



## ***Operational Simulation – Supports Decision Making for Build-up & Employment of Military Force***

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The Art of High Military Command calls for the development of two basic skills: The skill of planning the execution of force Employment, alongside the ability to plan and conduct military force build-up to deal with existing and emerging threats. These skills are of critical importance as the price of any mistakes is enormous and will reflect upon the inability to achieve operational goals in combat. Furthermore, these mistakes will come at a cost both of human life and the burnout of the fighting forces. This is especially evident in force build-up, as it calls for comprehensive planning ahead of time and requires us to make certain assumptions regarding future threats. These assumptions can be comparable to gambling, the only difference being the price paid for error is significantly larger – falsely leading the build-up of an entire military force.

Over the past years, we have relied upon the in-depth analysis and thinking of commanders and decision-makers to examine operational courses of action and other alternatives relating *Force Build-up* by means of staff-work and analysis. Today, these remain the main tool for commanders, and therefore the importance of staff-work and the personal analysis of decision-makers remain vital as ever.

As technology and computing abilities advance forward, the ability to analyze large amounts of data at high speeds have allowed us to examine new opportunities to utilize these technologies to assist decision-makers in the military context of Force Build-up & Employment. For this purpose, the Israel Defense Forces has developed a methodology for examining different core questions relating to Force Build-up & Employment. This is by using analytical tools that allow for operational simulation of various battle theatres. The methodology enables commanders to cultivate pin-pointed questions in the context of various courses of action in operational plans as well as allows for the examination of the different courses of action in Force Build-up. This methodology is based on several principles.

The first relates to the understanding that as of today, and likely for the foreseeable future, it will not be possible to simulate the decision-making process of commanders in aspects relating to human emotion or one's mental state in the battlefield. Considering this, even the most accurate simulations will have difficulty replicating the realities of what would occur on the field. Therefore, any simulation must

attempt to neutralize this component as much as possible. This principle led to the decision to rely on comparative simulation. With this approach, one can compare several scenarios and examine sources of change and their intensity among every scenario.

The second principle relates to the determination of the indices that enable examination of the simulation results. There are three main indicators that were determined in the simulation process:

1) The Burnout of Enemy Forces in Combat - The burnout is measured by the extent of the casualties, the various levels of severity, the extent of damage to platforms (rocket, ships, aircraft, etc.) and the scope of damage to the infrastructure and structures.

2) The Extent of Damage to our Forces - with identical indices to those of enemy forces.

3) The End-State Operational Picture – Identifying locations of both our forces and enemy forces.

Thereafter, assessing the strategic and operational value of these locations for the continuation of fighting, all while considering the ability of both forces for an ongoing campaign.

The third and final principle concerns human involvement in the simulation process. The greater the role of human factor in the decision-making and the Employment of forces during the simulation, the more it affects the ability to perform accurate comparative simulations. This is since it will not be possible to accurately replicate the human factor in several identical simulation runs. Considering this, the IDF decided to rely on a simulation system that enables the absorption of operational plans of our forces and the enemy forces, without any human intervention.

The methodology developed by the Israel Defense Forces enables the feeding of various forces, including enemy forces, while determining their operating rules. This is, while taking into consideration the combat doctrine and the operating and damage characteristics of the weaponry used. Additionally, the system simulates the space of land, sea and air operations using advanced field data. This allows for the examinations of a variety of questions relating Force Employment and Force Build-up.

Examples of this include –

1) The examination of two alternative operational plans.

2) The examination of an operational plan considering the enemy's possible courses of action.

3) The examination of different combinations of forces and weapon systems between two operational plans.

In the context of Force Build-up, the Operational Simulation enables the Israel Defense Forces to examine effects of combining means of warfare, old and new on the overall result of future conflicts. Furthermore, the simulation enables the examination of the different Force Build-up courses of action (ground fire versus air fire or naval fire), and so forth.

The importance of Simulation Systems as a tool for operational analysis and force build-up can be seen in a U.S. Congress hearing in preparation for General Milly's appointment as the USA Chairman of the Joint-Chiefs of Staff. During this hearing, General Milly was asked whether the U.S. Department of Defense had the necessary simulation capabilities to support the Joint Chiefs of Staff in evaluating the operational plans of the combat forces. The general's positive response noted that the defense ministry's simulation capabilities help examine operational plans and courses of action to help find the best approach. Furthermore, he noted that the comparative analysis makes it possible to understand operational plans even though the simulation is not a secure source of prediction<sup>1</sup>.

The IDF has recently decided to form a community of knowledge in the area of operation simulation, to enable joint-learning, knowledge development and joint-simulations. On topic, the Israel Defense Forces is expected to hold its first International Operational Simulation Summit in November 2019. During the conference we intend on showcasing the IDF's knowledge in the field, as well as present and future trends. We look forward to seeing you there and look forward to future cooperation.

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<sup>1</sup> Congress Hearing 07.11.2019

***Does DoD have the requisite modeling and simulation capabilities and tools to support you, if confirmed as Chairman of the Joint Chiefs of Staff, in assessing whether the Combatant Commanders' operational plans can and will achieve the national security objectives identified by the NDS? Please explain your answer.***

*Yes, the warfighting modeling and simulation tools we have help assess and refine warplans in partnership with the Combatant Command staffs and Service Components. These tools help us determine the warfighting merit of operational plans and explore alternative approaches in pursuit of better warfighting options. It is through these comparative analyses that we better understand and refine operational plans; but none are predictive.*