



## How to innovate in the field of doctrine? ...the best way is to use simulation...

Land Forces Doctrine Review

Général (2S) Marc de FRITSCH CEO/MASA Group

Published on 28/06/2019

Sciences & technologies

**Doctrine and innovation: what a fine oxymoron! These are two terms that do not necessarily go together, especially, let's be a bit provocative, in the military field. It is well known that the military is always one war behind. As Gamelin said, "the day war is declared on Germany, Hitler will collapse... the troops stationed in the western fortifications will offer little resistance. We will go into Germany like butter". Laziness and the sin of pride have brought about the result we know. What is certain, however, is that the victor does not have a war behind him. And to be part of this camp, one must not be satisfied with applying the usual patterns. We won't talk here about the current state of law and order in France, since ethics dictate that ambulances should not be shot...**

Let us simply re-read the words of a German instructor in the Officers' Factory, a novel by H. Kirst which describes the training of officers during the Second World War: "Tradition (doctrinal) is, among other things, a convenient excuse for the lazy, a pass for fools who hide behind acquired values to camouflage their own inability".

Closer to home, the fantastic rout of the Iraqi army in 2014 in Mosul calls into question the quality of its command.

The conclusion is clear: the best tanks, the best planes, the most beautiful frigates, the best commandos are marching and flattering the egos, but it's all worthless without a corps of trained and competent officers.

So to stay on the winning side, you have to adapt and innovate: easier said than done, so strong is the feeling that everything has already been written a thousand times. Unless you decide to use the same means as you did in the past. Future equipment and among them, of course, is artificial intelligence. This AI which is at the heart of the Army's work expressed in the Future Earth Action documents.

Thanks to the artificial intelligence contained in the simulation tools, we can now take into account the thousands of parameters from new equipment whose behaviour is not yet established or known. But AI is the "cream pie", so what exactly are we talking about?

There are several ways to define AI levels: there are usually four. Voluntarily and in a very simplified way, I will settle for two. The first level, called the artificial intelligence of low level (there is no value judgment), consists essentially of the combination of databases and computing power: it is the Learning Machine. Concretely, from thousands of images of cars, the machine will recognize a car from a learning process to recognize a car. This is the learning AI. It is very much in vogue in the due to the explosion of data and exponential growth computing capacity, even if technologically speaking it is not of very recent design. This AI, which relies on data from past events, carries the risk of making you prepare for yesterday's war, the war of delay if you abuse it through modeling. of past conflicts, or worse by insufficient data.

The second level, commonly referred to as artificial intelligence... must allow us to achieve artificial consciousness. But don't worry, it's not going to happen tomorrow. First, she's going to figure out how to use the car. To do this, we must arrive to model behaviour, which is extremely complex. It is easy to model my behavior if I have to leave my office when there's only one door. But if there are two doors that allow me to reach my boss's office by a different route but of the same duration and distance, how am I going to make my choice if one allows me to avoid a colleague but makes me pass outside while he and it's very cold and I'm in my shirt and stuff. If I'm a rational individual (which you don't doubt), my decision is explainable. Modelling my behaviour is like making a "modelled AI" who makes decisions that can be explained.

this approach represented by the modeled AI which is at the heart of the Soult simulation software for the training of chiefs and their staffs.

Historically, the first tools used to train staff officers were the sand box. Then came the time of Computer assisted exercises with first generation software (JCATS, JANUS). These software programs represented a considerable advance but they were served by a high level of complexity and the need for a large workforce, the operators, responsible for transforming the orders received from the PC into a "message" for the computer.

These software programs were and still are very boring: without constraints, it is clear that they would not have been very successful. And then, as far as innovation is concerned, there is nothing to be gained from it!

But with the AI contained in Soult, things have changed radically. This software precisely meets the training and coaching needs of staffs while using the latest advances in the field of artificial intelligence. The AI technology used is defined as a high level AI: in this case it is called behavioural and decisional AI. The software, developed by a private company, MASA, in close collaboration with the French army, is based on a high-performance algorithm. The software simulates thousands of actors (human but also non-human), called automatons, who are themselves capable of giving orders and have behaviors that are explainable and consistent with real life. This software makes it possible to give to these automatons no longer a succession of orders as before, but a real mission. Thus this software allows the training of officers from the company level to the divisional level in natural, urban or complex technological environments.

The staffs can train on ultra realistic, complex, very low to very high intensity scenarios. Artificial intelligence makes it possible to greatly reduce the number of operators in charge of running exercises, it simplifies their tasks but at the same time requires them to be more reactive and more present, which contributes by rebound effect to their motivation and training. No more "smoke breaks" and endless chatting.

Aware of the double contribution (complexity of the scenarios, very low cost), the Army,

after equipping the training center training centre and the schools in Saumur, Draguignan, Angers and Rennes, has decided to deploy the Soult software in all regiments from 2019.

But the contribution of artificial intelligence does not stop at training and education. It also makes it possible to develop new concepts and test equipment. That is why the Soult software (Sword for export) was purchased by the Japanese, Singaporean "DGAs". and Australian.

Only the simulation will enable us to understand as soon as possible the consequences of the entry into service of the new Scorpion equipment. You're not entirely convinced? But what do we know about the behaviour of modern soldiers, armed with sensors, loaded with information, operating in the midst of land or airborne drones? And for the moment, no one knows how these more or less autonomous machines will behave, even if, theoretically, their behavior has been developed by simulation. Virtuous circle or vicious chain, it is indeed simulation that will validate the doctrines of the future.

Today, the AI which is at the heart of Soult, capable of simulating thousands of actors with explainable and consistent behaviour, makes battalion-to-divisional level staff training realistic. This characteristic is fundamental. This is why, for the French Army, simulation is a structuring axis of its preparation for operational engagement as well as direct support to operations. However, in order to take full advantage of this tool, officers must, during their training, be familiar with him from their time as captain.

This is an innovation, a small intellectual revolution that will impose itself as the smartphone has imposed itself: "well, what's the point of all these apps, I'm just making a phone call! ». Tomorrow in operation, the boss will be looking at a huge touch table with the tactical situation. He'll be operating his brain, his human intelligence, the real, unique (...for the moment!) and, switching to decision support mode, he will draw on his map his future manoeuvre. He will launch the simulation software which will give him the answer on the relevance of his maneuver. He will then to be a real leader and make an informed decision. The technological innovation contained in this table will therefore lead to innovation in manoeuvre, tactics and strategy. And even innovation in the area of leadership behaviour.

Did I tell you tomorrow? No today the table is ready, it's there, but are the brains ready? Simulation will also enable intellectual innovation: humans will have to review their thought patterns and consider that, faced with the complexity of a situation, they must work more and more with the machine and therefore with simulation.

---

**Title :** Général (2S) Marc de FRITSCH CEO/MASA Group

**Author (s) :** Général (2S) Marc de FRITSCH CEO/MASA Group

**Release date** 26/06/2019