

Simulation Facing the Challenge of New Conflicts

The evolution of conflicts has heavy consequences over the doctrine, which doesn't stop changing in order to fulfill the needs of the forces. In the same line of thoughts, simulation cannot be lagging behind the reality of the engagement of our units. **The need for simulation is as strong as ever, but its adaptation to the new environment is necessary.** Technology must allow for this.

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The real need for simulation

The usage of simulation is not a recent phenomenon; all the tools leading to the reproduction of a real situation, whatever it may be, belong to the domain of simulation. However, this term has today taken a particular meaning; simulation has only kept a technical connotation usually declined in three domains, instruction, training and decision-making assistance.

As far as the **operational preparation and training** are concerned, simulation endeavors to fulfill a very general need. It is the case of **placing the soldier in a situation close to the one he might be facing in reality.** The aim is to lead him to react and then later to think, a posteriori, about the choices made, analyze them and draw the consequences from them. From the private to the commander, if the issue is identical, the technical solutions have actually to be different as they suit each level. The answers that are given today cover the overall need but without continuity between the different hierarchical echelons. This situation does not put into question the **added value brought to education and training**, but adaptations will be necessary to gradually correct this point.

A new domain in which simulation can bring support is that of **assistance to decision-making**; it still remains **poorly developed today.** Although the present information systems enable to collect and process ever-increasing information, it is still true that their capability in facilitating the decision-making process remains limited. But the need is there, even if man must remain the final decision-maker. The commander of today must decide faster and faster whilst having numerous information, often incomplete and sometimes inaccurate. It is in this changing world that simulation must integrate itself. It must contribute in clearing up the "mist of warfare" that the present information systems could have a tendency to thicken if one is not careful about this. The evolution in the military art has demonstrated that mastering information could be **the key point for success**, but the findings are today mitigated. The *Iraqi Freedom* campaign has demonstrated



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that facing the enormous volume of data, it was difficult for the commander to detect the pertinent and determining ones. On top of the uncertainties of warfare came the background noise of informations. The decision-making assistance simulation can contribute to **provide key elements for executives enabling them to partly clear up uncertainty and to clear up the picture of the environment.**

Although traditional conflicts, symmetric and balanced, enabled a rather easy simulation of confrontations and could be rather easily simulated, those we are facing today completely change the set of cards.

Influence of new conflicts over simulation

By observing new conflicts under the simulation angle, **two main aspects** seem to emerge.

At macroscopic level, the general framework of conflicts is different. The political-military environment is now present at low levels in the chain of command, sometimes even at the company-team commander level. This translates into **an increasing importance of environmental operational functions**, civilian-military actions, and operational communication, amongst others. All this has to be taken into great consideration in the conduct of operations and cannot be left aside of training simulation tools. In this way, it is barely acceptable to want to efficiently prepare a staff in view of a commitment within a multinational operation in which delicate multi-agencies and political-military relationships will prevail with a tool that only takes into consideration the parties (friends, enemies, neutrals) and consequently does not allow for the transmission of all interactions between the different parties and their consequences over the maneuver at the level of the player. In the same way, **the courses of action of potential opponents in an asymmetrical conflict can prove to be very different from those of a conventional enemy within the framework of a symmetrical conflict.** These courses of action encompass a very wide spectrum whose centers of gravity are as varied as the sphere of information and the human space. Unfortunately, the present training simulation tools do not take into consideration these **worlds that are sometimes immaterial and especially changing.** In addition, the information pertaining to this environment is very scarcely made up of quantifiable and accountable data. Consequently, it will be particularly delicate to analyze them using simple mathematical computations. All this concurs to render more complex the implementation of decision-making assistance tools for the benefit of commanders.

At microscopic level, the issue is even more complex. First, it pertains to the **terrain** over which actions are carried out. During traditionally envisaged symmetrical conflicts, built-up areas were avoided or neutralized. Today, it is no longer the case. The combatant cannot free himself from entering towns, seizing them and holding them. Indeed, the opponent draws his power and survivability from these **complex spaces.** Therefore, the dark built-up areas of old simulation systems are no longer adapted. Identically, the simple and arbitrary confrontation of two mobiles is no longer sufficient to appreciate the mission success.

The effects of all the available weapons and assets, as well as their gradation, must be available to the player.

The challenge raised by these different adaptations is essential but the **stakes are high**, as a great risk exists of watching combatants and commanders lose interest for expensive tools that are too far from the reality of their daily engagements.

An adapted technological answer

Since it was fielded in the late 80's, **training simulation has continuously changed;** year in year out, it followed the evolution of doctrine, derived itself from potential or real engagements such as the *Gulf War*. It is also at that time that recently fielded systems were conceived. But, since then, the strategic evolution has been especially rapid involving consequences on the types of engagements, tactics and operation modes for the forces. However, limited by logics of programs, it has not been possible to adapt simulation tools at the same pace, all the more so as their definition had to refer to a doctrine that was itself undergoing evolution. However, **achieved progresses** in the field of modeling and computing power of computers, enable to foresee a **favorable outcome in fulfillment of the need.** Although the reaction delays necessary to the adaptation of tools seem long, they are however in line with those obtained by civilian computerized developments of a similar magnitude, taking into consideration available funds.

As far as **assistance to decision-making** is concerned, the issue is different. In fact, solving a problem relies upon simulation, but also on operational research techniques. If for the first domain, the technological answer can draw inspiration from the one that will be used for training simulation with specific adaptations if needed, it is not the case for operational research. This discipline has been known by the services since the 50's, but its **employment** carries less enthusiasm. If the technology of the middle of the last century allowed to propose solutions to operational issues, the one of 2006 should be as much efficient to study a logistical deployment on a given theater or propose an employment of tactical drones in order to fulfill an intelligence need during a stabilization phase. Therefore, it is the case of taking actively advantage of all the capabilities offered by operational research in the domain of decision-making assistance.

Facing an ever-changing environment, the needs of our forces evolve, as far as training is concerned, but also in order to analyze and exploit situations that are becoming more and more complex due to the volume of information to process. Although technology is not the only answer to this demand, it can nevertheless **bring its contribution by proposing innovative solutions whilst preserving the place of man at the heart of each decision-making process.**
