



COMBAT TRAINING TACTICS

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The Energia 2000 company is currently developing a new-generation motorized infantry Battalion tactical simulation training system -- to be known as TacSim and representing a radically different design from what the Ukrainian simulation industry has ever built. In terms of its basic design concept, TacSim will be most similar to the Lockheed Martin's Combined Arms Tactical Trainer (CATT), a networked suite of tactical trainer simulators deployed in Great Britain and Germany.

It may be noted that approaches to simulation training techniques in Ukraine and other countries are different. Oleksandr Matvievsky, deputy Chief Executive Officer at Energia 2000, explains: "In the US and Europe, certain standards have been developed. One is the HLA (High-Level Architecture) standard that defines data exchanges between

individual simulators. The HLA standard allows simulation trainers of various kinds to be integrated so that they can run together and exchange information. But there is no such standard here in Ukraine. If you take two simulators from different designers, they won't be able to interoperate because they run different operating systems and different data communications protocols. Energia 2000 has built a comprehensive family of simulators supporting crew training requirements for armored combat vehicles (the market which is extremely competition sensitive), air defense weapons and, also, for tactical engagement - all running one and the same operating system and, therefore, being fully interoperable".

Force-on-force engagement simulation trainers - the category of tactical simulators to which TacSim belongs - are based on integrating individual weapons systems sim-

	Description	Combined Arms Tactical Trainer CATT	TacSim motorized infantry Battalion simulator suite
1	Force-on-force engagement simulation principles implemented in the simulator	+ simulated engagement with a computer-generated enemy force + simulated engagement with other 'players' in simulators, including simulators on other sites	* simulated engagement with a computer-generated enemy force * simulated engagement with other 'players' in simulators * simulated combined arms combat
2	Force-on-force combat scale	Brigade	Battalion
3	Number of collective training simulators of armored combat vehicles	70 simulator trainers for crews of Challenger-type main battle tanks and infantry fighting vehicles	31 collective training simulators for BMP-2 infantry fighting vehicle crews
4	Number of air defense weapons simulators and helicopter simulators networked	16	Simulation of actions by artillery, air defense, anti-tank and Air Force units
5	Number of infantry simulators networked	12	27 (all of the BMP-2 IFV crew trainer simulators support crew dismount simulation mode and command and control of dismounted troops in the battlefield)
6	Weapons simulator type	Static	Dynamic
7	Networking capability with other trainers	Able to be linked in real-time with a CATT suite deployed in Germany	Able to be linked with a Brigade-size unit simulator, as well as with laser-based tactical engagement simulator systems. Provisions are made for integration with artillery/anti-aircraft weapons and combat aircraft simulators
8	Capability to support command and staff exercises	Limited	Implemented to the full extent
9	Number of trainees in a single network	Up to 700	Up to 106
10	Training facility size, sq. m	5,400	650

ulators into Battalion and lower-level trainer networks, enabling simulated force-on-force engagements to be conducted in a common computer-generated battlefield environment using high-fidelity 3D graphics. The force-on-force engagement training on simulators can be used to support training exercises at various levels of command - tactical exercises of AFV crews and Platoon-level mechanized infantry units; tactical training of Platoon/Company-level units; tactical training of Battalion-size units.

TacSim provides capabilities as follow:

- Single-force/opposition-force tactical drills, exercises and training of Platoon/Company-size units in various virtual battlefield environments, using BMP-2-type IFV crew trainers;
- Battalion-level training exercises to practice battlefield command and control of subordinate units (without the use of BMP-2 crew trainers);
- Tactical training of Battalion-size units;
- Simulation of actions by assigned and participating assets; simulation of the effects of air/ground-based enemy weapons and electronic warfare equipment;
- Implementation of a broad range of tactical training exercises ranging from troop advance in order of march to fighting a battle (defensive or offensive) against a 'virtual' foe generated by computer;
- Support of real command-and-control datalinks;

- Battlefield command and control of motorized infantry units, mounted or dismounted;
- The display of dynamics of the battle on a working electronic map;

Integration into higher-level (up to Brigade) simulator training networks; networking with artillery, anti-tank and anti-aircraft unit simulators.

TacSim, as mentioned above, has no competitors on the domestic market. The advantages provided by the TacSim simulator suite are displayed in the Table given below:

Modest term 'simulation' actually implies a truly 'breakthrough' innovation; potential export customer (Ministry of Defense of any country) can specify its requirements regarding the potential enemy and associated weapons and AFV types (i.e. specific types and names of main battle tanks, battlefield tactics etc). Roughly speaking, in the event of an armed conflict with France, the Germans will have to deal with Leclerc-type main battle tanks, and the simulator trainer will be 'programmed' with characteristics and performance parameters of this specific tank type.

Furthermore, O. Matvievsky notes, projected market price of the TacSim simulator suite will be highly competitive; it will be by an order of magnitude (\$250 million, to be precise) cheaper than CATT which comes with a price tag of around \$300 million.

"Very few of relatively small armed forces are really interested in expanding their simulator trainer fleets, as there is simply no such issue as 'highly effective combat training' there. Reciprocally, the larger the armed force, the more advanced weapons it is interested to acquire, the more importance it ascribes to combat training issues at all levels - from an individual warfighter to a military formation commander", Matvievsky says. If this logic is followed,



The use of simulating technologies allows it to reduce the cost overall of combat training by 70 to 80 per cent

Ukraine is a country "with a small armed force" as it does not pursue a common or well-coordinated policy with respect to the building of a military simulator training system complementary to army skills training and field training. Matvievsky continues to note: "The Ukrainian Ministry of Defense does have a comprehensive program for the development and procurement of simulator training assets. But this only covers some individual simulator equipment types that simply cannot be integrated into a unified system. Indeed, nobody argues against the need for procuring certain simulator equipment types in the initial stage for familiarization purposes. But these need to be interoperable and to be able to link into a networked system. What to do in the initial stage and in each of the following stages? What to do to ensure that these stages are logically knitted into an integrated training system? Is it really necessary that simulators be interoperable with each other? Is it necessary that simulators be integrated into tactical training networks? It is necessary that they should be able to interoperate with simulators on other sites?" Nobody even bothers to find out answers to these questions; and there is zero probability that the Ukrainian Ministry of Defense will order a tactical training system like TacSim... **DE**



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