

## **Building up OR&A Capability in Support of Military Decision Making. Lessons Identified and Challenges.**

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### ***ABSTRACT***

*There is always lack of information present in decision making. Taking acknowledged risks in decisions is part of military leadership and usually risks can be minimized and understood better once proper questions are asked and answered. In this context, as a general rule, some specific questions cannot be answered through routine staff work. They might need the competencies that are not part of regular staff settings. As Estonia is building up Research and Development within its Defence Forces, the question arises how to build up its support to Decision Making, i.e. how to build an Operations Research and Analysis capability. Where should be the focus in building this capability: what are the critical competencies; how should an OR&A capability be embedded in staff work? This paper describes the path the Estonian Defence Forces have followed in developing OR&A capability and the challenges as well as lessons learnt from this experience.*

### **1.0 BACKGROUND**

Reviewing its R&D policy in 2013, the Estonian Defence Forces and the Ministry of Defence (the last having at that moment still the main role as a R&D manager on all levels) realised that there is an important piece of defence R&D competency missing in the complex task to support capability development with adequate and sufficient capacity. Up to 2013, R&D projects created at the request of the defence forces in order to fulfil identified capability gaps, were executed by civil universities primarily with a focus on technology development and to a lesser extent on human factor management. Although these studies and projects were of remarkably good academic content and produced results that fulfilled the project's aims, the practical use of the products in operational settings or in capability development did not materialize. After executing a review, it became apparent that the projects lacked an adequate way of describing the actual operational needs and requirements. Hence it was realised that there was unavoidable need of an Operations Research and Analysis capability, which would better understand the operational environment of the battlefield and allow the translation of military needs and requirements into the formulation of achievable and realistic projects for our academic and industrial partners.

### **2.0 BUILDING UP**

From 2014 onwards, the Estonian Defence Forces Centre for Applied Research has had its focus on building up an OR&A capability. It has been learning by doing, identifying lessons and overcoming challenges. The following sections address a number of these lessons identified and challenges faced. As such, they should serve as food for thought both for those who need research support in decision making process, as well as for those who support military decision making.

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### 2.1 Defining and formulating problems

It has been challenging to get problem owners to formulate their requests for research in such terms that it would be possible to focus research well enough for dealing with the nucleus of the problem. Often problems were described in a very broad sense, or already in terms of solutions, without the proper context or without aiming on the particular shortfall within the capability. By better defining and formulating, to get the focus right, this is the work done today in cooperation between the problem owner and R&D community. While sometimes it is felt that the problem formulation has taken more time than the research itself would have taken, which must be attributed to the learning process for both the OR&A professional and the problem owner, the overall result is seen as positive. On the other hand we must be aware that there may be situations in which timelines are compressed and the definition of problems must not overtake the time for finding solutions.

### 2.2 What decision making research should support?

When research or analysis is requested, we need to distinguish between nice to know *versus* need to know. Proper prioritization, linking the request to mid-term or long-term capability development provides the right focus of the research and analysis. Consequently, this also provides the incentive to the research work to occur within a certain timeframe so that results will be delivered on time to support the military decision-making. In this context, delivery of a report on time is of paramount importance, and even partial results provide opportunity to influence the decision-making process. An 80% solution on time is preferable to a 100% solution too late. In the latter case, the work done falls from the “must know” to the “nice to know” category.

To mitigate this, we have embedded R&D planning into the short-, mid-term and long-term planning process. As the Chief of Operations and Chief of Staff of the Estonian Defence Forces approve and the Chief of Defence signs the R&D plans, we are assured that research is as much as possible synchronized with the decision making process.

### 2.3 Staff work vs R&D

Many of the research requests contain work items that can be performed by the staff but are included in the request because of the lack of knowledge on how to undertake it. Once the OR&A analysts have been rethinking and restructuring the research requests, it is found that a number of work items can be fulfilled by staff members and items left can be truly formulated as R&D, thus optimizing the research load. Additionally, the OR&A analysts have been able to provide methodological support to the staff for the work they will perform to resolve the problem. In essence, this allows a faster turnaround of research requests and a further understanding of the staff how to resolve particular tasks.

### 2.4 Problem owner as a team member

We have seen many cases in which staff request research – and then forget about it. This is not because of a lack of interest, but more of the misunderstanding within the staff that “others” perform research and analysis, who will then report on it and carry it forward. This complicates the work for the research group as they are in need for specific information and unique expertise to complete the work. Thus, to ensure the important link between operators and R&D community, we have requested that the problem owner always appoint a person to be integrated into the research team as one of the preconditions to start any research or analysis. This arrangement allows for a better integration of the research and analysis into the overall project with the effect that results will be more optimal, better suited and delivered on time. As a secondary effect, this provides for an increased appreciation of the OR&A competency by the staff, and a better dialogue between staff in formulating research requests.

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**2.5 Team composition, 1+1**

We have seen that the most efficient composition of the OR&A team as a nucleus for research group is the combination of civil and military expertise. Despite this evidence, often it is not implemented in all cases. On one hand, the reason is the lack of OR&A personnel available and on the other hand, the cause is lack of understanding of the complexity of problem to be resolved. We do implement this principle in-house as well as in work done in cooperation with civil research institutions. For example, when making a research request to the universities with whom we have close and intensive cooperation, we always appoint somebody on our side as a research team member.

**2.6 Taking risks and accepting results: Decision based evidence making or evidence based decision making**

It is fairly well understood that peace-time staffs are not known for their risk-taking attitudes in approaches to resolve upcoming challenges. Putting money into research is, by nature, risk taking – we cannot be 100% sure if the results provide a complete solution. Or, it may produce outcomes we do not expect or outcomes that do not support our predefined notion of solutions to the problem. This may lead to the unwelcomed situation that leadership rejects the research or demands the research to produce results that support a predefined course of action or decision. This may lead to the bureaucratic tendency of not taking any risks on one hand, and on the other hand, we are attempting to bend the research towards our predefined notions. To mitigate this situation, we will have to convince leadership that risk taking is worthy – only by pointing to the fact that errors and mistakes can best be overcome early in the capability development process. Additionally, we must convince our leadership that evidence based decision making should become the norm. For the latter to happen, a close cooperation between leadership and OR&A staff is unavoidable. Having an OR&A capability as part of R&D and included in the capability planning process will make the leadership to start having ownership of this capability.

**2.7 Implementation**

Once the problem is well defined, and there is a research team member representing the institution requesting the research, ensuring the timely delivery of the results, the possibility that it has an influence on decision making or is implemented is as high as possible. All is left then is to ensure that the results are presented well in a language that is understood by decision makers. This may lead to situations that decision makers are only requesting to be briefed on the consequences and implications that the results of the research will bring.

**2.8 There is the impact**

There is already an impact our initial and continuing build-up of the OR&A capability has delivered. While today there are still a small number of examples of immediate or direct impact OR&A has made on decision-making, the quality and quantity of research requests have increased greatly. Three years after starting to talk about necessity for OR&A, we have today far more requests than we have the resources to respond. This is a visible sign that decision makers have understood that OR&A has an important role to play.

**2.9 Designing OR&A future**

In designing a future OR&A capability, we will want to increase the awareness, understanding and proper use of OR&A by our decision makers. Introducing them to the world of OR&A in the very early phase of their military education, will increase remarkably possibilities that they use it in their service later on. It would be even better and more useful for future military decision makers *vis à vis* OR&A, to continue this awareness towards along their educational path. They would learn from courses and classrooms – albeit in a passive manner. More actively, they may have an opportunity to engage with OR&A in academic settings or

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be part of our real research projects as team members. We are moving forward to integrate to a certain extent the bachelor and master degree programs into the project work and making the students' theses part of a bigger project. Trying to link their work as much as possible to fulfilling official research requests coming from the general staff of armed forces provides them unique insight to OR&A. Obviously, classification issues, timing, need for specific skills and synchronisation of work are the limitations to be addressed. However, an officer who has an experience being part of real OR&A professional research team will be a great counterpart and partner for the OR&A community later on. We can be sure that he is able to better distinguish OR&A from staff work, use OR&A tools and provide relevant requests for research.

### **3.0 CONCLUSION**

I postulate, simply put, that the smaller the armed forces and defence budget of a nation are, the more OR&A is needed: there is less room for wrong decisions. For smaller nations the fielding of capabilities is so limited that OR&A is not the question of fine-tuning or optimizing national capabilities; it is a question about the overall capability to be able to fulfil its mission.

In the end, the OR&A influence on military decision making is up on the decision makers. They decide on what they think is appropriate and they take the lack of information as being part of their job. However, by bringing clarity to what we know and do not know, trying to understand things that we do not know, and finding solutions for things we may be able to know, that is where the decision makers should be supported by the OR&A community. The precondition for efficient and effective OR&A support for decision makers is the seamless cooperation of all, ensuring an integrated and common effort of research activities starting from defining problem to presenting the solution. R&D, OR&A included, has to be embedded in daily work and routine planning process, to allow effective and efficient decision-making. Early awareness and understanding of the possibilities of OR&A in education of the future leadership will surely allow better and long-term implementation. Thus setting the conditions for future successful support for military decision making by Operations Research and Analysis.



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