a similar fashion.

Participants also had other experiences that they judged to be of value for their role in the KS experiment. These varied highly between participants and included UN, Police and rescue service, civilian academic degrees, NGOs and international service.

Half of the participants had worked at an op-level military HQ before the experiment. With a few exceptions they only had some or very limited experience of Campaign Planning, Effect Based Planning, Knowledge support and Red and Green Teaming. However, a majority (75%) of participants had experience from situations where military HQ and civilian organizations work closely together.

Although none of the KS participants were native English speaking they judged their skill in general to be functional or fluent.

2.2.3 Red and Green team

The R&G team consisted of five participants, who attended for most of the experiment. The R&G team was divided into two groups of two and three persons respectively, profiling one actor each. One participant was not able to participate the full two weeks, i.e. only attended the first half of each week, and the groups then consisted of two participants each. However as time progressed, little work was actually undertaken within the R&G groups themselves, instead the R&G participants were split up to participate in EBP sub-groups.

The R&G team consisted of military participants solely: three Lieutenant Colonels, one 1st Lieutenant and one Major. Only one had had some higher level civilian education. Two were concept developers; two were teachers in tactics at military institutions; and one worked within the Air Force. All but one of the participants had been in their current position for about 4-5 years, the other only a few months. Approximately half of the group had experiences they judged to be valuable for their role in the R&G experiment, these included working within military intelligence, and HQs and Tactical Command. One of the participants had been deployed to operations overseas.

Four of the participants had worked in operational level HQs before the experiment, although none had more than some or limited experience. All five participants also had only some or limited experience of Campaign Planning, Effects-Based planning and Knowledge Support. Everyone had very limited experience of Red and Green Teaming. With only one exception, all had at least some experience of situations where military HQ and civilian organizations work closely together.

Although none of the participants were native English speakers they judged their skill level in general to be functional or fluent. All were relatively confident in using English as a working language and only one felt that it ever impeded him in confidently expressing his opinion.

2.3 Scenario

The experiment used a modified version of the Viking 08 North Friendly Sea (NFS) scenario that was modified to meet the experiment conditions. An EU led military force was tasked to go to X-land to assist the government.

The scenario was based on a UN mandated Chapter VII operation in terms of an assistance mission with military units from UN, a combined Joint task Force under NATO and an EU led military force (EUFOR). UN were present on the ground with a mission Headquarters, several regional Headquarters and agencies co-operating with International Aid Organizations and Non Governmental Organizations. The NATO Joint Task Force was intervening in one country while the EUFOR was giving assistance in a neighbouring country. The task of the EUFOR, operating under UNSCR 2570, was conflict prevention primarily linked to security assistance during a parliament election and the subsequent implementation of a new constitution. In addition, the task was to promote the cession of hostilities and reconciliation among the militias and irregular groups in the Republic of X-land, assist the government of X-land, UNMIN and international organizations in providing humanitarian assistance, support the safe and

unimpeded return of refugees and displaced persons to their homes and protect and promote human rights.

However, the EUFOR mandate was time limited and was supposed to be succeeded by a United Nations Security Assistance Force (UNSAF) as the legal successor to the EU Military Mission to X-land. The scenario had its origin in the ordinary VIKING 08 security assistance mission linked to the X-land elections, but was developed to support the experiment settings, that is, new methods to identify, describe and follow up problem areas in the early planning stages. Furthermore, whereas the scenario used for the VIKING 08 exercise execution started six days into the land operation, the one used at the VIKING 08 LODE took place four months before, in the early planning stage, in the beginning of August. The elections to be supported were to take place in late December.

2.4 Procedure

Because of the nature of this experiment (a discovery experiment exploring a number of mechanisms for campaign planning) the procedure and results are closely related, i.e. a description of how the HQ worked in the different mechanisms can be seen as part of the results. Therefore, the procedure for the different mechanisms is kept short in favour of a more detailed description in the results chapter.

This section begins with a brief description of the preparation week (i.e. training week) followed by a narrative of the experiment weeks and the campaign planning mechanisms (aim, purpose, activity and expected output). Last, the specific procedures for EBP, KS and R&G are described.

2.4.1 Experiment preparations

Participants were prepared for the experiment during a training week. The training was based on the principle that campaign planning was the core concept and the other two concepts followed and supported that process. The training covered philosophy, methods and tools.

At the start of each part of the training the audience received a lecture covering what was to be done and why, concerning all the campaign mechanisms. After the theoretical briefing, the training audience were divided into four groups; EBP, R&G, KS, and Experiment Control. Each group got training on how the work on the different mechanisms would be carried out (with the exception of the R&G team, which did not have all the players in place during the training week). Training was lead by concept developers and supported by super users.

The training week also included a workshop for selected participants focusing on the interaction between EBP, KS and R&G teaming.

2.4.2 Experiment weeks

The experiment was divided into two major parts – *analysis of the operating environment* (week 1) and *generation of future scenarios* (week 2). Each part was then divided into a number of mechanisms (see Figure 2).

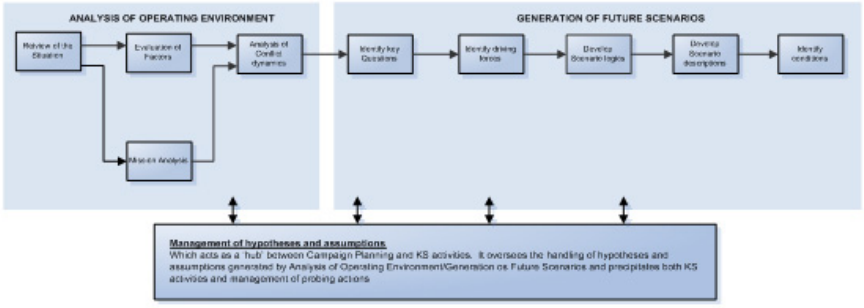

Figure 2: Mechanisms explored in the experiment.

The *analysis of the operating environment* consisted of four mechanisms: Review of the situation; Evaluation of Factors; Mission analysis; and; Analysis of conflict dynamics. The *Generation of future scenarios* consisted of five mechanisms; Identify key question; Identify driving forces; Develop scenario logics; Develop scenario descriptions; and; Identify conditions. In parallel with all these mechanisms Management of hypotheses and assumptions was carried out. The experiment also consisted of a third part that was planned to be conduced if time was available. It was a four hour Campaign Formulation workshop that was carried out at the end of the second week to discuss the applicability of the products that had been generated during the experiment.

2.4.2.1 Description of mechanisms

This section briefly describes the aim, purpose, activity and expected output of each mechanism.

- **Review of the situation (RoS)**
  Aim: To reach a basic understanding, across the HQ, of the 'Road to Conflict' and characteristics of the current situation.
  Purpose: To establish a baseline of understanding that supports all subsequent Sense-making and planning activities (within experimentation) to provide a 'starting state' of knowledge for Campaign Planning.

Activity: Involves all participants, and is led by KS. This is interpretation of available information concerning the current situation and the 'road to conflict' within the conflict region according to PMESII dimensions.
Expected output: The HQ should be informed about: key actors, conflict histories, recent events/patterns of behaviour and expected future events.

- **Evaluations of factors (EoF)**
  Aim**:** Develop an understanding, within the HQ, of the 'art of the possible' for the military force within the intervention – by making sense of the constraints and freedoms on military actions in the operating environment and in the context of the broader interagency intervention.
  Purpose**:** Shape and guide planning activities that must take into consideration blue military constraints and freedoms.
  Activity**:** Evaluation of factors[12] examining relevant circumstances, participants, surroundings and other influences within the operating environment.
  Expected output**:** Physical and resource/capability based aspects of the operating environment, deductions of factors that affect the campaign.

- **Mission Analysis (MA)**
  Aim: Understand and commit to the military mission.
  Purpose: Shape Campaign Planning activities – and thereby the Campaign – by reaching agreement on/committing to Operational 'transition state' and development/communication of Command intent to Operational HQ staff.
  Activity: Interpret Strategic Direction, including freedom and constraints on operational actions, and develop command intent as a means of directing and shaping operational actions.
  This activity concludes with a mission analysis briefing that should share Commanders Intent and give guidelines for further staff work, and set time-frame and overall framework for the operation.
  Expected output: Draft CCIR, key hypotheses and assumptions, Commanders intent guidelines for further staff work.

- **Analysis of conflict dynamics (ACD)**
  Aim: To build shared understanding of all perspectives on the conflict, confrontation or crisis – root causes rather than symptoms
  Purpose: To provide a basis for all subsequent sense-making and planning activities supported by ongoing collaborations.
  Activity: This will involve an assessment of symptoms and consideration of driving forces for the current situation. The activity should bring all HQ staff

[12] The collection, interpretation and expression of information with respect to well-defined factors in the operating environment that determine the 'art of the possible' for a military intervention.

into Sense-making and generating purposeful collection/ collaboration/ probing actions to reduce uncertainty. Loose structures will be required. The team must be inclusive and ready to form sub-groups, or expand/contract according to the needs of sub-activities.
Expected output: Actor/influence relationships, Hypotheses and assumptions map, a set of candidate driving forces. Pragmatically, we gauge 'completion' of this activity when the players are confident enough about their understanding of the driving forces for the conflict (this may be when they feel that they cannot leverage any more useful information about the conflict).

- **Identify key questions (IKQ)**
  Aim: identify the most appropriate (i.e. credible, time-based, relevant) key question to be answered within Generation of Future Scenarios.
  Purpose: To set the scope and tone for the entire Generation of Future Scenarios activity; reinforce Command Group leadership, yet open–minded and creative approach of the Generation of Future Scenarios activity.
  Activity: A multi-disciplinary team of planners and analysts, including a broad range of non-military partners review key outputs of MA and ACD. This activity will be concluded with a staff-briefing. In order that the most appropriate key questions are identified and that subsequent Campaigning is adequately framed, the COM must have established sufficient collaborations with non-military stakeholders prior to this deliberation and selection.
  Expected output: Guidelines for generation of future scenarios, timeframe for scenario-based thinking, key questions.

- **Identify driving forces (IDF)**
  Aim: Select 1 or 2 key driving forces for the future of the conflict region, from an initial generation of a *set* of driving forces. Selection must be made on the basis of criticality to the outcome of the question *and* uncertainty about their future values/categories.
  Purpose: Develop an understanding, within the GFS team of the likely driving forces for the outcome of the intervention and, ultimately, the future of the conflict region – in order to support remaining GFS activities and Campaign Formulation. Provide a framework for the development of diverse yet plausible scenarios for the future of the conflict region.
  Activity: This mechanism seeks to brainstorm all potential driving forces – note that these should be expressed as variables. It requires a diverse set of experts (including those from outside the HQ). This mechanism will be supported by 'systems thinking' and may benefit from the development of systems maps to help explore different views on what factors are driving what.
  Expected output: 1 – 2 key driving forces.

- **Develop scenario logics (DSL)**
  Aim: To characterise future scenarios according to the values/categories of key driving forces.
  Purpose: To provide initial descriptions of an end point for up to four scenario descriptions so that the creative work of DSD is framed appropriately. These provide an 'anchor' for fleshing out scenario descriptions (plausible story-lines).
  Activity: This is a whole group activity. We now seek to describe, based on an outline, four futures, within our timeframe of interest, the selection of values/forms of the 2 key variables. The scenario logic should entail a description of a possible future situation including blue, red and green actors. Scenarios should be plausible and relevant. The teams can be selected here. This step provides a starting point for the next stage.
  Expected output: Four diverse future situations/scenarios that are credible and distinct (enough) with memorable descriptive titles. The four appointed team leaders need to be confident in their ability to proceed to the next stage.

- **Develop scenario descriptions (DSD)**
  Aim: To develop fleshed out scenario descriptions: fully characterised future scenarios and a plausible storyline for each
  Purpose: To provide a framework for the identification of the conditions on which each of the storylines rests, and to provide storylines rich enough to communicate with others. To provide the means of identifying hypotheses and assumptions about possible futures that can precipitate collection plans/probing actions.
  Activity: Constructing storylines of events that might plausibly lead up to each future scenario, capturing hypotheses and assumptions in doing so. Plausibility is critical, accuracy is not. Scenarios should not be ranked or omitted on the basis of 'likelihood' – instead, consider the range of possible futures. It's vital to cross pollinate the stories/descriptions from the different teams.
  Expected output: Four rich, diverse and manageable set of future scenarios. Two distinct parts of the narrative should be described; the situation; and; the road to that situation. Generated collection/collaboration/probing actions to reduce uncertainty/equivocality.

- **Identify conditions (IDC)**
  Aim: To develop a shared understanding of the potential root characteristics of the possible future scenarios and to consider the desirability of these characteristics in any potential intervention.
  Purpose: To provide planning objects (conditions) to take forward into subsequent Campaign Formulation activities.
  Activity: The activity will identify conditions across all scenarios and assess their desirability to the ”desired scenario”. The undesired scenarios can be used to identify indicators and plan for avoiding negative outcomes. Positive conditions should be in line with Commander Intent, and will be important ‘stepping stones’ in the upcoming campaign design. The discipline in this stage is to first identify the conditions that the HQ thinks might contribute to the realisation of a future scenario WITHOUT starting to consider Campaign Formulation. Then positive and negative desirability can be considered, but without making any selection choices (this would be part of Campaign Formulation). Scenario planning does not finish here.
  Expected output: Conditions (positive & negative) across all scenarios. Rich understanding of the context for Campaigning. Key concepts for planning.
- **Management of Hypotheses and Assumptions**
  Throughout the experiment there is a need to handle hypotheses and Assumptions generated in the ‘Sense-making’ activities that serve to support upcoming Campaign Planning and Execution activities. This means to act as a ‘hub’ between Campaign Planning and KS activities, and precipitates both KS activities and management of probing actions.
  The aim is to manage, in an ongoing fashion, the collaborations between individuals engaged in two different types of activities:
  - Those ‘supported activities’ that *generate* hypotheses and assumptions (and also require them to be addressed)
  - Those ‘supporting activities’ that directly address hypotheses and assumptions (through collection and probing actions) and thereby generate knowledge

  The purpose is to enable the Command Group to maintain an overall ‘sense’ of the knowledge being generated and what is being learnt about the operating environment and (the likely success of) emerging planning concepts, and to guide the management of work within this activity.

2.4.3 Campaign planning procedure

The campaign planning mechanisms were explored during the course of the two weeks. The completion of some of the mechanisms took only a few hours or less whereas others took several days. However the procedure was more or less the same on a daily basis. The participants worked on the different mechanisms most of the day either as one group (the entire HQ together) or in different sub-groups. They cooperated with external actors (i.e. civilian representatives) and briefed the command group on a regular basis. When necessary, the HQ got support from concept developers to better understand how to work with a specific mechanism.

Data was collected continuously throughout the experiment. The participants filled out a daily survey (at the end of each day) focusing on *collaborations* between the different actors within the HQ and *the mechanisms* (i.e. way of working, pros and cons, possible difficulties etc.). In the evenings most of the participants (everyone but the white-cell players) took part in analyst led work-shops. EBP, KS and R&G conducted different workshops focusing on issues that were of importance for their specific experiment objectives. The white-cell players got training on subsequent mechanisms.

2.4.4 Knowledge Support procedure

The aim for KS was to support the military staff and decision-makers with the foundation for situational awareness and understanding of the operational environment. Consequently, the experiment procedure largely adapted to the contextual procedure for Campaign Planning. Still, the KS concept had hypothe-ses and experiment questions that were not directly related to the ones explored in the EBP experiment. A considerable part of the KS concept consists on on-going enabling activities that need to be run in parallel as long as any activity is going on in the HQ. These activities were explored with a very concrete hands-on approach. The intention was of course that these efforts would be a support to the EBP team but that also requires a working staff process which was not available in the experiment. Data was collected, compiled and analysed on a daily basis. A preliminary KS experiment report describing a full account of background, method, obtained results and conclusions were distributed to all KS participants at the end of the second experiment week. The preliminary report was discussed during a separate workshop in order to validate the content with participants.

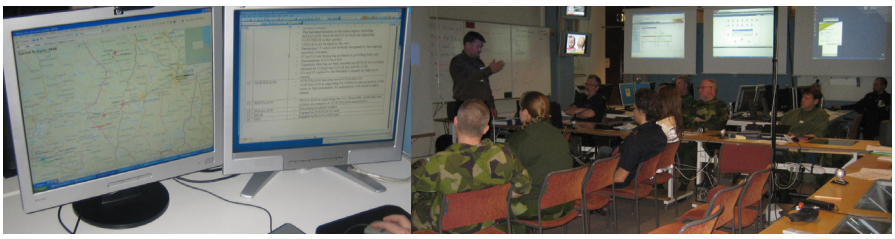

Figure 3: Photos from the KS room.

2.4.5 Red and Green teaming procedure

The R&G mechanisms greatly differed from the general campaign planning mechanisms and were mainly undertaken during the first week whilst the second week was dedicated to the R&G players partaking in the campaign planning mechanisms.

Usually the R&G participants were asked to fill out a daily survey asking questions about which R&G mechanisms had been used during the day and how the participants perceived the mechanism, including their usefulness. At the end of the first week and at the end of the experiment as a whole, the participants also answered another survey, focusing on the general perception of the experiment: which parts had been most challenging and time consuming; whether the participant had managed to step out of 'blue thinking' and into real profiling; and how interesting the R&G teaming had been. Throughout the experiment the R&G players were monitored by an observer. Due to the fact that the R&G players almost always were split into different groups the observer could only follow one or a few of the R&G players at a time. At the end of each week the participants were also interviewed. After the first week a discussion session took place where an analyst interviewed each R&G group member separately to find out their opinion on the relationship between R&G teaming and KS and EBP respectively, as well as how they felt the experiment was going and any comments they had on the evaluation of the R&G teaming concept. At the end of the experiment the analyst also interviewed all the participants individually, asking questions about their experience of the generation of future scenarios mechanism, perception of the R&G concept and its mechanisms, how they had found adjusting to role-playing, the relationship with KS and the contribution made by R&G to EBP, as well as how they thought the experiment could have been improved.

3 Results

This chapter describes the observations and results for Campaign Planning (i.e. mainly the EBP team), KS and R&G. Since the different concepts had their own experiment objectives the structure of the different sections in this chapter varies.

3.1 Campaign Planning

In this chapter the obtained results and observations related to the EBP team are described. The first section describes the results regarding the different *mechanisms.* Each mechanism is described in the same way. First the working process is described (based on observations), then some participant opinions are presented (based on surveys and workshops) and finally some observer remarks are presented. The second section presents *general findings* that are deemed to be of importance to the concept and the Campaign Planning experiment objectives.

3.1.1 The mechanisms

3.1.1.1 Review of the situation

The Review of the Situation (RoS) was conducted on the first day of the experiment by all participants except the command group, i.e. Chief of Staff (CoS), Force Commander (FC), the Chief of EBP and the Chief of KS. The command group got white-cell training and made preparations for mission analysis. The RoS was lead by KS. The purpose was to develop a shared situational awareness of the current situation in order to provide a basis for mission analysis and understanding of conflict dynamics. In the afternoon, the staff reconvened for a briefing on the situation and information sharing across the groups.

Due to time constraints the HQ did not have time to do a thorough review of the situation. The EBP staff mainly focused on studying available scenario material and looked for information in the technical system, and also got technical training on the BEATA planning tool.

The output of the RoS was a briefing for the Commander that was held by the KS team in the morning of the second day. The briefing contained detailed descriptions of actors and conditions, rather than an analysis of the situation. The command group asked for specifics about the situation on the ground but the KS team could not provide that information at that time.

Participants' opinions: After the completion of the RoS the participants did not think they had a thorough understanding of the situation. It was a complex environment to analyse and they had limited time to do the RoS. The participants thought that they had enough knowledge/information about key actors and recent/current events but that they needed more time to get an understanding of timeline, key factors and trends and resources/capabilities. They also concluded that they needed to read some key documents, e.g. 2570 (EU mandate) and 2510 (NATO mandate).

Observers' remarks: *The RoS should have been KS led and should have resulted in a thorough analysis of the situation to be used as a basis for the subsequent HQ work. However, due to misunderstandings and/or limited time this was not done as planned. During the RoS the EBP staff spent most of the time reading the scenario material and got basic training on the tool suite. Consequently the RoS briefing did not give the commander and the command group the input they needed for Mission Analysis nor did it give the HQ a common baseline understanding of the situation. Maybe this mechanism should have been completed beforehand (by experiment control) to ensure that the experiment had a good starting point. However, since the commander was not pleased with the RoS activity the KS team was instructed to prepare and conduct a RoS briefing on the third day of the experiment. That briefing seemed to be helpful and provided the EBP team with an opportunity to gain a deeper knowledge of the situation.*

3.1.1.2 Evaluation of factors and Mission analysis

The Evaluation of factors (EoF) and Mission Analysis (MA) was initiated on the second day (through the RoS briefing for the commander). After the morning briefing the EBP team started working on EoF. They worked in small integrated groups with KS personnel. They brainstormed around tasks and key factors. After the brainstorming session the EBP team worked in two groups generating assumptions and conclusions. It was concluded with a Mission analysis briefing for the command group.

The command group focused the morning on information requirements regarding the situation on the ground and possible threats to the UN, and subsequently EUFOR. The EU and UN meetings focused on information exchange where the command group asked for information about the situation, conflict dynamics and what guidelines the EU and the UN could/would provide. Through the meeting with the SRSG (Special Representative of the Secretary General) the command group learned that the UN still worked with their implementation plan for X-land. They also realised that the UN had very limited knowledge about the situation on the ground and that they very much needed EU military presence

and EUFOR's 'eyes and ears'. The command group tasked the EBP team to start working not only on the EoF but also on MA. The command group got briefings presented by the EBP and KS teams during the day.

After lunch the EBP team discussed and updated the MA. The planning team then continued working in three groups with CCIR (Commander's Critical Information Requirements), force estimate and timings. They were instructed to work more closely with KS. In the afternoon the command group gave a briefing informing the rest of the staff of the meetings they had had with the EU representatives and the SRSG.

The mechanism was concluded with two briefings. First, the staff presented a new RoS briefing for the command group. Then, a few hours later a MA briefing was held with all staff members. The Commander gave his intent for the mission.

Participants' opinions: Most of the participants understood to some extent what was expected from them in the mechanism. They found it a bit difficult to do the EoF because of the limited time to complete the mechanism and the expected output was not entirely clear. Some participants thought the collaboration with other parts of the HQ or external actors was good and some where not so pleased. They thought the integrated work with KS was good but they did not get a reply on the KR (Knowledge Request) that was sent to the KS cell.

The command group stated that they had a very good understanding of what was expected from them in the mechanism (MA). They thought it was both difficult and easy to work with the MA. It was easy because the mechanism was not new but they found it a bit difficult because the staff was not up and running, they did not have a complete picture of the situation and they lacked some experts.

Observers' remarks: *There was little collaboration during this activity. The command group worked quite isolated from the rest of the staff and there was little collaboration between the EBP team and the KS team (no interaction with R&G team). One possible explanation of the lack of collaboration could be that the EBP team was not accustomed to having KS support and therefore worked "as usual" .Only a few Knowledge Requests (KR) were processed, partly because of uncertainty about how it was supposed to be done. Instead of processing unanswered questions, the EBP team sometimes moved along without that information because they did not think they would get the right information in time. Further more, since all the personnel from the Knowledge Production cell was integrated into the EBP team there was no reach-back function in the KS cell that could handle these requests*

The HQ spent approximately 1.5 days on Evaluation of Factors (EoF) and Mission Analysis (MA). The original idea was to let the command group focus on the MA and the rest of the staff on the EoF. However, for a number of reasons (e.g. the insufficient RoS) these two activities were integrated closely together resulting in a mixture between the two mechanisms. During this time they also had to redo the RoS. Thus, the outputs from these activities were a new RoS briefing and a MA briefing. The EoF did not generate expected output, i.e. a deduction of factors that affect the campaign. The purpose of the MA briefing was to gauge the direction provided to staff for planning. However, it is unclear how this direction was used later within the planning process.

3.1.1.3 Analysis of conflict dynamics (ACD)

The Analysis of Conflict Dynamics (ADC) was divided in two parts. The first part focused on *what* (i.e. what is threatened) and the second part focused on *why* (i.e. why is it threatened). The ACD was initiated directly after the MA back briefing. All personnel attended a short training session on ACD.

ACD part 1 – what

The EBP team and KS team were divided into four integrated groups with different areas of responsibility according to experiment control guidelines. The four different areas were; political, military/irregular/criminal, economical and social/info/religion in line with the PMESII model. They were instructed to focus on investigating what is threatened; the quality and nature of such threats and who was involved. The work from two of the groups is described below[13].

- **Military/irregular/criminal group:** The work in the military group got off to a slow start. The group started defining the task and listing all relevant military/irregular/criminal elements in the area on a power point slide, but they did not take the time to read the documentation about the ACD method. They did not quite know what to do in the different steps of the analysis and they got stuck in a discussion regarding method and purpose. An experiment control representative suggested that the group should restart their work by taking a security point of view instead of a strict military point of view. The group restarted their work by listing threats to the security in x-land along with deductions/conclusions and actors.
- **Economical group:** The economical group discussed lively and explored a lot of different aspects of the conflict. Working in a small group made the dialogue dynamic, and many persons participated in the discussions. The economical group responded well to the analysis method, even if they did not

[13] Unfortunately there were not enough observers to follow the work in all the groups. Therefore, observations from only two of the groups are reported here.

follow the model to the letter. When information requirements were identified the team initially did not forward them to KS since the general view was that they would not receive the information in time. Still, the group felt that it was very useful to have a KS LO that was able to document their discussions and also contribute to the work in general.

Brainstorming and synthesis: After the worked in sub-groups a "brain-storming" session was initiated with all groups (it was called a brainstorming but was not planned and played out like a brainstorming). The sub-group leads presented results from the group work on a large screen and plausible connections between the threats were identified. This work later continued in a smaller group focusing on coming up with a synthesis of the obtained result from the earlier step.

After a short break the Commander (Cdr) presented the issues he saw as the most important based on his and the CoS's summary of the synthesis, which was in line with Commander's Intent. This was however not clear to the rest of the group and it created confusion. The staff felt that the synthesis had been for nothing if they were to work on new factors. The Cdr emphasised that they had to consider Cdr's Intent and to prioritise their work. The actors and events that the synthesis group had produced were far too many and far too wide. To be able to move on, the group clustered the Cdr's key factors into three groups which were subsequently given to three sub-groups that worked on one cluster each. The groups were then split into EBP and KS teams to evaluate their work so far and to continue ordinary staff work.

ACD part 2 - why

After the back briefing the participants were split into sub groups again to start focusing on why different factors were threatened, i.e. how do the actors involved derive their influence/power; why do those actors exert influence/power; and which long standing structures and sources of instability have created the conditions for the threat?

- **Military/irregular/criminal group:** The military group started their work by creating templates by themes (organized crime, irregulars, insecurity in x-land); actors, and the different questions stated above. The themes were derived from the previously selected 'focus teams' that had been chosen by the command group. The group collaborated with R&G on one occasion. The collaboration was done in an informal fashion. After this they continued to connect the three different why-questions to the different actors listed by themes. After a discussion with the group's KS LO they also focused on generating hypothesis and KR:s.

- **Political group:** The political group followed the three questions that they were given for the 'Why'-session in the previous step. They started to produce hypotheses and put them in a template that they were given. The group only had very limited contacts with other actors (two representatives from the UN offered to take part in the session but their help was declined by the group as they did not deem it appropriate to have outsiders in the planning session). The R&G team players that were a part of the session did however contribute a lot and their input was later praised and said to be vital by the EBP staff.

The command group had a meeting with two UN representatives during which they discussed the interagency coordination and the cluster approach; humanitarian space; what points of contact that could give EUFOR access to a wider set of actors; and what possibilities there were for joint planning. The UN representatives went through the EUFOR planning documents and highlighted what they perceived as gaps and flaws in the document: the lack of Human Rights-aspects, strategies for dealing with war criminals, a definition of 'free and fair election' and gender aspects.

Brainstorming, clustering and voting:

After the group work the next phase of the ACD was initiated. The CoS outlined the process which was divided into three steps; a brainstorming phase; a clustering phase; and a voting phase.

- **Step A Brainstorming:** The question in focus was "Why is X-land in the situation it is?" The facilitator stressed the importance to be open-minded and not criticise suggestions. Then the participants explained their individual reflections. The facilitator wrote post-it notes and put them on the board.
- **Step B Clustering:** After regrouping the post-it notes under common headlines the process continued with discussions on how to create clusters that was suitable for analyses purposes. They found approximately 15 different clusters.
- **Step C Voting:** The third step was voting. The participants placed votes on the clusters they thought were the most significant. Each participant was given the opportunity to motivate their vote. The result was then handed over to the command group.

The day ended with an ACD back briefing and a closing briefing concluding the first week.

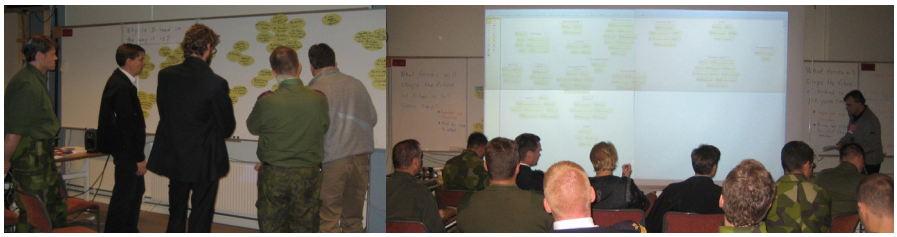

Figure 4: Clustering and voting.

Participants' opinions: Some of the staff members thought that there had been too much "micromanagement", while the rest of the staff thought that there should have been clearer guidelines. They all agree that the white-cell members had an important role to fill to support and guide the different groups in the right direction without taking over too much of the process. The participants also stated that they thought it would be good to start every mechanism by clarifying aim, purpose and expected outcome with the mechanism and also what the output will be used for later in the planning process.

Some participants were concerned about information sharing. When working in small groups everything discussed does not get conveyed in a briefing, consequently information can get lost in the process. They suggested short up-date briefings, "in between briefings", on a regular basis. This would enable the staff to better take care of results and assumptions that are not included in the main briefings.

The participants thought it was easier to understand what was expected from them in the latter part of the ACD compared to the first part. They thought it was easy to understand and follow the brainstorming but they stated that the sub-group work was a bit more difficult (including the transformation of turning the sub-group results into the over all work). They also stated technical systems should have been able to support brainstorming sessions better.

The participants thought that the collaboration with KS and R&G (mainly through the integrated teams) was very good and generated expected output. However, the collaboration with KS would have been even better if the KS cell had had more time to prepare. There were also civilian representatives integrated in the team and the EBP team rated this collaboration as very good and valuable.

Observers´ remarks: *Should the commander be involved in this type of activity (i.e. synthesis work)? It seemed to create confusion and hamper creativity. Discussions with some of the participants revealed that they did not think that the Commander should be part the synthesis, partly because it's not realistic, partly because his presence and his input might hamper the creativity of the work.*

The process itself can in some aspects be as important as the documented outcome of the process. How can the knowledge generated in the process be made available to the rest of the staff? The group did not use previously generated reviews or analyses, nor did they use the strategic documents. They did not take the Commander's Intent (CI) as a starting point which proved to create problems later in the experiment. Perhaps the many analysis-steps confused planners and increased the risk of losing things they had learnt previously? This is a reoccurring issue i.e. how do we keep track of already processed phases and mechanisms and draw on what has already been 'sense-made?

The participants seemed to think that it was difficult to differentiate between the two parts of the ACD (i.e. what and why). They were listing the same things in part one and two - only in a somewhat different way. They had some difficulties defining what 'Why' meant in this specific task and how to separate the 'Why' from the 'What'. The two steps in the ACD might be too similar.

3.1.1.4 Identify key questions

The Identify Key Questions mechanism was carried out rather quickly by the command group (with advice from the concept developers and one of the players who had previous experience from scenario planning methods). No survey questions or workshop questions were created to evaluate this process. Consequently this mechanism is only briefly described.

The choice of key question concerned both timeline and subject for subsequent Generation of Future Scenarios. One of the most common scenario planning methods in the literature (the Shell method) recommends that such a key question is set. The choice of subject reflected the 'pillars' of the mission and thereby gave the Commander the opportunity to direct his staff to consider the socioeconomic, political and security aspects of X-land. The key question was: *What forces will shape X-land in 3-5 years time?*

3.1.1.5 Identify Driving Forces

At the onset of the second experiment week, the mechanism Identify Driving Forces (IDF) was initiated. The mechanism was divided into four different stages/steps which are described below.

Step one: In the first step three groups were created: Political, Security and Social/Economical. Each group had members from EBP, KS, R&G and Role players. Each sub-group reviewed the outputs from the previous mechanism (ACD) focusing on; A) Driving Forces for current situation; B) Actors (including power and interests); and; C) Events and trends in the current situation.

The groups approached the task in a similar way. They started their work by reading through and discussing the template for identifying driving forces for future scenarios. The groups then started filling out the template, clustering actors and highlighting actors that would influence short-term developments in X-land and looked at events and trends in the current situation.

Step two: During the second step each sub-group prepared for the brainstorming by addressing eight questions:

1. Which actors can and will shape the future?
2. How do these actors derive their influence/power (think also about capabilities)?
3. What are their interests and motives?
4. What are their plausible policies, approaches and actions?
5. What are their plausible reactions to others?
6. What structures or sources of instability could plausibly shape future events?
7. What trends could plausibly be seen in the future?
8. What future events could plausibly occur?

The outcome was documented in a template for subsequent exploitation.

Step three: The third step was a joint facilitated brainstorming to address the key question "What forces will shape X-land in 3-5 years time?". The technical tool BEATA was used. Each input should be a candidate Driving Force. The sub-group leads put their driving forces together on the screen. The factors that were presented were rather heterogenic, with actors, events and factors mixed together.

Step four: The fourth step was a synthesis session lead by the command group where they tried to refine and seek causal relationships between Driving Forces (in order to identify the most important and most uncertain Driving Forces). In practice, the factors were clustered according to similarity. Each cluster was then given a label which described the characteristics of the cluster. At the end of the synthesis the larger group ‘voted’ on what two clusters should be used for subsequent analysis, based on criterions of ‘Important and uncertain’ and ‘Driving forces that EUFOR can affect’. The voting was a way to provide the Cdr with input for his decision regarding what driving forces should be pursued in the later phase of scenario-building. After lengthy discussions, the commander chose two driving forces that the teams later worked on, developing scenarios according to the mechanisms.

Participants’ opinions: The participants thought it was difficult to work on this mechanism. They thought it was hard to understand the structure of the mechanism and they did not quite understand the link between this mechanism and previous and subsequent steps. They wanted more precise and clear instruc-

tions about the mechanism. They did not know what was expected from them in the brainstorming activity and they thought it was unclear how the output would be used in the subsequent group work. The EBP team thought the interaction with R&G and KS (as integrated members of the team) was fairly good but due to time constraints they did not think they had time to get information from the KS cell (e.g. get response on sent RFI's).

Observer remarks: *During the first two steps the groups that spoke Swedish had more intense and inclusive discussions than the other groups. The civilian representative was a very valuable addition in the social/economical group, challenging 'group-thinking' and biases. However, one need to consider what measures should be taken to make sure that the groups don't miss relevant perspectives. No one was using the already existing documentation (except for a short glimpse now and then) and the groups just listed facts and assumptions as they went along in the process. How can one systematize the procedures so that previous findings are used and developed and that every step in the process doesn't start from zero?*

R&G actors were integrated in the teams which provided an additional perspective. However, when integrated in the teams, one must keep in mind that there is a risk that the R&G actor is influenced by the planning team and the perspective that the R&G actor is representing may be too dominating.

The brainstorming session seemed to be somewhat ineffective; a lot of time was spent on 'collecting' what had already been produced in the sub-groups and the activity did not engage all the participants. The final part of this mechanism can be questioned. Is it really good to conduct a voting? Did the participants really understand what they were voting on and did the commander find it useful? He was supposed to choose two key driving forces but his choices were questioned and changed several times.

3.1.1.6 Develop Scenario Logics

The Develop Scenario Logics (DSL) mechanism was mainly carried out by the command group, with support from the EBP team and it was completed rather quickly. No survey questions or workshop questions were created to evaluate this process. Consequently this mechanism is only described briefly.

The scenario logics were generated immediately after the two key driving forces were chosen. The mechanism aims to generate an outline of a few plausible future scenarios according to the selected key driving forces. The 'sticky

names'[14] were also chosen at this time (by the EBP team) which gave each scenario the degree of personality it needed at this point. The sub-group work then proceeded with developing scenario descriptions (DSD) – by introducing other driving forces (DF) to the scenarios and reasoning about their manifestations and consequences. It should be noted that KS work in finding credible associations between DF was also of benefit to the teams in DSD.

3.1.1.7 Develop Scenario Descriptions

The Develop Scenario Descriptions (DSD) mechanism aimed at developing four scenario descriptions, i.e. to fully characterise future scenarios and plausible storylines for each scenario. The participants were divided into four sub-groups. The work from two of the groups is outlined below[15]. They were tasked to develop a specific scenario (based on the key driving forces) and at the same time consider the impacts of other driving forces.

Group 1 – The eye of the storm: The group had a long discussion regarding what method to use. They stressed the importance of collaborating with other actors (e.g. R&G and civilian experts) and having an iterative approach, i.e. to revisit their work regularly. The group started going through the material they had previously produced that could help them to develop the scenario. They started to derive scenario developments from the two driving forces that had been given to them, placed in the context that was specific to the 'eye of the storm' group. The group started with a description of the situation at the end of the period and then traced developments backwards. After that they did the same work on the rest of the driving forces and all of the developments were placed in a PMESII-template. The discussion was very productive during this stage and the players seemed to appreciate the intellectual process. They listed a few hypotheses which later were processed as knowledge requests. Later they discussed the difference between assumptions and hypotheses without reaching any conclusion.

Group 4 – Armageddon: The group analyzed the task and reviewed the material that had been produced in previous mechanisms. The group leader stated that it was important to understand driving forces and the system map to be able to create a timeline and to sort out what the important actors might do.

The group decided to start working together to make use of the different perspectives from the participants. After a short discussion on different issues

[14] One of the key things in this mechanism is to come up with "sticky names" for the scenarios, names that are easy to remember and somewhat self explanatory.

[15] Unfortunately there were not enough observers to follow the work in all the groups. Therefore, observations from only two of the groups are reported here.

regarding how to structure their work, they began filling out the template containing how the different driving forces might look in the scenario. R&G contributed by elaborating on the irregulars. Together with the other participants' questions and remarks the group created a good picture of the irregulars which they probably wouldn't have been able to produce without the R&G expertise. The next step was to list how the different actors might act in the scenario. During this part the group again interacted with the R&G team to get additional information on some of the actors.

The group worked on a timeline for the story. First they described the state of affairs in 3-5 years in broad terms. They then worked their way backwards in time throughout the intervention, breakdown and declining phases. These phases were also described in broad terms focusing on the main events that led to the 3-5 year state. They found four different main threads that were described through several events in the different phases. The writing was divided into four parts; the end state, actor related events, political events and economical/misc related events.

After writing in four different constellations the different parts were put together. They took into consideration and tried to apply: election results, deployment, transition, key actors together with the guidelines from command group regarding actors, events, PMSEII and driving forces. They also considered consistency and plausibility. Alongside the story writing a ppt slide was produced that described the different phases.

Scenario Briefing: At the end of the DSD the sub-groups presented the scenarios for the command group and the rest of the HQ. When all four groups had presented their scenarios the commander had some reflections and questions for each of the groups. He asked some questions about all the scenarios to check plausibility and highlight the importance of considering different aspects of the situation.

Participants´ opinions: Most of the participants stated that they understood what was expected from them in the mechanism. They thought it was fairly easy to work on this mechanism - they finally started to understand "the big picture". They stated that it was complex but interesting and challenging for the intellect. They thought they considered problems from a diverse set of perspectives to a fairly large extent and most participants stated that they considered multiple hypotheses quite a lot. The participants thought they generated the expected outcome to a large extent but some were not quite sure of how the results were going to be used.

The opinion of method and guidance varied both within and between groups. Some participants thought that they still needed more guidance and support to make the creation of the scenarios easier whereas others thought that the templates that were provided limited their creativity. The participants thought that the creation of stories requires vivid imagination, good background knowledge and a good vision of expected outcome. The role-players or other persons from outside the group have an important part in the process of checking the plausibility of the stories.

The EBP team participants stated that the collaboration with KS, R&G and other actors (e.g. civilian representatives) worked very well. They thought that this way of working, in integrated teams, worked very well. When it comes to the involvement of the commander the participants suggested that he should "walk around" and take the temperature on all groups, gather influences from all groups, to get a more "collective" view of the work.

Observers´ remarks: *The groups working process contained good discussions with some depth and everyone was involved. The focus was on understanding the situation rather than producing results, i.e. they started working in a relatively free form instead of focusing on method.*

The process of management of hypothesis and assumptions was never fully played out. There were a lot of hypothesis generated but very few were managed. There was also confusion regarding what was an assumption and what was a hypothesis.

3.1.1.8 Identify Conditions

The Identify Conditions (IDC) mechanism started with an experiment control briefing, see Figure 5. After the briefing the HQ was divided into five groups. The work from two of the groups is described below[16]. The group constellations were almost the same as in the previous mechanism. A fifth group, the "lagom" [17], group was formed by appointing one person from each of the four groups used in the development of scenarios. The purpose of the fifth group was to create a "less extreme" scenario that was in line with the commander's intent.

[16] Unfortunately there were not enough observers to follow the work in all the groups. Therefore, observations from only two of the groups are reported here.
[17] "Lagom" is a Swedish word that means "enough" or "adequate".

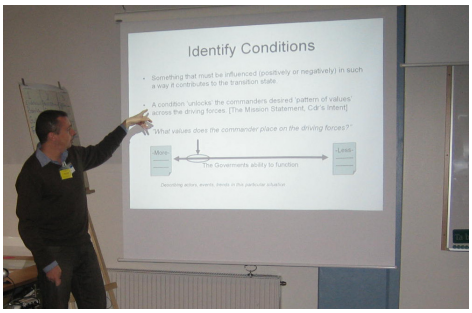

Figure 5: Identify conditions briefing.

The "eye of the storm" group: The group decided to look at possible conditions from all the scenarios that were generated the previous day. Initially they worked 'intuitively', and later deducted conditions from the scenario. After a while the group came back to their own scenario. They struggled throughout the session trying to reframe from looking at the best-case scenario (peace and love). The group had a long discussion on the issue of traceability and how this kind of product could be transferred to other groups/units without loosing the 'story' that lead up to the conclusions.

The "Armageddon" group: The group started by agreeing on the purpose, i.e. that they were to identify conditions to help avoid the Armageddon scenario. They continued with a brainstorming session where they listed conditions. The main driving forces from the scenario work were used as a checklist. Previous documentation (besides the main driving forces) was not used in a methodical way.

Back-briefing: The sub-groups presented the conditions they had generated relating to each scenario for the command group and the staff. The 'Contained crises' group divided their presentation into conditions where it is *possible* to interfere, and conditions where it is *not possible* to interfere (this group had a civilian participant/group leader). The 'Armageddon' group made their presentation by showing the driving factors from the scenario work, and the conditions they had found in order to avoid the Armageddon scenario, clustered on a timeline to transition state. The 'Lagom' group reasoned that their task was to identify the conditions to avoid the three scenarios not favourable, and to find the conditions supporting the desired scenario (Peace and love).

Command briefing: The Cdr presented his identified conditions for the subsequent Campaign planning to the HQ staff. Civilian competency in the formulation of conditions was highlighted as crucial in order to describe the conditions in a way that is useful in collaboration with external actors.

Participants' opinions: The participants thought that the integrated groups were a success. They stated that they had a good understanding of the scenarios and that it was easy to find conditions. The participants understood what was expected from them in the mechanism and thought it was one of the easiest mechanisms. One of the participants stated that this day was THE eye opener. They collaborated with KS and R&G (integrated members in the groups) and they thought that the collaborations were very good and generated expected output. However, they missed knowledge from KP (e.g. systems thinking in the condition work).

Observers' remarks: *Except for the main driving forces, previous documentation was not used in a methodical way. It was more of "free thinking" and the previously documented material was not used to enhance the quality of the analysis or to make sure that conditions and relevant factors were not missed. Most of the information that had been generated previously was stored in the system and available for reuse.*

3.1.1.9 Management of hypotheses and assumptions

The process of managing hypotheses and assumptions was never fully played out in the experiment. There were a lot of hypothesis generated but very few were managed. There was a lot of confusion regarding what was an assumption and what was a hypothesis. The different groups managed the hypotheses and assumptions in very different ways.

Observers' remarks: *There was a perceived increase in managing hypotheses and assumptions over time. At the beginning of the first week the results from the surveys show that 75% of the participants thought that they did not consider multiple hypotheses. At the end of the second week most participants considered themselves to see problems from a diverse set of perspectives and being able to consider multiple hypotheses to a fairly large extent.*

Another fact that hampered the handling of hypotheses and assumptions was that the KS personnel did not have more knowledge about the scenario and the actors than the EBP team. The EBP team even refrained from sending knowledge requests on several occasions as they felt that KS could not provide the information they needed in time[18]*. KS also felt they had limited time to handle knowledge requests and to analyze hypotheses and assumptions (mainly due to the frequent interaction in subgroups).*

[18] It should be mentioned that the aim was not to handle *all* knowledge requests within this experiment (that was not realistic given the preconditions in the experiment). Instead the aim was to handle *some* requests to examplify how it can benefit the planning process

3.1.1.10 Campaign formulation workshop

A Campaign Planning workshop was conducted with the Command group, the entire EBP team, a couple of KS members and two military Subject Matter Experts on Operational Planning.

The purpose of the workshop was to discuss the applicability of the conditions that had been generated through the scenario based planning and relate it to Guidelines for Operational Planning (GOP). Further, the aim of the workshop was to:

- Get the participants' views on how we can use the output from 'Identify Conditions' mechanism for Campaign Formulation
- Help us understand whether we are better prepared to build a campaign plan
- Help JCDEC identify suitable development areas for Campaign Formulation

The participants were introduced to the topic of Campaign Formulation and GOP. An experiment control representative gave his view of the added value from the way the groups had worked in the experiment. He emphasised, for example, that; the participants had a critical approach but remained open-minded; took time to engage other actors; considered a broad set of possible futures for X-land; and; planned in harmony with each other.

The participants were divided into two groups and were instructed to discuss a number of focus questions for an hour and then come back to brief the big group and have a common discussion. One group focused on the past, i.e. discussed if the work they had undertaken over the last couple of weeks could be used for campaign formulation. The other group was instructed to focus on the future, i.e. discuss to what extent the mechanisms can be operationalized in a near future and be integrated in the GOP.

Group "Past": The group thought the work that had been undertaken in the experiment was *suitable to be taken forward to Campaign formulation*. One important question is how to take care of the knowledge that was accumulated, i.e. how to ensure traceability. The only shortfall of the mechanisms that the participants raised was the importance of having a lot of *overlap between the staff and the commander* to have an enhanced understanding of the situation and the decisions that need to be made, i.e. to find ways to transmit the essence of the knowledge.

The participants thought that they had *a rich and deep understanding* of the environment, i.e. a better/deeper understanding than with traditional methods especially since it was created in a short period of time. However, some participants raised the concern that with the broad view there is a risk of losing things along the way because the military way is traditionally focused on "handing

over" and then "forgetting". It puts high demands on the organisation and it is important to have civilian actors involved in the process. The participants also said that there are differences in ways of working between civilians and military which must be considered.

Group "Future": The group stated that the method had given them a better understanding of the situation and uncertainties and that it made them *look at the problems in a lot of different ways*, which hopefully lead to better planning. Regarding the possibilities of operationalising the mechanisms in the near future the group thought that *it would take time to transform the mechanisms into SOPs*, but that this should be the next step. They also stated that the effectiveness of the mechanisms will very much depend on the command culture.

The group thought that the work *can be injected into to current GOP planning process*, even though some modification may be needed. There is a risk that this method might create different mechanisms than all others HQs, ex EU, EU partners etc, which would affect the whole chain of command. The group thought that we need a revised/improved campaign formulation process to exploit the mechanisms.

Furthermore, the group stated that the R&G team was valuable; they had the time to create a better and more thorough understanding of the situation. Perhaps R&G should only be used in specific steps and not know what blue are planning. Regarding the organisation of the HQ, the group's suggestion was to use traditional Js but still be able to form joint groups when necessary.

Discussion with both groups: The groups presented the results of their work and then a common discussion was held. The facilitator raised a number of questions. The first question was: "how do we ensure that every aspect/perspective is heard and noticed and gets a fair hearing?" Some participants thought that classification can be a problem. If you spend too much time classifying everything, it will be hard to retrace the whole picture. Storytelling might make that part easier. It is also important to consider when to use standard briefings and when to use for example dialog as an instrument to increase understanding and to pass on information. One must always keep in mind that it is in the interaction between persons knowledge is created, not by reading documents and that striving towards consensus risks losing a lot of perspectives in the process.

The second question for discussion was: "what would make you choose this method for a real operation?" Participants thought that it would be preferable to be able to evaluate the method after a plan is executed.

Finally a general discussion was held regarding the mechanisms and GOP. Several participants stated that they thought that the mechanisms would be

possible to implement without changing the GOP. Furthermore, participants discussed whether it was possible to implement the mechanisms at one (operational) level without implementing it through the whole chain of command. One workshop participants stated that one useful output from the experiment was the way that the conditions had been expressed and that that type of language would make interaction with external, civilian actors much easier.

3.1.2 General findings

3.1.2.1 The role of the commander

It is hard to draw any final conclusions about 'the role of the commander' after one experiment but there are some observations and opinions from participants that can be highlighted. Workshop discussions and survey results show that the participants thought that the command group sometimes was too disconnected from the rest of the staff. During some phases they were tied up in meetings and/or training which limited the interaction with the staff. It is important that the command group is part of the sense-making process so that they get a better understanding of the environment. It is also important to find ways of keeping the staff informed about outcomes of different meetings with external actors.

Results show that the participants thought that future commanders have to be trained in a wider range of environments and cultures than today to be more socially interoperable. Furthermore, participants stated that it is important that the commander takes part in the staff work as a good listener and "one voice among others". They thought the commander should "walk around", take the temperature of the staff and gather influences to get a better overview of the staff work and the complexity of the situation.

During the experiment the engagement of the commander was sometimes perceived as positive and sometimes as negative. At times the commander's engagement contributed to the common understanding within the staff by showing an open mind, curiosity and by asking the right questions. On other occasions the participants thought the engagement of the commander hampered creativity and created confusion. This shows that the way in which the commander chooses to interact in the process can influence the result to a great extent. The Swedish EBAO concept proposes that the commander has to be more actively engaged throughout campaign planning. There is a need to differentiate between command decisions and command guidance/direction. Even though the commander is present and engaged in the process, it doesn't mean that he or she always should make decisions. There is a need to further investigate how the

commander should be engaged in the Campaign planning to best support the Sense-making process.

3.1.2.2 Collaboration

One of the objectives for this experiment was to study collaboration within the HQ. The EBP team collaborated with a lot of different actors both within the HQ and with external actors (e.g. UN and EU representatives as well as civilian experts).

The results show that the collaboration varied a lot (both quantity and quality) between the different mechanisms and between the different sub-teams in the HQ. The collaboration between EBP and KS mainly worked in two ways: through KS Liaison Officers (i.e. KS members integrated in the EBP team) and through knowledge requests. The first part, with integrated KS officers, was appreciated by the staff and it seemed to provide greater depth to the analysis. However, the other part (KRs) did not generate the same effects. The EBP team felt that the KS team could not provide the information they needed in time and therefore on several occasions refrained from sending KRs. Time was a critical issue, most of the participants stated that they thought that the collaboration with KS would have been much better if KS had had time to prepare. For example, the Review of Situation could have started before the experiment so that KS could lead that mechanism in a better way.

Figure 6: Staff-work in the KS room.

The EBP team did not interact much with R&G at the beginning of the experiment. The R&G team needed time to build their knowledge and the EBP team did not quite know when and how to use R&G. The first time that the R&G was used by EBP was during synthesis in the ACD mechanism. On that occasion the point of view of R&G players was somewhat disregarded. However, as the experiment progressed the groups collaborated more and more. Generally the EBP team thought that the collaboration with R&G was valuable and added important information and new perspectives.

The collaboration with the command group was rated as good but the EBP team wanted a closer interaction, i.e. they felt that they could not always get hold of

the command group and they wanted them to be part of their work to a greater extent. They also stated that it is important to investigate how to share information between the command group and the rest of the HQ.

The collaboration with other actors (e.g. UN and EU representatives and civilian experts) was sometimes rated as good and sometimes not so good. When integrated into the team they added new information and perspectives that were judged to be crucial for the process. However, the team thought that it was difficult to know who to collaborate with. Since this could be a problem related to the experiment setup the civilian representatives took the initiative and offered to help in some mechanisms. This was mostly appreciated by the team but some participants stated that they sometimes felt forced into interacting with civilian representatives too early in the process (i.e. not giving them time to prepare properly).

Most participants thought that the integrated teams, with representatives from EBP, KS, R&G and civilian organisations, was a very good way of working and helped them to consider problems from diverse perspectives. However, both KS and R&G must be given time to work back-office as well otherwise they just become another officer. Time constraint was judged to be the main barrier to *all* collaborations.

3.1.2.3 Previous experiences and competence

Most of the participants were not familiar with the scenario based planning method that was used in this experiment. Therefore it took quite a lot of time to initiate the mechanisms. A lot of time was spent on trying to understand what to do in the different mechanisms and how to approach the task. The participants also had difficulties in understanding how the different mechanisms were related. Most participants wanted more guidance and support from experiment control. They also wanted more time to allow reflections on the ongoing mechanism and its nature. The work on the mechanisms was often perceived as rushed. It would probably have been good to start each mechanism with an educational briefing to clarify aim, purpose, activity and expected output.

Another issue that may have affected the campaign planning process was the participants' limited experience from operational HQ work and operational planning. Only eight of the participants in the EBP team had worked in an op-level military HQ before. Four of them stated that they had a lot of experience from operational planning - the rest had limited or very limited experience from operational planning. Many participants stated this affected the staff work negatively and that they found it hard to compare the method in the experiment with traditional methods like GOP.

3.1.2.4 Use of information

During the planning work very little time was spent on reading and analysing available scenario material and guiding directives like the different UNSCRs and the Strategic Guidance. A lot of time was spent on discussing issues or information that was already available in the system. This could be a result of the high pace of the experiment, i.e. the participants felt that they did not have enough time to search for, and analyse, information. Part of this problem could probably have been solved if the Review of the Situation had been conducted before the experiment. It would have saved some time and also ensured a good starting point in the experiment. The planning team needs time to digest the output, and this activity is very important to situate Mission Analysis.

3.1.2.5 Language barriers

Language seems to have had a large effect on the experiment. While the method should support, for example, the creation of hypotheses and assumptions and engagement in various collaborations it was apparent that these activities were affected by language skills. Working in English impacted the level and depth of the discussions in the groups. When the HQ spoke in Swedish during sub-group work the dialogue seemed to generate much more questioning and critical thinking. When using English less people spoke their minds. Furthermore, the participants with better language skills dominated the discussions, which may have affected the process.

3.1.2.6 Cultural differences

The participants thought that cultural differences sometimes made the work process and collaboration difficult. The military personnel and the civilian representatives were accustomed to different ways of working. Several HQ players stated that they were ‘product-oriented’, partly because that lies within military culture. Civilian representatives seemed to be more accustomed to questioning and criticizing assumptions. This might be partly because of cultural reasons, i.e. military structures and culture do not foster argumentative dialogue or questioning of superiors. Since many of the civilian representatives were not afraid to argue their case they gained a lot of influence in the discussions.

3.1.2.7 Facilitation

In some of the mechanisms a facilitator was used (e.g. during brainstorming sessions and some discussions). One must consider that the personality, skills and approach of the facilitator most likely have a large impact on both the process and outcome of a mechanism. One can assume that complex mechanisms and concepts will need a facilitator. This has proven to be highly valuable in other experiments with somewhat similar concepts and processes. Such a facili-

tator needs to be inclusive, knowledgeable about the process and knowledgeable in different aspects of the issues at hand. It is important to further investigate what type of facilitator skills are needed for the different mechanisms.

3.2 Knowledge Support

This chapter describes the KS observations and results obtained during the experiment. The results are described in short. For more detailed results see the KS report[19].

3.2.1 Day by day observations

The work procedures of KS were highly integrated with the Effect Based Planning team. In the following sections, only the KS specific results are presented. The general staff procedure is thus excluded. Instead, references to the corresponding EBP result sections are included.

3.2.1.1 Day 1 - Review of the situation

For the general staff procedure on this mechanism, see section 3.1.1.1.

At the end of the day, a half hour workshop was conducted. During the workshop, the list of assumptions was discussed with experiment participants in order to capture if their views corresponded with experiment expectations. In addition, participants and observers answered a questionnaire, containing a pre-determined set of focus questions, individually.

Data from the workshop indicated that much of the expected activities had not yet been fully manifested. The reason was judged to be insufficient time. Although the JIBP process had been initiated, no products had materialized. The activities during the day focused on the Knowledge Production cell conducting an initial overview of the conflict area. Day 1, thus, largely served as 'read-in' time on scenario material.

Data from the questionnaire gave no clear indication on what kind of information from KS is needed to appropriately undertake the "review of the situation mechanism". Neither was any results obtained regarding how to capture Knowledge Requests and make them usable to KS. Many participants argued that questions on problems they had come across and improvement to KS functions could not be answered at this stage of the experiment. Still, participants stressed

[19] Wikberg (2008) (Ed.)

the importance of KS personnel working actively and integrated in the EBP teams.

3.2.1.2 Day 2 – Evaluation of factors and Mission analysis

For the general staff procedure on this mechanism, see section 3.1.1.2.

KS's role in the mechanism was to have one or more person from the team represented in the command group activity. Parallel to this, the rest of the KS team would conduct staff work.

Data was collected by observers throughout the day and in a workshop at the end of the day. After the workshop, the KS team was divided into three groups each asked to answer a set of questionnaire questions.

During this workshop it was recognized that the prescribed activities of the KS concept would not occur according to the in advance defined time plan. In general, hypotheses about the conflict were not being defined. Instead, analytical reasoning about the conflict was expressed as assumptions. In addition, these assumptions were not transformed to comprehensive command and control information requests handled by the KRM tool. The consequence of this was that the hypothesis testing analysis from this moment and the rest of the experiment shifted focus from the expected activities above to the "meta level" hypotheses and assumptions on the KS concept expressed in the analytical concept paper and the experiment objective.

Observer notes and results from the group work confirmed the situation indicated in the workshop. The observer made the judgement that there was a substantial lack of time during the day. The impression was that the KS team had not been able to sufficiently engage in deep analysis. The lack of time also made it difficult for the KS teams to work with a long-term perspective as most of the time was spent on the fact-finding process.

3.2.1.3 Day 3 - Completing Review of situation and Mission analysis and initiation of Analysis of conflict dynamics

For the general staff procedure on this mechanism, see section 3.1.1.2. and 3.1.1.3.

Data was collected by observers and in two separate half-hour workshops at the end of the day. The first workshop was an evaluation of the experiences from the work in the sub-groups. The second workshop focused on defining what participants thought had been the major challenges during the experiment so far.

Observer notes indicated a good staff work in KP and preparations for the briefing. However, some members expected more discussions about the interac-

tion within KS and between the different cells. The analysis procedure seemed ambiguous and participants could not clearly define the meaning of "threats". It was also a challenge to seek information at the same time as the analysis and information discussion was on-going. The groups' perceptions were that they needed to be provided with "correct" information to be well prepared for their tasks. Finally, it was perceived as a restriction to directly document the work in digital format. There seems to be a need of visualizing the method's different steps in the group work.

The outcome from the group workshop implied that opinions on whether the proposed model for analysis was helpful varied. In general mixed teams and face-to-face interaction was judged superior to formal briefing and knowledge requests in order to create effective relationships with KS.

A number of problems, perceived to be the major challenges during the work so far, were defined in the second workshop.

- That EBP, which KS is supposed to support, is a "moving target", and KS has struggled to find an appropriate work-load balance which would allow it to participate in an integrated way in the EBP.
- Difficulty in achieving the expected systems approach to the analysis. Instead it had to a large extent been limited to stove-pipe perspectives.
- Technical restrictions; not technical failures but limitations regarding possible ways of undertaking tasks due to limited technology available
- Uncertainty whether the ACD factors were suitable to inspiring creative thinking. The method felt like a limited part of a SWOT analysis and was perceived to be too coarse.
- Organisation of work in groups and tasks was perceived to be too ad hoc and insecure. KS should have a KS-specific goal in each mechanism.
- Lack of a sceptic approach when assessing information in the database, which had not so far been questioned.
- Planning work being too driven by preparing and executing briefings. Too much focus on formal audience briefings and the work in general being too little information or process focused.

3.2.1.4 Day 4 - Completing Analysis of conflict dynamics

For the general staff procedure on this mechanism, see section 3.1.1.3.

Parallel to the synthesis work conducted by a smaller team, the major part of KS documented their experiences of KS so far. Participants were instructed to in free-text MS Word format document conclusions and opinions they, from their individual perspective, thought should be included or considered in the concept.

At the end of the day the written documentation from the experiment, including, background, method, result and preliminary conclusions and recommendations were presented and validated for the KS team in a workshop.

Outcome from documentation of KS participants experiences of KS so far were compiled into one comprehensive text and inserted in the conclusions section as a preliminary body of conclusions. Validation by participants was done later the same day in the KS workshop. No specific issues on the compiled documentation above were raised. Instead, the workshop mainly focused on issues regarding the forthcoming analysis work.

3.2.1.5 Day 5 – Identify Key Questions

For the general staff procedure on this mechanism, see section 3.1.1.4.

Observers were successively taking notes in order to capture and describe the flow of events. However, the day was largely focusing on EBP in terms of the *why* part of the ADC process.

Still, the observer noted that the whole process seems to be difficult to formalize in Documentum in the way that was planned by the documenters in the beginning of the process. Even if they had good amount of recourses (two persons) it was hard for them to use Documentum during the whole phase. The technique wasn't helpful in the chosen method.

3.2.1.6 Day 6 - Identification of Driving Forces

For the general staff procedure on this mechanism, see section 3.1.1.5.

Data was collected in a questionnaire at the end of the day. The KS groups were divided into their cells and were asked to discuss and answer a number of questions focusing on the interface and functionality of the work environment and software relevant to the KS work.

Data from the questionnaire indicated that the layout in the KS room was appropriate. The solution of having several screens was perceived as positive since it allowed for a good overview when working with several systems. Two screens should be considered a minimum, especially when looking for information. It was often necessary to use one screen for DAM/BEATA and one for exploring information. The big screens were good for teamwork and were very useful.

The general opinion was that the design of the workplace and available technical system was sufficient and sophisticated. Participants were positive regarding the solutions and thought that the underlying principles of the concept were excellent. Still, they recognized that KS had not fully tested the systems yet and

that there had been a lot of issues with reliability of the systems. It was suggested that the organizational structure should be emphasized in a better way, e.g. marked chairs for head of KS and each cell. The purpose of which would be to facilitate coordination, although one must also be aware of the risks of creating too high fences between cells.

The training issue and the question of whether participants constituted an appropriate group were also raised. There were different views on this. Some participants meant that the lack of experience limited the value of the experiment. Others meant that the problems experienced so far will always be present whenever new staff is initiated.

Finally, participants suggested a number of improvements to the workplace.

3.2.1.7 Day 7 - Develop Scenario Logics and Scenario Descriptions

For the general staff procedure on this mechanism, see section 3.1.1.6 and 3.1.1.7.

The mechanisms of “Develop Scenario Logics” and “Develop Scenario Descriptions” were initiated at mid-day the second day of the second experiment week. Within KS, analysis aiming at defining how the different driving forces depended on each others and thereby the uncertainty in the operational environment was undertaken. This was done spontaneously in a group session were relations between the clusters identified the previous day were suggested and discussed. In this discussion, the KS concepts ideas of the intelligence emanating from diversity were illustrated through the competing perspectives of the KP analysts: a humanitarian perspective competed with a political, a social / cognitive (perception) and an International Community perspective. This resulted in a set of different plausible relationships each representing a theoretical perspective.

Data was collected in a workshop at the end of the day. The workshop focused on the main hypotheses and assumptions derived from the KS Analytical concept and whether participants’ agreed with these. The list of hypotheses and assumptions were presented to the KS team which were then divided into their cells and requested to document their discussion in free-text MS Word format. The workshop was then concluded by a joint discussion were the subgroups presented their answers.

The documentation of KS participants’ opinions of the main hypotheses and assumptions derived from the KS analytical concept were compiled by the analyst into one comprehensive text which was included in the introduction of the conclusions on KS. Validation by participants was done later in a separate workshop.

3.2.1.8 Day 8 - Continued Development of Scenario Descriptions

For the general staff procedure on this mechanism, see section 3.1.1.7.

Data collection focused on changes over time during the experiment week in order to capture improvements and the effects of training.

Participants, individually or in pair, documented their conclusions and opinions on what they thought had changed since the first experiment week regarding the KS work in general, the work in their specific KS component and the EBP, as well as stating any further comments. The obtained files were compiled into one comprehensive text and inserted in the conclusions section as a preliminary body of conclusions. Validation by participants was done later in a separate KS-workshop.

3.2.1.9 Day 9 - Identify conditions

For the general staff procedure on this mechanism, see section 3.1.1.8.

Data collection and analysis focused on validating the compiled preliminary experiment report. On the morning of the 9th day, a review version of the KS part of the Viking 08 Experiment report were distributed to participants. KS participants were asked to prepare for a workshop to be held during the evening the same day by reviewing and commenting the report. Participants were informed the workshop discussion would focus on the question: “Is this the conclusion to put forward from the KS experiment?”

To be able to focus the workshop on the core conclusions and not on semantics or minor details, participants were instructed to:

1. Make notes of minor comments (such as spelling, semantics, individual sentences to include or delete or minor misinterpretations) directly on the paper version and hand over to the analyst.
2. Discuss minor suggestions of easy editing changes directly with the analyst.
3. Use a separate MS Word document to suggest more comprehensive text passages changes and import this to the Experiment Data folder: Subfolder Draft-KS-Experiment report. The text passage would be discussed during the workshop.

The workshop was then initiated by the analyst who gave a short presentation of the conclusions put forward in the report. Then the suggested text passages were presented. Finally, the analyst initiated a “free format” discussion by rephrasing the workshop question: “Is this the conclusion to put forward from the KS experiment?”

The following notes were taken during the workshop:

- Insufficient manning and lack of personnel had resulted in reduced work capacity.
- There were different opinions on the choice of language for the experiment. It was suggested that Swedish should have been used as the working language since a lack of fluency in English might have reduced the participants' engagements. Even though many agreed with this sentiment, it was also noted that there were other considerations regarding choosing English as the working language; for example, the work on the concept could not be documented in two languages.
- Presentation techniques must be enhanced (see KV conclusions).
- The exercise only comprised the initial planning process. KS processes might have greater impact on the execution phase.
- It might be a possibility to use other units and exercises to prepare for analysis; for example, the Swedish Armed Forces Intelligence & Security Centre.
- Comments were made on the open climate; participants expressed that they felt free to be explorative in their experimentation. There was a positive and ambitious experiment lead which is important for the experiment.
- Parts of the experiment had not been executed according to plan.
- 'Development of scenario' was perceived as similar to step 3 in JIPB and questions were asked as to why EBP was responsible for this. EBP being so might be positive for integration but some questioned whether the staff really should create it's own scenario.
- A question arose as whether the generated hypothesis might become self-fulfilling; that is if we rely too much on a hypotheses, we might (intentionally or unintentionally) create the conditions to make it inevitable and absolute.

The analyst then made the changes in the preliminary report which were deduced from these notes. The final result constituted the draft experiment report administrated in the post experiment analysis week.

3.3 Red and Green Teaming

It is worth to emphasize that the Viking 08 experiment was a Discovery Experiment; as such there were no pre-defined hypotheses aimed at being tested during the experiment, in which case it would have been a Validating Experiment. Rather, the purpose of these two weeks was to enact what had been developed in the concept so far and to observe what emerged: such observations are the generating ground for new questions that lead further concept development and experimentation.

3.3.1 Day by day observations

3.3.1.1 Day 1 – Review of the Situation

Procedure & observations:
During the first day the mechanism "Review of the Situation" (RoS) – which was led by KS – was undertaken. The purpose of the mechanism was to develop a shared situational awareness of the current situation in order to provide for mission analysis and understanding of conflict dynamic activities. R&G teaming had no defined role in RoS and the R&G team members spent the morning generating an overview of the scenario and seeking basic information gathering regarding the conflict and the actors to be profiled. During the afternoon the R&G players were informed by KS of which actors were to be profiled: the President Max Bock and an irregular group: the Klykers. The R&G team activity started with a briefing about the concept and the main mechanisms, followed by a deeper explanation of the first mechanism to be undertaken: 'Develop Multiple Hypotheses'. The team was then split in two groups, each dealing with one of the actors. After a review of all the existing information on the selected actors the 'Develop Multiple Hypotheses' mechanism was initiated within the R&G groups. The purpose of the mechanism was to lay out hypothesis regarding the actor's role and position in, as well as its understanding of, the conflict. No real hypotheses were developed during the day but rather facts were gathered and compiled. Discussions regarding the implications of these facts also arose but did not constitute any deeper analysis. The R&G team did not interact with the Campaign Planning team, but began filing Knowledge Requests with KS to obtain further information about the R&G actors.

3.3.1.2 Day 2 – Evaluation of Factors/ Mission Analysis

Procedure & observations:
The day began with a general briefing of the result of the 'Review of the Situation' to the Commander and an integrated mix of the EBP mechanisms Evaluation of Factors (EoF) and Mission Analysis (MA) was initiated as the focal point of the day. After the morning session the R&G groups (President & Klykers) briefed each other on how they had worked during the previous day and brought up questions/comments about the method. Consequently, they briefed each other about the information obtained regarding their respective actor during the previous day. During the day the 'Develop Multiple Hypotheses' mechanism was continued. The participants probed deeper into the history of the actors, filing further Knowledge Requests. Throughout the day questions and information about the actors was further developed into hypotheses regarding the actors by the R&G groups. The Knowledge Request (KR) technology functioned poorly,

causing some requests to get lost and temporarily impeded needed information gathering. The R&G group profiling the President called in a subject matter expert (SME) to supply theoretic information about economic theory (conflict economics) to generate further analytical understanding of 'facts' concerning the Presidents background.

In the afternoon each R&G group briefed a KS representative (from Knowledge Request Management- KRM) on the information found so far. Afterwards each team carried on with a brainstorming session, in which the KRM representative took part, to generate hypotheses regarding their actor. The KRM persons had to return to the KS cell before the brainstorming session was finished; evidence that R&G and KS had not been sufficiently coordinated. Furthermore, since some Knowledge Requests from the Klykers group had not yet been answered, the Klykers participants stated that they would have preferred the KRM representative to attend to the Knowledge Requests than participate in the brainstorming, since formed hypotheses would be mere speculations without KRM providing the needed information about the actors.

Whilst hypotheses regarding the actor's profiles – their history, patterns of behaviours, and relations to other actors – had been developed during the day, few actually regarded the actors' impact on and role in the conflict, as the concept suggests to focus on actors' history as deeply and comprehensively as possible in trying to understand what shaped him, in order to gain a better picture of who he is in the present and his relation to the conflict. The Klykers group was of the opinion that the lack of information from KS prevented them from sufficiently developing hypotheses and thus they had not achieved much more than merely compiling information.

3.3.1.3 Day 3 - Mission Analysis

Procedure & observations:
The day began with another morning briefing for all the experiment staff in which it was decided that the Mission Analysis mechanism would continue during half of the day. After the experiment briefing, the R&G teams once more briefed each other on the previous day's respective work. The problem of unanswered Knowledge Requests meant that one team had not been able to fully develop their hypotheses but could continue to do so during the morning as feedback on their KRs arrived. Just before lunch, the R&G teams moved on to the second R&G mechanism 'Testing-Argumentation'.

The mechanism was introduced with a briefing on its purpose and on the techniques (FBI Analytical Strategies) that the team members should use to carry out their Argumentation sessions. The technique 'Analysis of Competing

Hypotheses' was, for the time being, left aside and would be more thoroughly explained and employed in the coming days. Purpose of the 'Testing-Argumentation' mechanism is to challenge each hypothesis, break it down and see if there are other ways of interpreting it. Eventually the mechanism will reveal which hypotheses are grounded by the evidence available, so that the most truthful profiles of the actors can be developed. However, the argumentation in itself can also foster discovery and learning, which is the main purpose of the mechanism.

To test the hypotheses the R&G concept suggests the use of six Analytical Strategies employed by the FBI: Brainstorming; Backwards Thinking (What If); Devil's Advocacy; Analysis of Competing Hypotheses (ACH); Red Cell Analysis; and Key Assumptions Check. Both groups started using the Devil's Advocacy strategy to challenge their hypotheses and did not move on to other strategies during the day. A representative from the R&G Klykers group made a presentation to the EBP team after a Knowledge Request had been filed by the EBP team regarding the Klykers. The interaction between R&G and the EBP team worked well but did not generate the desired output because too much of the information needed for effective profiling was still lacking.

3.3.1.4 Day 4 – Analysis of Conflict Dynamics

Procedure & observations:
During the day both R&G teams continued the 'Testing-Argumentation' mechanism to try to challenge their hypotheses. The day began with an R&G educational session where the participants were instructed of how to use the 'Analysis of Competing Hypothesis' analytical strategy which "forces" the R&G teamers to challenge their hypotheses by checking and counter-checking them against evidence. Afterwards the R&G teams had a meeting with the KRM representative discussing how the interaction with KS had worked so far. The opinion amongst the R&G Team that the Knowledge Request Management was not working very well was voiced. The previous day KS had expressed their view that the experiment in general was too concerned with 'blue thinking' and facts rather than with probing into analysis.

The problem for Red and Green Teaming was that whilst they had been able to generate 'stories' regarding the actors who were to be profiled, it was difficult to validate the stories without better information support from KS. The Testing-Argumentation mechanism within R&G Teaming was highly dependent on these facts to facilitate further 'critical thinking' and creation of storylines that could still be authenticated. One issue expressed to the KRM representative was how Knowledge Requests were responded to. Even once KS had started responding to the KRs, the response was still considered insufficient by the R&G team. Rather than straight-forward answers to the questions sent, documents *containing* the

answers would be provided, wasting a lot of time for the R&G teamers. Furthermore, these documents did not actually contain the answers, just information related to the question asked, and were actually documents that the R&G team already had access to and had read before sending the KR. Sometimes the KR was simply returned as it was, without any comments or attachments, causing a lot of confusion in the R&G team which did not understand whether this meant that the question had been looked into but no answer was available, or if no one had actually attempted to answer the question. The KRM representative seemed to believe that in such cases the KS team had either not had the information available, or had considered the question irrelevant.

During the mid-morning the representatives from all groups conducting the experiment were brought together in a synthesis meeting with the aim of making sense of previous steps in the planning process. R&G Teaming participated with two representatives to bring in R&G viewpoints into the planning. One of the representatives, however, felt that the opinions of the R&G participants were not taken seriously by the EBP team and that EBP already had formed their opinion of how things were interrelated and did not want to hear any opinions that suggested that reality might actually look differently. For example, EBP had already listed a range of factors including that EUFOR was considered a legitimate force in X-land. The R&G participant expressed the view that EUFOR certainly was not considered legitimate by the Klykers group, an opinion which was mainly disregarded by the EBP team.

After lunch the R&G teams participated in an experiment briefing, contributing with their knowledge about the Klykers and the President of X-land by outlining the profiling of their respective actors so far to the EBP and KS teams, answering their questions about the actors to their best ability. In the mid-afternoon an EBP representative came to invite the Klykers group to come present any relevant information they might have on the Klykers to the planning team. The EBP representative seemed unsure of what the procedure was for requesting information from the R&G team and what information was actually to be gained from the R&G team that the EBP did not already have. It was obvious that the EBP group did not fully comprehend the role or purpose of the R&G team, signalling that the R&G team had been too anonymous.

EBP did not want a briefing about Klykers in general but input into their planning process on specific issues, yet the interaction still ended up taking the form of a briefing-like presentation. The main purpose of the concept is that profiles shall be presented in a ‘live’ manner by the R&G members themselves, through role-playing and speaking in a first person, as if the actor were in the room; therefore briefings passed in an abstract manner should have been avoided.

One R&G member went to EBP to present some information of interest. The meeting was short but seemed to provide EBP with at least some relevant information. Later on the Presidents team was also invited to participate in another EBP group as support to their understanding of the situation. This group seemed more confident regarding what use they could make of the R&G input and the R&G representative sat in on the EBP meeting for a longer period of time, providing input when needed.

3.3.1.5 Day 5 - Analysis of Conflict Dynamics

Procedure & observations:
The day began with each R&G group going straight back into Testing-Argumentation, continuing the Analysis of Competing Hypotheses strategy for testing their hypotheses. The president's team also brought in a KS representative to assist in the process. This was one of the few occasions when the diversity advocated in the concept was actuated in practice. The group dynamic proved to benefit greatly from it, as the difference in mindset and background of the people participating in the session fostered deeper discussion and critical thinking. The Klykers team (still lacking their third R&G participant) had the help of the concept developer and expressed the opinion that they had a hard time conducting independent work, without coaching, particularly during such a tricky phase as Analysis of Competing Hypotheses.

The morning also included preparation for a synthesis session that took place just before lunch. Only two of the R&G team participants (one from each group) could partake in the experiment after lunch, so no further profiling took place. Following lunch there was also a staff-briefing and end of the first week briefing, after which the experiment paused for the weekend.

3.3.1.6 Day 6 - Generation of Future Scenarios: Identification of Driving Forces

Procedure & observations:
The R&G groups continued evaluating their hypotheses using the 'Testing-Argumentation', 'Follow Multiple Leads' and 'Rethink' mechanisms. In the afternoon the general experiment mechanism 'Generation of Future Scenarios', which would continue throughout the week, was begun by the EBP group. The afternoon would consist of a range of sessions identifying the key driving forces in X-land. Straight after lunch the R&G groups individually partook in two sub-group EBP sessions focusing on the identification of important actors and the actor's respective power/capabilities, interests/intentions and policy/approach/actions.

To this end, as well as the analysis of the actor's potential reactions to other actor's actions, R&G teaming contributed with important insight regarding the actors they had profiled, as well as other actors they had come across whilst conducting the profiling. After the discussion the EBP sub-groups, KS and R&G came together in a brainstorming session to come up with ideas of what forces are likely to shape the future of X-land over the next 3-5 years. Only one R&G team member took part in the brainstorming session, but since R&G had provided sufficient information in the previous sub-group discussion, further participation was not considered necessary.

During the day, the Klykers group was also able to disprove one of their three main hypotheses; in addition they merged the remaining two together, creating one hypothesis that was supported by all the evidence. This meant that they had come closer to a likely profile of the Klykers group that could be used to guess and reason around Klykers' actions and reactions in accordance with the four possible scenarios for X-land that would be developed during the following days. The President's team was, however, still struggling to invalidate or validate any of their four main hypotheses regarding the President for most of the day, but eventually decided to drop the two most unlikely hypotheses. In the late afternoon the R&G groups got to try-out a role-playing exercise which included learning techniques for, and practising of, 'stepping into the shoes' of the actors profiled. This was the first time the R&G groups engaged in a 'physical activity' that really forced them to 'think as the actor' instead of the player.

3.3.1.7 Day 7- Generation of Future Scenarios: Developing Scenario Descriptions

Procedure & observations:
The 'Generation of Future Scenarios' continued throughout the day; in the mid-morning 'embryonic' versions of the four potential future scenarios were presented at a staff meeting, which also outlined the course of action for the rest of the day. In the morning the Klykers group was also asked to briefly profile/gather information regarding another group in the X-land conflict, the Valiens, so that they could support the planning team during the afternoon sessions. In the afternoon the experiment staff was divided into four sub-groups, each group responsible for developing scenario descriptions corresponding to each potential future scenario of what X-land would look like in 3-5 years depending on whether successful elections had taken place and how much stability had been achieved in the region.

Two of the questions asked during the morning's staff meeting concerned R&G teaming: "How can R&G contribute to the development of scenario descriptions" and "Should R&G deploy to each of the four teams/ sub-groups?" Most R&G

members participated in the development of scenario descriptions (one in each sub-group) but one continued the profiling. Throughout the day very little work was undertaken on the actual R&G teaming process and its mechanisms, rather the day focused on testing the value of R&G teaming for general campaign planning and bettering 'blue' planners view of the conflict situation. The input from R&G team to the scenario descriptions was good, as was that of the other persons participating in the discussion. Most of the R&G contributions, however, had little to do with the R&G capabilities as such since most parts of the discussions did not directly deal with the profiled actors. In some of the groups, however, the R&G participants were considered to have provided highly valuable information about some of the irregular forces operating in X-land that would not have been otherwise available to the planning team.

One issue regarding the contribution of R&G is the fact that the discussion in most groups is broad and rather descriptive and does not seek to understand the actors at a deeper level than broad potential actions; consequently the particular contributions from R&G teaming at which the R&G concept is aimed did not naturally occur.

However, had the R&G groups actually managed to develop such deep 'in-character' profiles as the concept intended the situation probably would have been different with the profiles 'shining through' the facts.

3.3.1.8 Day 8 - Generation of Future Scenarios: Developing Scenario Descriptions

Procedure & observations:
The day began with the instant gathering of the same sub-groups as the previous day to work further on finalising descriptions of what X-land would look like in 3-5 years, according to the one scenario each group had been given. During the day the use of the R&G players was not as frequent and some did not need to sit in sub-group discussions all the time. However, since the R&G groups had been split up, R&G teaming was no longer really functional in another way than providing information on the profiling already achieved to the scenario description mechanism. No further profiling was therefore done other than probing into the profile by the individual R&G members whilst participating in the sub-groups. In the mid-afternoon a general briefing describing all the four scenarios took place to draw together the work of the past few days and prepare for the next step of identifying conditions.

3.3.1.9 Day 9 - Identify Conditions

Procedure & observations:
During the day the 'Identify conditions' mechanism was undertaken, to develop an understanding of the root characteristics/conditions of the potential scenarios. The R&G players participated in the sub-groups as they had done over the previous days. The experiment was, however, nearly over and the mechanism was very brief. After a few hours the experiment was effectively over and went into evaluation mode and participants were asked to participate in a workshop with the purpose of evaluating certain parts of the experiment.

3.3.2 Impact of R&G teaming on Campaign Planning

3.3.2.1 Part 1 - Review of the Situation, Initiation of Strategic Directive and Mission Analysis

No interaction with the Campaign planners took place during the RoS and MA mechanisms. The first days of the experiment were mainly just used to generate understanding of the scenario and basic information about the actors to be profiled. The participants eventually began developing hypotheses but these were still too immature to be validated or invalidated, therefore R&G teaming generated little of importance to the campaign planning. Within EBP and KS the need for R&G teaming to provide input had not yet arisen either. KS and R&G interacted a lot during this period, but the interaction was only initiated at the request of R&G, which needed information and support (in terms of manning) from KS to develop their hypotheses.

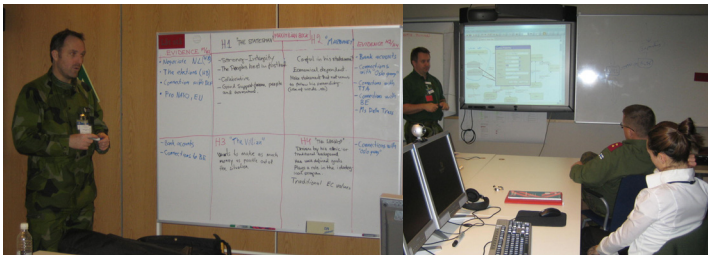

Figure 7: Pictures from R&G teaming room.

3.3.2.2 Part 2 - Analysis of Conflict Dynamics, Evaluation of Factors and Identification of Key Questions

No interactions occurred between the EBP team and R&G team during the Evaluation of Factors mechanism. One reason being that it was early in the process and there was little basis for interaction. Another reason might have been that EBP did not yet fully understand the role and function of R&G teaming or

how R&G could contribute to their work. Some limited interactions with KS (Knowledge Request Management and Knowledge Production) took place, initiated by both Chief of KS and the R&G groups: R&G made the use of subject matter experts from KS and provided KS with important input about the actors profiled, as well as other actors in the area of operations. The collaborations were not excellent but satisfactory, generating most of the outputs expected at this stage in the experiment. Some KS participants, however, requested an environment in which interactions were not so easily and frequently interrupted.

During the Analysis of Conflict Dynamics mechanism R&G briefly assisted the EBP sub-teams – particularly the one dealing with political analysis since at this stage the R&G actors seemed to mainly have political influence on the conflict – by presenting information and hypotheses which R&G thought might assist the EBP teams in understanding the X-land conflict. The purpose was to increase the level of knowledge about the actors profiled by R&G and share important information with the EBP groups. The interactions took the form of discussion and brainstorming, as well as one session of role-playing.

Within the EBP groups the interactions were considered to be mainly really good and symbiotic, generating the outcome expected and providing very useful information to the planners. EBP nonetheless expected the collaborations with R&G to improve further once more time had passed in the experiment and both EBP and R&G were better prepared. Within R&G the collaboration was also considered to have worked well. However, one of the R&G teamers that had participated in an EBP synthesis meeting felt that opinions and analysis of the conflict situation expressed by R&G was overlooked by EBP, which, the participant argued, had already developed prejudiced understandings of the conflict situation and did not want to hear these be challenged.

The R&G players were of the opinion that they had contributed with some important information to EBP but felt that they needed to do more work on the actors, as well as practice role-playing more, to be able to continue to support EBP as the process went further. Some interactions with the EBP team did take the form of role-plays, but those exchanges could have been hazardous since there was not sufficient information available to form well-founded profiles and the role-players risked presenting a false profile. Due to a lack of information other than what was already available to the EBP group, R&G teaming had had some, but very limited, effect on the campaign planners as a whole, even though the interactions that did occur were considered to have generated good outcomes.

The R&G groups also interacted with KS on several occasions. The collaborations included one person from the Presidents group briefing KS on specific details about the actor, as well as representatives from KS supporting R&G by

participating in the profiling, to help broaden the R&G group with new viewpoints.

All these interactions had a positive impact showing KS and EBP role of R&G and how it could be useful to the campaign planners. Amongst those EBP and KS members that had not yet interacted with R&G, there still seemed to be some great confusion regarding the purpose of R&G. Some R&G teamers sensed a sentiment amongst KS that R&G teaming was stepping in on KSs turf. In many instances, this was a consequence of insufficient staffing and could have been resolved by increasing the number of participants so that ownership of tasks would have remained with the groups tasked with that special responsibility.

3.3.2.3 Part 3 - Identifying Driving Forces and Identifying Key driving Forces

During the Driving Forces mechanisms the R&G groups participated in a lot of interactions with both EBP and KS groups. The R&G team contributed to the EBP subgroups tasks of identifying key driving forces by providing important insight regarding the actors they had profiled, as well as other actors they had come across whilst conducting the profiling. This was done by participation in discussions with the sub-groups. After the discussion the EBP sub-groups, KS and R&G came together in a brainstorming session to come up with ideas of what forces were likely to shape the future of X-land over the next 3-5 years. Not all R&G members participated in the brainstorming but the major contribution made by R&G had already been to provide sufficient information in the previous sub-group discussion, which functioned as the basis for the brainstorming.

Once these mechanisms were started there was less and less time for the R&G groups to continue refining the rough profiles that they had generated during the first two days and more time was spent on disbursing the profiling that had been done during the previous mechanisms. This was also a consequence of a conscious decision made by CoS and chief KS (after considering the problem with the concept developer): as the R&G Teaming did not have the manning necessary to assure the diversity requested by the concept to provide depth and quality of the analytical process, they decided that it would be more valuable to set aside this aspect and focus on the support that R&G Team could give to the EBP group, given the profiles that they had developed so far.

3.3.2.4 Part 4 - Scenario Logics and Flesh Out of Scenarios: Generating Future Scenarios & Develop scenario descriptions

During these mechanisms ‘integrated teams’, which included members from EBP, KS and R&G, were created to generate future scenarios of what X-land

would look like in 3-5 years time. R&G interacted well with KS representatives as well as EBP in these integrated teams, which had the purpose of functioning as forums in which in-dept and diverse discussions about the actors and driving forces in X-land could be investigated. The R&G participated as much as anyone in the sub-groups, developing descriptions of each of the potential scenarios. By this stage there was no time at all for further development of the profiles.

The information forming the foundation for the work of R&G was the same that was available to anyone through the database. No one else had had the time to analyse this information as thoroughly as R&G and in general, the interactions generated the output expected and there was a widespread opinion that R&G had provided new and valuable information. One EBP player, however, commented that the information provided by the work of R&G had not been too different from that of a normal intelligence cell and much of the positive response was due to the fact that KS, who would usually provide such information, had not been working according to plan. Had KS done so, R&G had had a more limited effect at this stage of the experiment.

Other criticisms regarded the fact that whilst R&G interactions provided relevant information, many of them were only normal presentations and not the 'role-playing' that had been expected from R&G. One of the R&G participants noted that when collaborations take the form of 'interviews' where the EBP asks questions straight to the profiled actor, played by R&G, EBP will receive answers that are appropriately responding to their currently existing needs. In contrast, when R&G is used for presentations and briefings the risk is that of presenting information that is interesting, but not the most useful to EBP at that particular moment in time.

During role-playing interviews, the participant noted, EBP had also asked more focused and prepared questions, making the process much smoother. Some EBP teamers felt that there had not been enough time to interact with R&G, or that R&G had been hard to get a hold of, whilst some R&G players in their turn felt that a lot of their time had been 'wasted' participating in discussions that did not always relate to R&G teaming.

Many of the R&G players, as well as the concept developer, felt that the participation of R&G in the integrated teams should have been more limited than it actually was. A suggestion was that the players should have participated in shorter scenario discussions and been briefed on the main driving forces, and then gone back to their own teams and continued profiling in relation to these specific scenarios. This probably would have facilitated better and deeper thinking about how the actors would relate to just that specific scenario, which would have been more in line with the purpose of R&G teaming. As it was, the

players rather tended to be drawn into long and superficial discussions about the scenario in general, where they heard and discussed the ‘blue’ perspective. These discussions were also important for the campaign planning but defeated much of the purpose of R&G teaming since the team had no time to work on deeper profiling and stay more focused on how the actor thinks, what he wants, and how he would relate to different situations.

3.3.2.5 Part 5 - Identify Conditions

During the last part of the experiment the R&G participants were once more divided into smaller integrated teams to collaborate with KS and EBP on the identifications of conditions of each scenario. The mechanism was very short due to time restraints and by this stage it was so late in the experiment and the R&G players had been separated from their R&G groups for so long that their impact as R&G players must be considered to have been extremely limited. One concern regarding the collaboration during this mechanism was, however, that R&G was too closely coupled with EBP and KS and risked loosing impartiality – being further influenced by blue thinking – so that R&G may not have had the same impact on the process as it otherwise would have had.

3.3.3 Overarching Concept Observations and Results

At the end of the first week Red and Green Teaming was suffering a few challenges that endangered the experiment as a whole. The overarching problem was that the R&G team was not actually testing the R&G concept. There were two reasons for this; insufficient staff and insufficient information.

R&G teams are supposed to contain no more than the two ‘generalist’ R&G players (players that have no expertise competencies but are still appropriate for R&G teaming with a general knowledge of relevant issues and proper training to the mindset that is needed to conduct this sort of profiling work). However, according to the concept, such generalists should work together with Intelligence personnel, analysts and, at times, Subject Matter Experts (SMEs), throughout the process. These types of additional staffing are particularly important during certain stages of the R&G process, for example during testing and argumentation where diversity in the group is essential to appropriately challenge each hypotheses.

The R&G teams often did not have access to the required expertise and the homogeneity of the staff that was actually present contradicted the diversity of disciplines required for appropriate profiling. All R&G participants in each R&G team were military staff with, more or less, the same background, when required

competencies should preferably have included at least some R&G members with experience from working in Intelligence (J2) cells.

Other required competencies that were essential to the concept were the ability to think creatively, role-playing and being aware of one's own fundamental bias: skills that were planned to be developed during a training week that never took place. The concept developer was present throughout the experiment, assisting with 'coaching' explanations and guidance; however, more training, particularly aimed at developing the competencies and skills needed for the concept and 'unfreezing' the existing mind-set to create space for re-framing was needed. Furthermore, a second 'coach' would have been valuable, so both groups could have been helped at the same time. Only one of the participants had been able to attend the pre-experiment training week, and even so only in part, explaining to a great extent the confusion expressed.

Even if R&G teaming had had a sufficient number of participants and sufficient diversity, the lack of staffing within Knowledge Support was still considered an issue impeding sufficient testing of the concept. Cooperation with KS was a challenge; the R&G participants felt that there was a high workload on KS and that, as a result, it took a lot of time to find routines for coordination and cooperation between R&G and KS. In the meantime there was a great risk of duplication of tasks, and the R&G players felt that information-sharing between the groups were greatly insufficient. All participants felt that if KS had started the experiment a week or so ahead of R&G, 'to get their own house in order', both KS and R&G would have found their respective tasks much easier. Furthermore, R&G should have been able to start after KS, but before EBP, in order to be able to have reached a deep enough level in their profiles to be able to provide the EBP group with information that is grounded in thorough and highly qualitative analysis.

In addition, there were severe technical problems with the Knowledge Requests, which were eventually solved as the experiment went along but had several consequences including a poor ability of Knowledge Request Management and Knowledge Production to appropriately generate answers to Knowledge Requests made by the R&G teams. Almost all the information the R&G groups had on their respective actors at the end of the first week was exactly the same as had been found after 3-4 hours of information seeking on the first day of the experiment. Since no new information had come to hand, the R&G team found it extremely difficult to evaluate and validate their hypotheses. The sentiment within the R&G team was that R&G had to do much of the information generation that was actually the responsibility of Knowledge Production, and reduced the R&G to an intelligence like cell instead of its actual purpose.

Lack of KS staff meant lack of R&G staff, since a KS representative was not always available to partake in R&G procedures as intended. At the end of the first week it was evident that if these themes would remain during the second week there was likelihood that the experiment would not generate any information regarding the R&G concept, since the factors allowing for the real testing of the concept were missing.

In that case, the experiment would fail to answer the main research questions and the concept developer would have gained little further knowledge of the concept as such. The concept developer, together with chief KS and CoS decided, in light of these circumstances, to give up on testing the internal processes during this experiment and instead solely focus on testing how valuable contribution of R&G teaming was to the effects-based planning process. The second task was accomplished and R&G teaming managed to provide valuable support and inputs that were much appreciated by the EBP.

It seems also that the profiles developed by the R&G teams were very close to the truthful profiles, according to the scenario team. However, we cannot define whether this shall be considered at least partly a matter of coincidence rather than a result of the R&G teaming concept itself, since the above mentioned requirements for the internal analytical process were missing. Moreover, it should not be forgotten that the scenario was developed by people who were quite similar to the R&G players in terms of cultural values and so called 'framings'. What might be helpful in future experimentation could for example be to use a 'real life' person to be profiled, or have someone with a different background develop the scenario, as this would provide a greater challenge to test the ability to gather multiple world-views.

3.3.4 Research Questions & Answers

Do the mechanisms used for profiling actually support the concept of R&G teaming?

The answer to the first research question is unfortunately inconclusive and cannot be answered as a result of this experiment. R&G teaming has hardly been experimented at all and whilst some information about the mechanisms and the R&G concept has resulted from the experiment no appropriate conclusions can be drawn regarding the internal processes of R&G teaming on the basis of this experiment. The explanation for why R&G teaming was not fully experimented is simply that some crucial requirements for what is needed to test the concept were not present during the experiment:

- Diversity amongst the players,
- Special competencies of the players and
- Pre-experiment training.

Regarding the diversity requirement it should be noted that on a few occasions R&G was able to 'borrow' personnel from KS, in particular a former police officer with expertise of working with motorcycle gangs. The inclusion of this player led to noticeable changes in R&G group dynamics: discussions were touching upon a broader span of perspectives and the R&G players started paying attention to some details and ask questions they would otherwise have ignored; adopting typical law enforcement strategies.

On the negative side, the police officer, strong of the fact that he "knew how to carry an investigation" was sticking closely to what can be called Standard Operating Procedures in police work, and did not notice details or ask questions that were out of the range of such procedures. Such details and questions, that otherwise would have been missed, were picked up by some of the other group members who approached the investigation with fresh eyes just because they did not have any police work experience. In other words, it seems that having group members with diversity in their background helps overcoming, to some extent, the biases that are typical of one profession or personality type.

People with diverse backgrounds, coming from different professions and areas of expertise, bring into the discussion diverse framings and manners to approach the situation; they pay attention to different issues and ask diverse types of questions. In virtue of this, they challenge each other's biases rather than enforcing a common understanding based on the fact that they all think alike, as it is the case when group members come from the same professional background. We might say that people who look at the picture in different ways and asking different questions contribute with each own little piece of understanding. The collage of all such understandings gives a more complete picture than a snapshot from only one perspective. It should, however, also be noted that such occasions with increased diversity in the group were far too few to draw conclusions that are robust enough to be considered scientific regarding experimentation of the concept. They shall rather be treated as interesting hints for further, and deeper, experimentation.

To a great extent a lack of information also impeded the appropriate testing of the concept (see also section 4.4.1).

How do the players adjust to role-playing and 'red and green thinking'?
All participants stated in interviews that they felt it had been relatively easy to step out of blue thinking even though they had frequently had to remind them-

selves of the need to avoid old patterns of thinking. Whilst managing to think as the actor and not the players and carrying the actor 'with them' during certain stages, none of the participants had managed to do so throughout the experiment. They had, however, all felt that the experiment had at least changed their way of thinking and that they to some extent had managed to build a first person expression of the actor's view of the situation.

Adjusting to 'role-playing' was found to be relatively easy for all players even though the adjustment period varied.

Do aids, such as technologies as well as whiteboards and post-its etc, help the role players in fulfilling the purpose of each mechanism?
The R&G team frequently relied on technologies and aids throughout the experiment. Particularly technologies such as Computers and the Internet proved very essential to R&G teaming, as were aids such as whiteboards and smart boards and software programmes with mind-mapping tools which all assisted the R&G players in seeking-out and structure information, as well as keeping track of their own thinking. 'BEATA' has been used frequently but has also caused some frustration amongst the players due to its restricted ability to visualise connections.

If there had been additional ways of displaying relationships and interconnectedness in Beata it could have been a very useful tool for R&G teaming. Information is another requisite for R&G teamers, and the Knowledge Request tool was essential in seeking information. However, the KS technology was considered deficient. Some R&G players expressed an opinion that it would have been useful to have some kind of tracking function included in the KR tool, so that one could follow what was happening with the KRs and their path of being processed. In addition, a tool for storing sent KRs – similar to a 'sent items' or 'outbox' function in a normal e-mailing system would have been useful.

Are the mechanism descriptions appropriate and sufficient to fulfil the purpose of each mechanism?

Developing Multiple Hypotheses

Most participants seem to feel that the 'Developing Multiple Hypotheses' mechanism was sufficient to fulfil its purpose of developing hypotheses regarding the actor's profile and its understanding of the conflict and its role in it. However, some concerns were expressed regarding how to manage the mechanism if a greater number of hypotheses had been generated during the experiment and requested some kind of tool for 'storing' hypotheses that had been developed but then put aside to be dealt with at a later stage. Another participant argued that the mechanism was not sufficient by itself but needed to include elements of discussion and role-playing to fulfil its purpose.

Testing-Argumentation

The testing-argumentation mechanism is not only considered sufficient to its purpose of leading the players to challenge all hypotheses (i.e. check if there are other ways to interpret them and identify which ones hold) but absolutely essential to the hypotheses working process and to test the evidence with the aim of reaching one 'true' hypothesis that will become a profile.

One issue, however, was the fact that, due to lack of sufficient information, most hypotheses were based on assumptions that were not founded in evidence, making them difficult to challenge using the testing-argumentation techniques, proving how important it is for the R&G concept to have access to sufficient information regarding the actors to be profiled and their circumstances.

Following Multiple Leads

There was an overall consensus that the Following Multiple Leads mechanism was needed and sufficient to assist in building storylines and profiles of the actors that connect to the elements and evidence but without narrowing in on just one storyline too soon.

Rethink

The aim of the Rethink mechanism is for R&G participants to be aware of their bias (what they want and think the actor to be rather than what the actor might be). The mechanism was considered in itself to be an important and required tool for ensuring that the profiles are supported by evidence and not personal prejudice. However, not all participants felt that the mechanism was completely sufficient to prevent such bias.

Have the players managed to fulfil the purpose of each mechanism whilst using the mechanisms?

Developing Multiple Hypotheses[20]

All participants responded that they had managed to fulfil the purpose of the Develop Multiple Hypotheses mechanism when directly asked, even though some complained that lack of information about the actors long had prevented them doing so. When instead asked if they had fulfilled the indirect requirements of the mechanism (had they judged and criticised the other player's hypotheses and ideas, stated the unobvious, thought as the player and not the actor?) it was evident that some behaviours inconsistent with the requirements for fully achieving the purpose of the mechanisms had occurred. The occurrence of these behaviours were relatively limited but may have had a negative effect on the

[20] Purpose: To manage to develop hypotheses regarding the actor's history and its understanding of the conflict and its positioning in it.

mechanism. The use of technologies such as computers (word and ppt) and internet (search engines etc) were essential to the R&G players during this mechanism. The availability of aids such as whiteboards was also considered 'very useful'. In general a difficulty to generate hypotheses arose because of lack of information about the actors. The lack of information in its turn was due to the fact that KRM technology worked poorly and the KRs were not filed properly.

Another issue was the fact that the KRM representative responsible for processing Knowledge Requests was supposed to sit in on parts of the DMH mechanism, further delaying the provision of information requested. One of the R&G teams admitted to having found it difficult to step out of 'blue thinking'. Rather than having focused on the history of the actor to build a profile to understanding the actor, they had fallen into traditional military planning methods using the hypotheses to plan a traditional Red course of actions since this was their 'comfort zone' – something they were used to and good at, but had eventually realised this was not what was needed to fulfil the purpose of the mechanism. In doing so they applied Re-thinking, a very important component of the R&G concept.

Testing-Argumentation[21]

When faced with the questions of whether the participants had managed to achieve the purpose of the Testing-Argumentation mechanisms the answers greatly differed. The basis of R&G profiling is that profiles found can never be guaranteed to be absolutely truthful (unless the profilers really were the actors); what R&G profiling can do, however, is to argue that there has not been any evidence found to falsify a hypotheses or profile. To find the truthful profile by matter of excluding the false ones (where invalidating evidence can be found) is thus aim of Testing-Argumentation. The main challenge perceived by the R&G participants during the experiment was just to step into the mindset of seeking evidence to invalidate hypotheses instead of evidence to support them. All participants agreed that this was important and necessary but still found it difficult to achieve, continuously finding themselves trying to prove rather than disprove the hypotheses.

Falsifying and challenging the hypotheses were considered difficult because of a lack of information and evidence, which prevented both the validation and invalidation of the hypotheses. One problem was the tendency of the groups to fall back on generating hypotheses rather than testing the ones already made.

[21] Purpose: To manage to challenge all hypotheses, with focus on falsifying them rather than proving them; only the hypotheses that cannot be falsified are the most likely. Furthermore, seek alternative ways to interpret them and identify which ones hold.

Challenging the hypotheses was more uncomfortable and required breaking old patterns, which resulted in insufficient challenging of the hypotheses. The biggest challenge for the participants was not to think in course of action terms, which to them was easier and came more naturally than disclosing a profile.

Furthermore, the R&G teams needed information before they could move on to probe further into the actors to be profiled. Much of the time that should have been dedicated to testing and argumentation thus went to information seeking, and generating new hypotheses. The groups developed many 'stories' and hypotheses that could be potential truths but because of a lack of information they had little foundation for their stories, or evidence upon which to test them.

Following Multiple Leads

'Following Multiple Leads' was practiced in a circular fashion throughout the profiling and the participants felt that they had managed to achieve its purpose of being open-minded to potential storylines and threads. However, at the same time the participants stated that they had not always objectively followed all leads and often chosen to stick to logical and obvious conclusions, as well as often thinking as the player and not the actor, all of which contradicted the purpose of the mechanism, suggesting that the mechanism after all had not been sufficiently achieved.

Rethink

Rethink occurred throughout the experiment every time the R&G teams realised that they were going in the wrong direction and decided to try another approach instead. The participants did not reach a consensus of whether they had fully managed to develop profiles that were fully objective and had not been influenced by their personal bias. Much of the hesitation, however, seemed to have been a consequence of the participants feeling like they had not fully had sufficient time to work on building the profiles. All participants also felt that they had not fully let go of their preconceptions and thus been somewhat biased in their profiling even though all felt that they had avoided sticking to their first impressions.

Are the requirements for each mechanism sufficient to obtain desired transformation?

Unfortunately the requirements for each mechanism were not totally fulfilled during the experiment and the answer to the question is therefore inconclusive. However, even though they were not fully fulfilled the transformations were at least somewhat obtained, seeming to suggest that the requirements would be sufficient and we might be on the right track but that the issue requires further experimentation.

How are the players reacting to the mechanisms?
All the mechanisms were perceived as valid and important to the participants even though some were found to be more challenging than others (see above) The Testing-Argumentation mechanism was the one to which most players had a stronger reaction, stating the mechanism to be the most difficult.

How can the mechanisms be improved?
At the current stage it is really difficult to state how the mechanisms could/should be improved since each mechanism has not been appropriately tested in accordance with its requirements.

If mechanism used was 'Testing-Argumentation':

Which of the six analytical strategies are best suited for profiling to support the military HQ?

An insufficient number of persons attempted to test their hypotheses using the 'Red Cell Analysis' and 'Key Assumptions' check to be able to draw a conclusion about these strategies appropriateness for profiling. The Analytical Strategies that were used the most and were considered most useful and appropriate by the participants were 'Analysis of Competing Hypotheses', 'Brainstorming' and 'Backwards Thinking'. 'Devil's Advocacy' was also frequently used by the participants but was considered less appropriate (see below). In general Analysis of Competing Hypotheses was considered the one most appropriate strategy, and the most difficult to carry out, but none of the strategies were considered sufficient to stand alone testing-argumentation.

The fact that the players seemed to be most prone to use ACH raises a question for further experimentation: ACH is undoubtedly the most complicated and demanding of the six Analytic Strategies; something also commented on by the players. It was also the only one that, because of its difficulty and need for rigor when using it, was described in a step by step manner in the handout material and thoroughly explained to the players in a workshop/briefing. In other words, it was the only procedure described in a 'Standard Operating Procedure' fashion – the players' comfort zone. Could this be the reason why they preferred ACH, the most demanding strategy, yet the closest to their usual way of 'doing business'?

If so, the question arises of whether training of competencies needed to unfreeze comfortable ways of thinking and usual framing (to leave space to a more receptive, less linear and more creative mind) would have supported them in embarking on a more unsafe pattern, such as the one represented by the analytical strategies that leave more freedom to the player's initiative, intuition, and will? This is a question that we need to further experiment on, before any full conclusions could be drawn.

Are any of the analytical strategies especially problematic/easy to work with?

An insufficient number of persons attempted to test their hypotheses using the 'Red Cell Analysis' and 'Key Assumptions' check to be able to draw a conclusion about the difficulty of these strategies. The fact that they were very rarely used could be a sign of their difficulty and complexity. 'Brainstorming' was considered the easiest analytical strategy, although it should be noted that, when they were left without coaching, the Brainstorming was conducted more in a discussion-like manner, overlooking the most important and fundamental rules of Brainstorming, namely to come up with free associations, ideas and options and not comment on any of them before they are all on the table. 'Backwards Thinking' and 'Devil's Advocacy' was regarded to be of medium difficulty, and 'Analysis of Competing Hypotheses' was considered the most difficult and challenging strategy amongst those frequently used.

How many analytical strategies are appropriate to use to sufficiently deal with each hypothesis?

The appropriate number of analytical strategies needed to be used varies in relation to the particular hypothesis being under scrutiny. Most participants felt that not all six needed to be used and suggested that a number of three, depending on the situation, might be sufficient, particularly if Analysis of Competing Hypotheses were one of them.

How are the players reacting to the strategies?

- Brainstorming: Easy and the most frequently used strategy. Very good for creating hypotheses and generating ideas, but not to test them. Could be useful for Testing-Argumentation if in the right combination with other strategies and could be particularly appropriate if coupled with Analysis of Competing Hypotheses
- Backwards Thinking (What If): Was mainly used as part of other discussions and not as a separate technique during the testing-argumentation mechanism. Some participants felt that the mechanism was difficult and required more training on how to use it whilst others felt that it was a good technique that could easily be used to question hypotheses when under time pressure.
- Devil's Advocacy: Like backwards thinking, Devil's Advocacy was considered by some participants to be a good and easy technique, particularly useful when under time constraints. One person argued that the strategy should have been undertaken in a more role-play like fashion and many felt that even though they had used it they probably had not been completely loyal to the technique and not undertaken the strategy to its full. One person was of the opinion that the strategy tended not only to just de-construct the current hypotheses but resulted in the creation of a range of new hypotheses, which

could make it complicated to use, but which is its strength. Such comments prove even more that there was need for training and for closer coaching, which was not possible due to the timeline.

- Analysis of Competing Hypotheses: This was considered the most time-demanding strategy, but also the most useful for testing-argumentation. Participants said that it was an easy strategy because of its clear structure and argued that it had been the best described in the R&G concept paper provided to the participants, which had further facilitated its use. In addition, the concept developer had briefly instructed the participants of how to use the strategy, contributing to making it easy to comprehend.
- Red Cell Analysis: Was hardly ever used. Some participants stated that they had touched upon the strategy but had not used it in orthodox and appropriate ways. The reason was that participants were not sure of its purpose of how the strategy was supposed to be used. It was expressed that there needed to be more training on this analytical strategy if it was to be fully utilized.
- Key Assumptions Check: Was not used during the experiment. Participants felt that they did not understand it and, in similarity with Red Cell Analysis, needed more training.

To what extent does the concept of R&G teaming help broaden the blue planners' view of the operational environment and create relevant knowledge?

The relationship with the planners during the experiment can be considered to have been a success; the feedback given has stated that R&G has provided much useful analysis of information that, although available to anyone, has not been possessed to the same extent by anyone else. R&G teaming has as a result made a difference for generating important and relevant knowledge for understanding a conflict situation and has supported the campaign planners (see also section 4.4.2).

Have the mechanisms helped discover living and truthful profiles that seem loyal to the actors?

The R&G players did manage to create profiles of the actors that could be considered 'truthful' in relation to the scenario. In relation to the concept and its mechanisms, however, the development of these profiles could partly be a matter of coincidence and 'luck' rather than result of the concept in itself, since the requirements for appropriately experimenting on the mechanisms, and R&G teaming as a whole, were lacking (see section 4.4.1).

Does R&G teaming make a difference for the aim of generating important and relevant knowledge for understanding a conflict situation?

R&G in this experiment did not in itself generate any 'new' information as such but the main contribution of R&G teaming was the role of the R&G players as analytical experts that had been able to probe deeper into the information available than any other player. The difference for understanding information about the conflict situation available was thus just that R&G had the time to thoroughly analyse it, generating new understandings of facts and its consequences, and present it, partially, in a lively manner.

How often did interaction with the campaign planners occur?

Interaction with the campaign planners occurred frequently throughout the experiment, whenever needed. Most interactions were, however, concentrated to the end of the experiment and the Generation of Scenarios mechanism, in which R&G played an important role.

4 Conclusions

4.1 General conclusions

As always in experiments, **time was a limiting factor**. Sense-making is indeed a time-consuming activity. The idea is that allowing these issues to be explored in an open-minded way will provide a richer understanding of conflict dynamics and thus provide a better basis for future planning. On several occasions, lack of time meant that the staff did not feel that they had the time to fully explore the different mechanisms. Consequently, time constraints affected the possibilities of testing the mechanisms. Time constraints also affected the Knowledge Support capability to a large extent. To be able to conduct a thorough review of the situation (which was important to create a common understanding of the situation within the HQ) KS needed a head start, i.e. KS should have started their work before the experiment. This is especially true when exploring new methods that require extra training. Another way to handle this could have been to let the experiment control create the necessary material (to ensure a good starting point for subsequent phases in the experiment). The high tempo of the experiment also affected the KS cell's possibilities to continuously support the planning process, i.e. the KS cell did not have time to manage all the knowledge requests that were sent by the EBP team. Another factor contributing to that was the experiment design which called for almost all members of the Knowledge Production cell to be part of the group work in EBP. Therefore there were in reality very small additional analytical resources available to support the EBP team. Consequently, *it was difficult to fully exploit the KS capability to support operational level planning.* Similarly, the work within Red and Green teaming was negatively affected by time pressure. To be able to support the planning process with information about different actors in the region the R&G team needed time to do thorough analyses. This was managed by specifying a very limited number of actors. However, *time constraints meant that it is difficult to fully evaluate the effective exploitation of Red and Green teaming.*

The **profile and number of participants** affected the possibilities of reaching the experiment objectives. It turned out to be very difficult to recruit the personnel needed for the experiment, both in regards to the number of persons and their profile (competencies and skills). When the HQ was divided into subgroups it was not possible to maintain diversity within all groups, i.e. it was difficult to ensure that all core competencies were represented. Still, this will also be an issue in real operations. The concept puts high demands on the planners and these issues needs to be mitigated through further exercises and training.

Most of the participants were not familiar with the concepts and the scenario based planning method that was used in this experiment. Therefore a lot of energy was put into understanding the method and to understand the expected outcome. For future experiments it would probably be good to start all phases in the experiment with an educational briefing so that the participants know what to expect and also to get them into the right mind set. Furthermore, the participants had limited experience from operational HQ work and operational planning which affected the staff work negatively. Due to their lack of experience from operational planning in general the participants found it hard to compare the method in the experiment with traditional methods like the GOP. For future experiments *it is very important to start the recruitment process early and find ways to ensure that the right competencies are available during the experiment.*

One of the main objectives for the experiment was to explore ways to support campaign planning within complex operating environments; and also; to **evaluate how KS and R&G teaming can support operational level planning.** We can conclude that *the integration of the concepts worked on some level but it was not possible to fully explore how this should be organised.* The different concepts had somewhat competing objectives which made this part of the experiment difficult. The KS concept had a higher level of detail available (i.e. an organisation with specified rules and some standard-operating procedures). Since EBP was not developed in that detail it was hard to integrate KS and EBP. For future experiments it is important to integrate the concepts more closely before the start of the experiment and create common objectives. However, even though it was not possible to fully evaluate the benefits of KS and R&G for operational level planning, we can conclude that some important aspects were identified and needs to be further investigated. For example, both the effects based philosophy and the KS concept emphasises the importance of using a variety of methods to make sense of complex environments and in the experiment KS supported the planning process with both methods and technology mainly for information management. The main analytical method explored in the experiment was scenario-based planning and specific methods form the KS concept was only used to a limited degree. However, R&G contributed with detailed information and knowledge based on an actor profiling method and gave new perspectives to the Sense-making process.

4.2 Campaign planning conclusions

The experiment has been an important step in the development of a generic Campaign Planning concept, based on the effects based philosophy. The rationale behind this development is the need for more effective ways of dealing

with uncertainty and complexity in contemporary conflicts at the operational level. When we engage in conflicts driven by a multitude of causes and factors not necessarily obvious to us, we need to deal with this uncertainty in new and more dynamic ways. Making sense of the environment thus becomes both harder and more important in today's conflicts. Consequently, there is a need to develop new methods that can meet these demands and it is important that these methods are based on a philosophy or rationale. A lot has been learnt from this discovery experiment. Continuous testing of the mechanisms was done during the experiment and many development areas were identified. We can conclude that it takes a lot of time to fully understand the underlying assumptions of a mechanism. Observations showed that the participants had difficulties understanding how the mechanisms were related to each other and to grasp the "bigger picture". However, this changed over time and as the participants' understanding of the effects based philosophy improved it started to affect their way of working on the mechanisms. Thus, we can conclude that it is time consuming to comprehend new philosophies and mechanisms but it is important to let this process take time.

A number of campaign planning mechanisms were tested in this experiment - some worked better than others. There were a number of factors that affected the exploration of the mechanisms. As mentioned in the previous section, time constraints and the participants' previous experiences affected the results to a large extent. One could argue that it would have been better to focus on fewer mechanisms so that the staff would have been given more time to reflect on their work. By reducing the number of mechanisms it would also have been possible to repeat some phases, e.g. to compare methods used. However, since this was a discovery experiment testing all mechanisms was judged to be important. More controlled experiments will be needed in future steps of the concept development process.

The guidance and templates that were provided for the mechanisms also affected the work. Some participants wanted more guidance and structure whereas others thought the templates impeded creativity. It can be concluded that it is difficult for participants to work on a Sense-making process without a specified method (which was supposed to be identified during the experiment). There is a need to find a suitable balance, i.e. to *give enough guidance to support the process without limiting creativity*.

Sometimes the participants focused to a large extent on problem closure, that is, they focused on creating a product or output rather than focusing on the Sense-making process. We need to find ways to *support the sense making process and focus less on creating products*. Furthermore, individual characteristics, leadership and facilitation had an impact on the mechanisms. The process varied

greatly depending on who was in charge of a certain activity. Based on this experiment it is not possible to specify exactly what characteristics and skills are needed but it can be concluded that *individual characteristics, leadership and facilitation are important for the method and need to be further investigated in future experiment.*

Language seems to have had a large effect on the experiment. While the method should support, for example, the creation of hypotheses and assumptions and engagement in various collaborations it was apparent that these activities were affected by language skills. Working in English sometimes affected the level and depth of the discussions in the groups negatively. Two things can be concluded from this. The first conclusion relates to the interpretation of the results, i.e. *the planning process, the collaborations and the testing of the mechanisms were affected by the participants' language skills*. The second conclusion concerns the implications the lacking English skills has on HQ work. Assuming that a lot of HQ work in future operations will be conducted in English it is essential to put some time and effort into English education. It is important to find ways to assure that all *HQ personnel have an adequate level of English*. This could, for example, be managed through participation in some kind of "business English for staff officers". From a technology standpoint it seems vital to also provide adequate language support with dictionaries easily available. A dictionary was available in EBAONet through MS Word but was not extensively used.

One of the objectives for this experiment was to study collaboration within, and outside of, the HQ i.e. collaboration between EBP, KS and R&G and collaboration with civilian actors. The quality and quantity of the collaboration varied between the different mechanisms and the different actors. In general, the collaboration through integrated teams worked well and was perceived to generate a lot added value: the integrated team members added new perspectives and information that was good for the planning process. It can be concluded that *diverse competencies within the staff is fundamental* for this kind of open-minded sense making process. However, it is essential that both KS and R&G have time for "back-office work" so they can contribute with new information and perspectives when necessary. How to organise the staff work needs to be further investigated. It can also be concluded that *collaboration with non military actors is a vital step towards better Campaign planning* because it helps the HQ consider problems from diverse perspectives.

Another important part of the effects based philosophy is the enhanced role of the commander. The current command tradition, where the commander's primary task is to make decisions, is probably hard to change. However, the concept emphasises the importance of the commander's engagement in the sense

making process – not only to make decisions but to contribute with his/her unique competencies, experiences and perspectives. The engagement of the commander can vary – sometimes it may be necessary to just listen and be one amongst others in the staff and sometimes directions and decisions are needed. In the experiment the commander and the command group engaged in the staff work in different ways in different mechanisms. The engagement mostly consisted of traditional decision making and giving, or listening to, different briefings. However, sometimes the commander gave input to the staff work based on his experience which helped the process along. It can be concluded that *the engagement of the commander can contribute to the sense making process but also hinder it* depending on the type of engagement. The command style and experience will probably also have large impacts on the process. There is a need to *further investigate what profile and role the commander should have to best support the sense making process*.

So what conclusions can be drawn about the scenario based planning method - does it support the generation of a better understanding of the environment? Does it generate better preconditions for Campaign Formulation? It seems that the mechanisms helped the HQ consider problems from a diverse set of perspectives and helped them create a holistic understanding of the environment. It also seemed to support collaboration and integration with other actors as well as create an understanding for the importance of conducting continuous analyses of the dynamics of the conflict. The HQ stated that they thought that the scenario based planning method helped them generate a better understanding of the environment and that the *"conditions"* that were produced had potential and probably could be turned into Campaign Formulation. However, even though the method seems promising one must be careful not to draw to strong conclusions based on one discovery experiment. We can not conclude that the scenario based method generates a better understanding of the situation without further experimentation. It was not possible to evaluate the participants' sense making nor was the outcome compared to any traditional method. To be able to draw some conclusions about the benefits of the scenario based planning method and its implications for future concept development and experimentation there is a need to let subject matter experts examine and evaluate the products that were created in the experiment.

4.3 KS conclusions

The following section outlines a brief summary of the conclusions from the KS part of the experiment. As the experiment generated a vast amount of results, a more detailed account is found in the KS experiment report[22].

This experiment has been an important step in bringing the KS concept forward and generating a vast amount of input which can be used to further develop the CONOPS/SOP-level of the concept, taking it closer to real implementation. It also successfully tested a large number of technical features which will provide crucial input to further development of EBAONet.

4.3.1 Overall concept conclusions

The basic ideas outlined in the concept and partly implemented in the experiment are perceived as relevant and well thought through. The concept should therefore be allowed to be tested in a live operation to see what added effect can be reached. The experiment has also generated valuable, in depth, conclusions and solutions for further work. This is especially true of the work within the different KS cells. The list of plausible solutions includes in detail technical and procedural designs of organization and manning, improvements in the graphical interface and functionality of the software, workflows etc. The detailed list can be found in the KS experiment report.[23]

The obtained results from the experiment also indicate that the concept approach of integrating knowledge by using a set of complementary methods and procedures should improve the analytical capability as well as the ability to store, find and reuse the information assets that the analysis rests on. For example, the way KI has worked during the experiment could be a model for how to manage the responsibility for structuring all data in order to make this findable in a joint staff.

A practical and theoretical centre of both the KS and EBP concepts is the handling of uncertainties: without it we could continue with rigid planning and confidence in traditional intelligence. Participants agree on the approach of using diversity in the analytical process in terms of access to a wide variety of sources which provide multiple ways of understanding the situation. Attempts for applying a systems approach has also been utilised in the KS work in preparing for briefings.

[22] Wikberg (Ed) (2008)
[23] Wikberg (Ed) (2008)

The concept demands a change in behaviour which is always difficult. People need to understand why it is so important to have information structured in a specific way. This includes everything from simple things such as metadata fields to an understanding of how different staff products relates to each other. This does not only apply to the KS team but also to the whole staff. It is also important that the staff members have more than basic understanding and training on the software and the underlying concept for information management that KS provides. Training of the staff members would require a minimum of two weeks which corresponded well to the situation that was at hand at the start of the second week of the experiment. However, both concepts are in the middle of a concept development phase and an SOP-level of guidance is difficult while the overarching concept is still under development. It is difficult to introduce new procedures for handling information but this extra week would probably make people understand the process better and the benefits will be even more evident.

4.3.2 Concept integration

Since the KS Concept is a supporting concept to the EBAO concept this was also an important step towards concept integration. Several key issues were identified which highlighted the need for further concept integration. One of them was the fact that the proposed EBP methods address the same challenge - to understand a complex and dynamic environment which is hard to predict. However, the two concepts address these from different perspectives. The EBP perspective mainly deals with handling more complexity with an active participation of the whole HQ to achieve “buy-in” to the conclusions. The KS perspective instead focuses mainly on achieving diversity in the methods, skills and sources and therefore in the end also produces several contrasting conclusions. The KS perspective naturally calls for a higher level of detail and continued development of foundational data that can be used in analytical processes. Achieving integration between these two approaches have a good potential of addressing the common challenge in a fruitful way.

Consequently, it has been perceived as positive to test the integration between the two concepts. However, since the two concepts are in different development phases, integration has been difficult. To combine the two experiment objectives “develop the concept” and “test the integration” at the same time requires balancing personnel between different tasks.

It must also be noted that KS was not perceived as the main audience for this experiment. It was EBP-centric focusing on the planning phase. During the experiment, there was no opportunity to get a proper overview of the situation before the EBP process started. As the process did not start with a JIPB, KS

could not support EBP with relevant information at the start of the experiment. KP did not have the time needed to create a good picture of what was happening before the ACD started. A necessary condition is that the KS process must be initiated early. The time available for analytic work within KS was very limited. A possible solution to avoid this situation in forthcoming experiments is to use other units and exercises to prepare the analysis (for example The Armed Forces Intelligence and Security Centre).

As a consequence many of the KS hypotheses could not be tested (as these were expressed in terms of a set of expected integrated activities and products). KS work was to a large extent done within the KS cells and not as an integrated KS-process.

4.3.3 Detailed conclusions

The KI process worked very well and managed to process a lot of the information about the conflict area. However, there is a need to revisit the different roles of KI and KP and determine the proper interface. In this experiment the KI staff conducted more and more analytical products mainly because of the fact that they also had a lot of intelligence experience.

The KM cell explored the methods and generated mostly experiences concerning software aspects of the EBAONet. They also generated some useful improvement suggestions and ideas to the distributions of KM guidelines and the use of the portal. However, it was somewhat limiting that the KM staff had no prior training in the concept and technology.

Another observation was that most participants remained rather uncritical to the information coming into the HQ. A lot of work focused on gathering information, presenting information and drawing conclusions from it but rarely was any of the underlying information subject to criticism. One reason for that could be that it was a fictitious scenario with only a certain amount of information available. However, it should be noted that the scenario actually contained built-in ambiguities that could allow for criticism to some degree. Another factor was that the traditional intelligence method of source criticism was not employed consciously in the EBP teams. Therefore it can be argued that it contributed negatively to the ability to handle uncertainties.

The KS concept is perceived as an interesting and fresh approach to the J2 function. The traditional J2 should be enhanced by more competencies and a broader view on conflicts and events. However, in order be able to assume the role of a traditional J2 department there are a number of additional activities that need to be considered in order provide adequate support in a full HQ. These

include intelligence support to targeting, security and counterintelligence as well as a dedicated current intelligence cell.

The KRM process was initiated in the beginning of the experiment and the KRM cell mainly focusing on exploring the proposed process and the tool support that Documentum TaskSpace provided. Several hundred Knowledge Requests were generated by staff members and those will be analysed as a part of further concept development. The internal workload management that was supposed to be handled by the KRM staff was only done in a limited way. One reason was that the analytical resources were limited. Still many valuable lessons learned were identified and will be used in refining this part of the concept. The full CCIRM-style process that KRM is intended to implement will most likely require a more detailed SOP for the whole HQ and also a process covering the execution part and not just the planning phase.

The experiment has generated a vast amount of plausible solutions which will form a valuable source in the subsequent development of the concept. In the forthcoming years a revised version of the concept will be developed together with more in-depth products on the CONOPS where solutions generated during experimentation will be implemented. Continued experimentation is needed to continue to discover and test both the concept in general and the CONOPS products.

4.3.4 Facilities, software and IT-architecture

Many of the proposed methods in the KS concept relies on access to advanced but commercially available software which means that the development of the technical platform called EBAONet is critical to both concept development and experimentation. The KS team has in reality assumed responsibility of designing the IT architecture and requirements management of both concepts. The technical part of the experiment has delivered a vast amount of improvements and necessary features over the two and a half months before and during the experiment. The technical project management team at the Swedish Defence Materiel Administration (FMV) and skilled consultants from specialised companies made this possible. The system proved stable and managed to contribute to the activities in the HQ over the two experiment weeks in a good way. Having EMC Documentum as the core infrastructure for information proved to be a good choice to enable a controlled and integrated information flow between a number of different user interfaces.

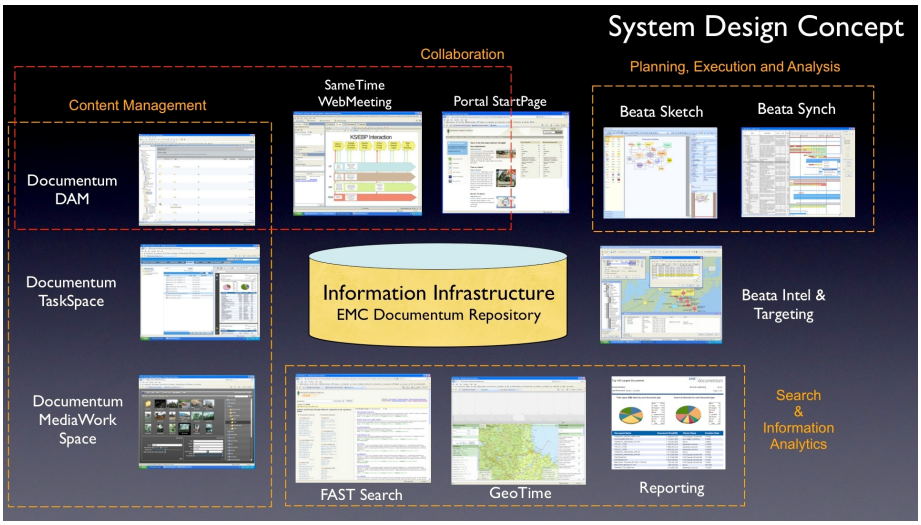

Figure 8. EBAONet System design

The development of BEATA Campaign Design and Analysis (CDA) tool worked well and contributed significantly to the analytical activities in KS as well as conducting some of the mechanisms in the scenario-based planning method. As a result, the KS team could provide the information management support as intended. Almost all information generated by the EBP team in this sense was reusable (and allows for KS to connect analytical products to them in the future). A result of the technical architecture was that the KS team could show how information objects describing people and organisations could be linked to sources but also to extracted events and locations that could be visualised in the map.

A combination of very committed people working in the Knowledge Integration (KI) team and the access to new features in the EBAONet made it possibly to explore the KI method in detail and a vast amount of recommendations were generated.

The KS room also introduced a new design in terms of facility support. A high-resolution screen, which was perceived as very useful, was placed in the centre of the room. It was critical to handling the large amount of objects in the CDA-tool during different analytical workshops. The workstations with large wall mounted screens seemed to work well when small groups needed to work together using computers. Having many projector screens and wall-mounted screens to present common information was perceived by the participants as useful. Having dual screens at their workstations seemed necessary for most people and some even called for a third one to be able to handle all the information.

The portal turned out to be a nice looking start page for the whole system with a layout based on the official Swedish Armed Forces web profile. The portal gained better functionality over time which highlighted the need for a central calendar/schedule/battle rhythm, clocks in different time zones, room layouts and an active approach to update information to assure it is relevant. Finally, a basic personal page where all staff members could describe their skills was introduced and a majority of staff members provide such information. In the future this feature needs to be based on the Match-IT experiences but integrated in a community style collaboration platform. The FMV Ledsyst T Fas 3 provided some components developed in their own project to be used in the EBAONet. The components implement a single-sign on (SSO) mechanism in the web clients to improve usability. The components called the User Registry and the Organisation Registry provided am external management of all users, groups and roles in all SSO-integrated applications: EMC Documentum, FAST ESP Search, Carmenta Server GeoTime, Carmenta Beata and the InfoGlue Portal.

The experiment showed that the approach of striving for integration between different systems using an SOA approach is the way to go. The result of having almost no information stove piped proved to be as good as intended when designed and provided a realistic way to manage rather complex information in spatial, temporal, thematic and relational dimension.

4.3.5 Experiment analysis

One experience from the experiment was that there in general was not enough time to analyse the concepts and gain experiences from them. Time for analysis workshops was limited and often placed in the evenings when people were tired. There was a general perception that the balance between completing staff tasks and having time to reflect on concepts and procedures needs to be revisited for an experiment like this. Otherwise it risks limiting the amount of conclusions that can be drawn. Another reflection is that it is vital that the analysis staff has enough knowledge about the concepts they are analysing in order to be able to have a good understanding of what is actually going on but also to provide comments and reflections on material generated in the analysis.

The way spatial information is presented and integrated in the KS processes has potential for development. Experience from real world OHQ/(F)HQ Advanced planning shows that the existing maps are insufficient and that most of the “map” information is created or revaluated during the planning process /JIPB within J2/KS.

4.4 Red and Green teaming conclusions

4.4.1 Internal processes and the R&G teaming concept

The experiment was a discovery experiment to test and draw conclusions regarding concepts that had not been developed in full. In regards to testing the internal process of R&G teaming the experiment was not a complete success. Not because the experiment did not generate the desired conclusions, but because much of the concept was not appropriately tested and as a result the 'discoveries' made were limited. The answer to the first research question: 'Do the mechanisms used for profiling actually support the concept of R&G teaming?' was unfortunately inconclusive and could not be derived by means of this experiment. Whilst some information about the mechanisms and the R&G concept has resulted from the experiment no full conclusions can be drawn regarding the internal processes of R&G teaming. The reason for why R&G teaming was not fully experimented is that some crucial requirements, on which the concept rests, were not available during the experiment. These were; diversity amongst the players, special competencies of the players and appropriate pre-experiment training to develop certain required skill-sets. In addition, a lack of information – which should have formed the basis on which the profiling was to be conducted – impeded the full testing of the concept.

R&G is based on the players being able to see things from a wide range of perspectives. R&G teaming is thus supposed to include people who, by terms of their background and personality, are more likely to disagree than agree. The more homogenous the R&G team is, the narrower the perspectives. The first requirement for R&G teaming is therefore diversity.

The second requirement is the presence of crucial competencies. The R&G players need to encompass a range of qualities and competencies. The players are supposed to be generalists (even though supported by subject matter experts, SMEs, for specialist knowledge). Rather than 'expertise' as such it is their ability to step out of traditional ways of thinking that is the main competence they bring to R&G teaming. However, there should also be a closer connection to the Intelligence services than was the case during the experiment; for example, at least one player in each R&G group should have had experience of working in a J2 cell, or similar – which was not the case.

As stated, one of the main requirements of R&G players is their ability to look at a situation through a range of perspectives. These perspectives are sometimes described as 'lenses'. Another main requirement is for the participants to be aware of their own personal lenses – with which they see the world and which

form the basis for their individual bias. The third requirement is thus pre-experiment training. The training should not primarily teach the participants about the concept and its mechanisms but consist of a range of skill-building activities and role-playing exercises where participants are taught to become aware of themselves in relation to the world, as well as taught techniques for creative thinking and how to view the world with 'new' spectacles, amongst other things. Such training was envisaged and planned before the experiment but because only one participant could attend the training week (and the one who could, could only do so in part) the training was cancelled. The lack of training did have dire consequences on the R&G teaming concept, since without education on these skills R&G teaming would solely amount to 'dressing old ways of thinking in new types of clothes'. It is important to note, however, that even though such training could have dramatically changed the situation, training still needs to be combined with the needed competencies of the players, without which the training would not have the same effect.

Another crucial issue was the lack of information, particularly in the beginning of the experiment, which slowed down the generation of hypotheses as well as making the task of testing these even more challenging and making the entire experiment much more cumbersome and frustrating to the players than it needed to be. The lack of information was an external issue that did not have anything to do with the internal composition of the R&G team but must be considered to have had an equal impact on the failure of appropriately testing the ability of R&G teaming to develop living and truthful profiles of actors of importance in a situation of conflict.

Because of the lack of all these three basic requirements, the internal structure of the R&G team during the experiment did not support the concept. As a consequence, the R&G teaming concept cannot be considered to have been appropriately tested to generate an honest and straightforward answer to the first research question. The lack of an answer does not suggest qualifying the R&G concept in any way, merely to say that there is not yet enough information to come to any conclusion regarding the concepts internal structures.

At the end of the first week it was evident that the experiment would not generate any conclusions regarding the R&G concept, since the factors allowing for the real testing of the concept were missing. The concept developer then decided, in light of these circumstances, to give up on testing the internal processes during this experiment and instead solely focus on testing the ability of R&G teaming to contribute valuable input to an effects-based planning process. The R&G players did manage to create profiles of the actors that could be considered 'truthful' in relation to the scenario. In relation to the concept and its mechanisms, however,

the development of these profiles was partly a matter of coincidence and ‘luck’ rather than a result of the concept in itself, since the requirements for appropriately fulfilling the mechanisms, and R&G teaming as a whole, was lacking. The initial results in terms of the R&G concept and its mechanisms must therefore be considered inconclusive.

4.4.2 The impact of R&G on effects-based planning

Unlike the experimentation on the internal R&G mechanisms, the relationship with the planners during the experiment can be considered to have been a success. This was the case in two ways: Firstly, interactions between R&G, EBP and KS happened frequently and generated a lot of information from which conclusions regarding the R&G concept could be formed. It also resulted in a range of questions and suggestions for how the R&G concept should be taken further. Secondly, this part of the experiment was a success for R&G teaming since it seemed that R&G had actually managed to support the campaign planners; the feedback given has stated that R&G has provided much useful and relevant knowledge and thus made a difference for understanding the conflict situation, which in turn supported the effects-based planning process.

R&G provided useful inputs based on information that, whilst being data available to everyone, had not been analysed to the same extent by anyone else. Much of the effect of R&G was just that it had had more time and ability to pay attention to common information. EBP had not had time to appropriately go through the background material, but even had it been able to do so, it would never have had enough time or resources to probe as deep into the information as R&G. As a result, EBP benefited greatly from R&G perspectives during the scenario stages, which required such analytical insight and work.

Other than the overall evidence of the usefulness of R&G teaming for operational planning, the experiment also generated some conclusions regarding how the relationship between EBP and R&G should be structured. As it was, R&G had been closely incorporated into the planning process during the latter parts of the experiment, taking part in the integrated sub-teams. Observers noted that through such integration R&G ended up being involved in most EBP mechanisms irrespective of any identified need for them to be there. This was a problem for a few reasons. First, too tight coupling with EBP might have negative consequences on R&G teaming. R&G is based on stepping away from ‘blue’ perspectives; close interaction between the concepts thus means that there is a risk of R&G loosing its impartiality and being influenced by ‘blue’ ways of thinking. Keeping R&G players separate from the planning process is therefore essential. The R&G teamers still need to be able to interact with EBP, when required – after all

providing profiling support to the blue planners is their main purpose – however, they should fundamentally work in separate groups to ensure R&G is not distracted by courses of action type thinking. Instead of being integrated in the sub-groups during the Generation of Scenarios and Identify Conditions mechanisms, the R&G planners should have been swiftly briefed on the situation, told which were the identified driving forces in the conflict and given specific tasks, which should have been dealt with by R&G separately. The R&G teamers should then have appeared in front of the other groups to answer questions, tell a story about the actors or be interviewed at required stages. As it was the R&G players were very useful to the EBP team during the generation of scenarios when integrated in the sub-teams, but whilst useful the integration somewhat defeated the purpose of the R&G teaming with the R&G teamers playing the role of, in the words of one of the participants, 'just another clever officer'.

Furthermore, such incorporation of R&G in the planning process meant that there was little, if any, time for the R&G players to conduct further profiling or 'deep-thinking' once the generation of scenarios mechanisms had begun. It became widely recognised that the R&G team should have started experimenting at least a week before the EBP group to allow for properly going through the R&G mechanisms and appropriately test their hypotheses before R&G players became too busy and caught up in the EBP process. This should have been the case even if R&G had been allowed to be more loosely intertwined with EBP. As it was the profiles were still quite unfinished and had not been appropriately tested before R&G were made to share them with EBP. Unfinished profiles are merely 'hypotheses' and hypotheses may prove false at a later stage; there was thus a real risk that EBP was provided with what it might have considered information, but that might later have been proven as false information. Even though the profiles that were developed during the experiment can be considered 'truthful' in relation to the scenario, they may not have been useful in a real life situation because there was not enough of a solid foundation on which to argue their 'truthfulness'; i.e. in real life you don't have access to a 'key' telling you whether you were right or not, but have to rely on testing and trying to disprove your theory until you can truly say that you have not found any evidence that could invalidate it. This was not the case during the experiment and the profiles developed could not have been considered 'truthful' even if they were. In hind-sight, it is thus evident that R&G should have started the experiment one week (or more) ahead of EBP, and KS, in turn, one week ahead of R&G, to ensure that everyone could get their own tasks in order before they would become necessary in the support of others activities.

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Annex A – Acronyms

ACD	Analysis of Conflict Dynamics
ACH	Analysis of Competing Hypotheses
BEATA	National C3-tool, used as a base for the KS experiment-tool-suite
CCIR	Commander's Critical Information Requirements
CCIRM	Collection Coordination of Intelligence Requirements Management
Cdr	Commander
CI	Commander's Intent
CONOPS	Concept of operations
CoS	Chief of Staff
DAM	Digital Asset Manager
DEMO 06H	Demonstration exercise autumn 2006
DMH	Develop Multiple Hypotheses
DSD	Develop Scenario Descriptions
DSL	Develop scenario logics
EBAO	Effects Based Approach to Operations
EBAONet	A set of integrated enterprise software based around EMC Documentum.
EBP	Effects Based Planning
EoF	Evaluation of Factors
EU	European Union
FBI	Federal Bureau of Investigation
FC	Force Commander
FHQ	Force Headquarter
FOI	Swedish Defence Research Agency
GOP	Guidelines for Operational Planning
IDC	Identify conditions
IDF	Identify driving forces

IKQ	Identify key questions
JCDEC	Joint Concept Development & Experimentation Centre
JIPB	Joint Intelligence Preparation of the Battle space
KA	Knowledge Acquisition
KI	Knowledge Integration
KM	Knowledge Management
KP	Knowledge Production
KR	Knowledge Request
KRM	Knowledge Request Management
KS	Knowledge Support
KV	Knowledge Visualisation
LO	Liaison Officer
LOE	Limited Objective Experiment
LODE	Limited Objective Discovery Experiment
MA	Mission Analysis
Mil HQ	Military Headquarter
MNE	Multinational experimentation series
NATO	North Atlantic Treaty Organization
NFS	North Friendly Sea
NGO	Non Governmental Organisation
OHQ	Operational Headquarter
PfP	Partner for Peace
PMESII	Political Military Economic Social Infrastructure Information
Ppt	Power point
R&G teaming	Red and Green Teaming
RoS	Review of the situation
SAE	Stand Alone Event
SME	Subject Matter Expert

SRSG	Special Representative of the Secretary General
SwAF	Swedish Armed Forces
SWOT	Strengths Weaknesses Opportunities Threats
UN	United Nations
UNSAF	United Nations Security Assistance Force
UNSCR	United Nations Security Council Resolution