

The Added Value that Simulation Brings to Training at the EAABC¹

*Today the French Armor has at its disposal a large **array of powerful, coherent and complementary simulation tools which allow the conduct of a well targeted individual and collective training.** The simulation assisted training sessions are at the heart of the fire training pedagogical curriculum and at the one of the tactical training, which prepares and complete in some aspects any hands on operational preparation for crews, platoons, companies and battalion task forces.*

When on the top of his turret, the armored vehicle commander is, in many ways, in a situation quite comparable to the one of a horse rider: a wide sight of the space of maneuver, a sometimes hostile environment, and a sometimes hard to tame “vehicle”... This is why 102 hours of the student lieutenants’ curriculum (in addition to the Carrousel²) is dedicated to riding, a very demanding discipline regarded as being a stress simulator which puts the riders in a situation close to operational conditions.

Beyond this caricatured introduction, which points out the almost carnal bond which has always existed and still does exist between the rider and his horse, and which is at the origin of the crews’ team spirit so specific to the armored units, let us focus the subject of this paper first on efficiency through coherence, then on the quality of the digitized simulation, and finally on the description of several tracks for improvements.

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Training coherence and quality improvement...

Let us emphasize a first obviousness which does not take into account any consideration of financial profitability: **simulation occupies a position³ which is unavoidable and natural.** It coexists today with the currently fielded operational equipment.

Indeed, without simulation, the school would not be able to train the students in tactics, firing, and armored combat vehicles employment techniques up to the required level of excellence, without having to resort to using the real equipment, which is unrealistic due to the excessive spending in matters of functioning hours and money. The curriculum relies on practical training and acquisition of basic know-how in a combined arms framework, which includes logistics. The training can be conducted on different types of digitized terrains: Central-Europe, urbanized areas (this is an environment for which the improvement of the 3D images is in progress), expeditionary theatres of operations; these digitized terrains are

very close to the ones on which the students will have to intervene, when they join their units.

A few statistics illustrate the place of simulation within the tactical training:

- 6 647 simulation hours were spent in 2005, be it for training LECLERC MBT drivers on the tank driver simulator or to make the CFCU⁴ captains work within company team framework with the JANUS simulator;
- Tactical training is distributed as follows: 30% with traditional type of equipment, 26% with real equipment (organic or substitution), and 44% with simulators.

In addition, simulation covers today **the entire spectrum of the soldiers’ tactical education** as well as the armored cavalry units training. The school has been a source of initiative for a long time. The ROMULUS training system was born there 15 years ago; the same happened recently, with the development of the “Operation French Point” (OFP) tool intended to train crews and platoon

commanders. Its progressive implementation, which is due to several generations of computer addicted officers and NCOs of the school and to users’ initiative, was made possible because the existence of the tools had become an obviousness to all. The stabilization of physical systems, even temporary ones, very often reveals some truths.

It is however necessary to define which of the school training requirements should be met by simulation. The tactical and technical training practices adapted to each type of equipment demonstrate the **excellent complementarities that exist between the training sessions conducted with simulators and those with the organic equipment.** Simulation keeps and enhances the possibility to put the students in various types of situations, which guarantees the tactical training quality; it produces a strong added value within the desired combined arms engagement framework. But this is again an observation which does not highlight those properties that are appreciated by trainers and students.

...undeniable qualities...

Simulation means only can offer to individuals, crews and units **a lot of very diverse realistic and operational situations. Realism** is indeed the most significant value which simulation adds to tactical teaching and practice. Thus, the tactical environment, which is one of the components of the simulated operational situations, is much better and fully replicated using simulation than actual equipment in the field.

In addition, the firing effects, which are materialized by the combat fire simulators (STC), provide the opportunity to sanction a bad positioning, the lack of aggressiveness in front of the enemy, the inconsistency of a tactical field organization... During synthesis combined arms exercises at the Force on Force Training Center (CENTAC) of Mailly le Camp, crews regret that CENTAC is not fully equipped yet with STC systems that are compatible with each other, which imposes to have to resort to a manual type of firing effects evaluation, conducted by observer-controllers officers.

Simulation lies perfectly **within the framework of the rightly sought continuity between the training and operational preparation** and responds to the issue of training while in operation (considering obviously that priority should be given to the operation itself but that any spare time should be used for training, and in particular for training related to the on going operation). The armored cavalry simulation employment policy gives the priority to officers and NCOs' basic and advanced trainings. It also deals

with armored units instruction and training through the provision of a general framework and of the school means. That policy respects well the training - operational preparation continuity thanks to a large and coherent array of complementary simulation tools¹ which make it possible to deliver well targeted individual and collective trainings. Thus, the two products, *Operation French Point* and ROMULUS, which are fielded in the battalions, are easy to implement, and directly usable, even on laptops and are provided with easy to transfer exercises libraries. Within that same spirit of continuity, the Forces Preparation Center and the School have made contacts in order to find new **synergies between the means that are dedicated to initial training and those committed to continuous training and preparation to operations.**

Simulation uses "models", i.e. imperfect and more or less accurate representations of the reality, but which are indefinitely perfectible: the instructor must thus perfectly know the limits and complementarities of the operational preparation actions. It provides pedagogical added values (increased accuracy of the proposed exercises, ability to teach a large array of different missions, after action analysis...), a better preparation of the actions (evaluation, risks, ...) and a reduction of the delays and costs, security, environment. The issue of savings in number of personnel must be tackled carefully since simulation is known to be a personnel consuming activity. For instance the quality of the exercises realized implies an **obligation of**

involving highly qualified personnel into the teams in charge of the simulation organization (operational evaluation and validation, production and edition of pedagogical scenarios, development and feeding of the databases, conduct of after action review...).

...expected improvements

The many initiatives in matter of simulation, the diversity of the means that have been implemented and the complexity of the problems justify the establishment of a **simulation policy which is being developed by the Army staff**. This policy should, in particular, aim at:

- Describing the requirements in order to facilitate the choice between the many tools that are available;
- providing the education and training developers with flexibility by organizing within a determined perimeter the remote distribution of exercises, the connection of the tools or the association between fixed and mobile means;
- merging virtual and constructive simulation tools together with the operation information systems (SIO)²;
- straightening up (indexes and references, updates, uniqueness and responsibility for the follow-on) the existing databases, i.e. those related to weapons systems, doctrines (behaviors), forces and terrains (2D and 3D);
- defining tools for the production and edition of pedagogical scenarios, the preparation of exercises and after action analysis.

In order to enhance the simulation evolutions, the **upholding of a dual type of approach**, top down and bottom up, is to be carefully assessed as for the role of each actor. **Users'** contributions are indeed the more relevant to lead toward realistic and simple solutions, be it for crews' drill or for instructor-led types of training; their experience places them in the best position to express a requirement.

A collaborative type of approach between both **"operational"** and **"industrial"** actors is a guarantee for the sound definition of simulation tools just like for any other weapons systems, which meet both the training and operational preparation requirements (short loops between functional experts and industrials, and implementation of integrated teams).



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As a conclusion, it should be kept in mind that LIVEX are crucial and that they constitute the climax of any training. Simulation helps to make the best out of any live training sessions thanks to the systematic practice on simulators which is conducted prior to the live session.

Live fire, individual (at vehicle level) and collective (at unit level) trainings are indispensable, they are defined by the functional experts of the armored and infantry schools as being actual “security as well as validation thresholds”.

The combined arms combat, which is permanently studied through the analysis of operations, is well taken into account. It is important to further adapt the tools to combat in urbanized areas and to insurrectional situations as well as to crowd control.

Notes :

1 Ecole d'application de l'arme blindée - cavalerie. Armor-Cavalry Branch School.

2 The annual school festival that includes several riding events.

3 Simulation at EAABC and in Army and TDM (Marine) armored cavalry units:

• Teaching at individual basic tactical level:

That teaching is conducted with the support of sand box rock drills as well as the one of an off-the-shelf wargame software: “Operation French Point”. This is an evolutionary and low cost solution; the software has been delivered to all armored battalions; this training process participates in reinforcing the overall training coherence.

• Controlling know-hows at crew level:

For the LECLERC MBT, the various practical applications use the virtual simulation embedded within the crew training simulator (SEE: Système d'Entraînement d'Equipage). The tank commander learns how to command his crew on a 3D terrain under various conditions that can be related to the opponent, the threats, the weather or to the framework of his action (the tank operating alone or within a platoon, and with or without infantry or artillery cooperation).

• Controlling know-hows at platoon level:

All types of platoons have access to the following tools to practice basic tactical actions (moving, getting in position, observing, and using own weapons): the platoon training simulation tool (SEP) for the LECLERC MBT and the platoon fire simulation tool (STP) for wheeled armored vehicles (gun).

• Learning platoon tactical procedures:

Tactical employment practice is taught through the use of ROMULUS system (version 5) which enables the students to analyze and then play the various components of the studied mission, including movements and logistics. ROMULUS (V5) is simple to implement and can be used by autonomous platoons as well as by platoons operating within a company team framework. It has been distributed into all armored battalions and, since short, to the Infantry branch school; it is also adapted to battalion TF CPs exercises. It participates to reinforcing the consistency of the entire armored function's tactical training. (SEP) enables platoons to work on tactical missions.

• Learning tactical procedures within a company team:

Company commander course students as well as land forces company commanders use ROMULUS V5 and Janus to learn tactical procedures at company team level.

• To the benefit of the forces:

Units belonging to the combat forces conduct periodic rotations at the school simulation center which enables them to maintain and improve their operational efficiency.

Virtual simulation (SEE or STP) enables crews and platoons to maintain their collective training and to get ready for the various firing evaluations in a tactical ambiance.

Constructive simulation conducted with ROMULUS V5 or JANUS enables:

- the battalions commanders to train their battalion task force command posts;
- the combined arms brigades to train their battalions' chains of command with the support of their staff or the one of the school.

4 Armored Advanced Course for preparation to Company and Company Team commanders assignments.

I The SEE tools, the *Operation French Point software*, ROMULUS are fielded at the school and in the battalions; EAABC supports crews, platoons and companies' training (STP, SEE) as well as the battalions TF CPs exercises (ROMULUS or JANUS).

II It appeared soon that there was a definite requirement for training officers and NCOs to employ the new command and control tools within their tactical environment. From an organizational point of view, this led to the creation, within the training division, of a training team responsible for the digitization of the battle space, which would be in charge of linking the SIT (Terminal Information System) and SIR (Battalion level Command Information System) technical know how to the tactical procedures that have to be improved among officers and NCOs.