

Virtual Simulation for AFV Gunnery and Crew Procedure Training

By Nils Hinrichsen, Director Marketing & Business Development, eSim Games LLC

Over the past ten years eSim Games has expanded its original armor simulation game into a full-featured training solution which is currently employed by nine armies on four continents. *Steel Beasts Professional* is a PC based virtual simulation, suited for the training and education of crews of armored fighting vehicles in a wide spectrum of everyday training situations.

It covers basic and advanced gunnery training for currently nine different AFV fire control systems, crew procedure training. All this is being presented in a tactical context of up to battalion level task force strength. This is provided by a powerful yet easy to manage constructive simulation. It has semi-automated forces for realistic medium and high intensity combat scenarios involving armored and mechanized forces.

Gunnery training is supported by using 3rd party control handle replicas, or by integration of the software into new or existing crew trainer cabins. In cooperation with the Danish Army a series of new crew trainer cabins have been developed for the Leopard 1A5 and 2A5. New cabins are under construction for the CV90/35. In addition an ongoing retrofit of an existing simulator will be finished by the end of this year, replacing the original software with *Steel Beasts Professional*.

In close cooperation with its customers eSim Games has developed a solution where a microcontroller is programmed to transmit the system state of the simulator cabin to *Steel Beasts Pro* and to receive status updates from the simulated fire control system to activate control lights or to cue other system events in the hardware. This is a good basis for similar projects in the future.



2004: The early days of desktop gunnery trainers

Each simulation session – be it in solitaire training mode, or as a collective training in a network environment – starts with a planning phase where the crews can reconnoiter the virtual environment prior to executing their mission, and to develop a battle plan where this is appropriate.

The planning phase is then followed by an execution phase where the fire, maneuver, and communication with other virtual units are being practiced. This is a challenge to all participants – for the gunners to perform target identification, shooting, shot observation and correction, and of course the proper communication drills within the crew. It is a challenge for the drivers to bring the vehicle in tactically sound movement to the desired location, and to help the turret crew with observation. It is a challenge for the vehicle commanders to coordinate the actions of the vehicle crew, and to maintain communications with other units and their chain of command. Finally it can be a challenge for troop leaders at platoon, company, and battalion level to orchestrate the maneuver of different combat and combat support elements in order to accomplish the mission given in the mission briefing and operations order.



2006: Training facility in Finland

Each exercise ends with the after action review (AAR). The AAR starts with presenting the instructor with a pre-screening of gunnery performance which can be filtered and reviewed for each student to identify key elements like laser range finder usage, aim at the moment of weapon release, impact location analysis, and eventually the procedures to correct the aim. Once that the pre-screening is complete the AAR for the whole audience can start (or be saved for later). Eventual comments on the pre-screened events can now be seen as well as all tactical events and the flow of forces in the map view as well as the virtual environment.

Finally, *Steel Beasts Professional* creates a tabular overview over the logistical footprint of an exercise as well as a complete and detailed event list which can be accessed with a normal web browser or a spreadsheet calculation which allows the customer to pull the relevant information into a training database for further statistical analysis.

As a desktop trainer *Steel Beasts Professional* offers a wide range of functionality at an unprecedented price point of under 10,000.- EUR per workplace, including PC hardware and gunnery handle replica. This enables to use the solution as a supplement to traditional simulator training for better crew preparation prior to simulator rotations, and better retainment of acquired know-how and skills after simulator training, or even during deployment where patrol and guard duty might otherwise result in a deterioration of skills in medium and high intensity combined arms operations.



2009: Cabin Trainers with *Steel Beasts Pro*

eSim Games at ITEC 2011

Visit eSim Games at stand A154 for public demonstrations.

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Mr. Hinrichsen has served in the German Bundeswehr as an armor officer, and has studied industrial engineering in Hamburg and Albstadt-Sigmaringen. During university he formed the eSim Games team with lead developer and president of eSim Games, Mr. Alexander H. Delaney, to debut the market with the armor simulation Steel Beasts in 2000.

Mr. Hinrichsen is married, 42 years old, and leading the eSim Games office in Hannover, Germany.