

# All Realized Projects

## The Centre of Simulation and Training Technologies in Brno (CZ)

VR Group, a.s. has significantly contributed to establishing the Centre of Simulation and Training Technologies in Brno and Vyskov according to Czech Army training requirements; the company took care of the system integration, development, facility setup and long-haul communication design.

**The Centre of Simulation and Training Technologies provides following kinds of training (especially for ground forces):**

- Battalion and brigade commander and staff training
- Training of commanders (up to company level)
- Training of units, combat vehicle crews and infantry up to company level
- Training of members of organizations responsible for crisis management
- VR Group, a.s. has provided following equipment, which constitutes the core of the simulation centre equipment.
- Reconfigurable simulators “Virtual Tactical Simulator” – each with 10 configurations (3 sets)
- Constructive simulation systems - OneSAF and OTB modifications (in cooperation with the SAIC company <http://www.saic.com>)
- Distributed simulation systems - DIS protocol
- After Action Review tools
- Terrain databases and 3D models
- Communication system

VR Group, a.s. provides comprehensive technical support to the simulation centre, including training support.

## The Centre of Simulation and Training Technologies in Vyskov (CZ)

VR Group, a.s. has significantly contributed to establishing the Centre of Simulation and Training Technologies in Vyskov in accordance with the Czech Army training requirements.

The training facility in Vyskov provides following kinds of training (especially for ground forces):

- Training of commanders (up to company level)
- Training of units, combat vehicle crews and infantry up to company level
- Training of members of organizations responsible for of crisis management

The company has provided following technology, which constitutes the core of the simulation centre equipment:

- Reconfigurable simulators of the "Virtual Tactical Simulator" category – each with 10 configurations (16 sets)
- BMP-2 Crew Simulators of the "Full Mission Simulator" category (4 sets in total, 3 of them installed on motion platforms with 6 degrees of freedom)
- BMP-2 Driver Simulator of the "Full Mission Simulator" category (1 set)
- Team Leader Simulators of the "Virtual Tactical Simulator" category (10 sets)
- Artillery Observer Simulator (LOS) "Virtual Tactical Simulator" category (1 set)
- Simulator for constructive simulation - OneSAF and OTB modifications
- After Action Review tools for the exercise management and evaluation

VR Group, a.s. provides the simulation centre with comprehensive, including training support.

# The Air Training Centre Pardubice (CZ)

## Flight Training Centre in Pardubice (CLV)

The Flight Training Centre located in Pardubice has been providing complete training of pilots for the Czech Army since 2004. The pilots are trained in modern environment and with use of multimedia training tools.

## Tactical simulation centre (TSC)

VR Group, a.s. has completely developed and manufactured the simulation system for the Tactical Simulation Centre (TSC) established in 2010 in the Flight Training Centre (CLV) in Pardubice. The TSC enables training of up to 8 pilots, 2 CGI drivers and other participants in the roles of operators, observers and training instructors.

The simulation allows the use of JAS-39 and L-159 and generic supersonic aircraft in all types of air-to-air operations, focusing on BVR tactics.

### VR Group, a.s. has provided following technology:

- Reconfigurable cabin simulator of the "Part Task Trainer" category (4 sets)
- Reconfigurable PC simulator of the "Desk Top" category (4 sets)
- GCI (Ground Controlled Interception) simulators of the "Desk Top" category (2 sets)
- FAC (Forward Air Controller) simulator of the "Desk Top" category (1 set)
- Instructor Operating Station (1 set)

## Department of Simulation Technologies

### VR Group, a.s. has provided following technology:

- Mi-17/171Sh Helicopter Simulator of the "Part Task Trainer" category
- Mi-2 Helicopter Simulator of to the "Part Task Trainer" category
- L-39 simulator of the "Part Task Trainer" category

## Czech Army Tactical Air Force Base Caslav (CZ)

The Tactical Air Force Base (<http://www.afbcaslav.cz/>) is one of the main combat units of the Czech Army Air Force. Its main duty is to ensure defence and sovereignty of the Czech Republic airspace. The comprehensive training of flight, technical and support personnel is aimed at fulfilling this goal.

VR Group, a.s. provided following products (delivered by the Hexagon Systems, s.r.o. company before its fusion with VR Group, a.s.):

- Aero L-159 simulator of the "Full Mission" category
- Aero L-159 simulator of the "Part Task Trainer" category
- Multimedia classroom for Aero L-159 aircraft training
- Reconfigurable simulators of the "Desk Top" category (2 sets)
- Terrain databases and 3D models
- GCI simulator

## Armed Forces Academy of General Milan Rastislav Stefanik (SK)

The Armed Forces Academy of General Milan Rastislav Stefanik is a public university established in Liptovsky Mikulas in the Slovak Republic. It has been providing military education for over 60 years.

VR Group, a.s. supplied this university with a simulation system for tactical training of individuals and units focused on crisis management via the LYNX Ltd. company based in Kosice. The project was financed by the EU Structural Funds. This solution enables training of security forces including staff officers in the area of crisis command and control.

**Following products were supplied:**

- Reconfigurable Virtual Simulators of the Virtual Tactical Simulator category with the Police, Ambulance, Bus and Mi-17 transport configurations (10 pcs)
- Exercise Director Tools for exercise control and evaluation - VS Manager
- Terrain Databases
- 3D Models

## **Pakistan Air Force AIR HEADQUARTERS, DIRECTORATE OF PROCUREMENT (PK)**

Control loading system for the Cessna T-37 aircraft.

## **Air Force Kazakhstan (KZ)**

Full-mission simulator of the Aero L-39 aircraft.

## **MetaVR (USA)**

Building and conversion of the terrain database and 3D models.

<http://www.metavr.com>

## **SAIC (USA)**

Development and delivery of the modifications of simulation systems for tactics training delivered via the FMF Fund as a part of the US government's help to the Czech Army.

<http://www.saic.com>

## **Austro Control (A)**

Aerodynamical model for the FNPT MCC II category simulator of the Boeing 737 aircraft.

<http://www.austrocontrol.at/content/acg/austro.shtml>

## **ALION (USA)**

Participation in building of the capabilities of the modelling and simulation synthetic environment systems for Joint Chemical, Biological, Radiological and Nuclear Defence Centre of Excellence in Vyskov - analysis, development and implementation of the simulation tools, technical support in cooperation with Alion within the EZ-Z-EZA project of the USA FMF program (2008-2009).

<http://www.alionscience.com/sitecore/content/Alion.aspx>

# Studies and Research Projects

## Current Projects

VR Group, a.s. actively participates in research and development projects for the Czech Republic Ministry of Defence, Ministry of Interior, Ministry of Industry and Trade and NATO. Currently VR Group, a.s. is involved in following projects.

### **Simex (2014-2017)**

The purpose of the project is to research interoperability in the processes of social security, continuous crisis planning and response to critical infrastructure element malfunction. The research and experimental development is focused on cooperation among the Integrated Emergency System (EMS) organs, the subjects of critical energetic infrastructure, their peers and the authorities.

The company will design, develop and test simulators suitable for training of dealing with emergency situations.

### **Tactical training of vehicle crew in the environment of virtual simulators (2013-2015)**

The aim of the project is to check the possibility of tactical training of military vehicles crews currently put into equipment of the Czech Army, by designing corresponding vehicle models for reconfigurable virtual simulators used at simulation facility CSTT Vyskov.

### **Training of commanders and staff for recent types of operations (2013-2015)**

The aim of the project is to provide military units and staff with tactical training focused on current types of operations by utilization of OneSAF simulation system used at simulation centers of the Czech Army.

## **Integrated simulation platform (2013-2015)**

Use of simulators which are not sufficiently authentic may lead to negative training. If the upset recovery training allows exceeding physical limits of the real machine, this phenomenon is regarded as an improper use of simulation technology. As the simulation industry is concerned with the effects of negative training, this project aims at research and development of an integrated simulation platform, capable of high-fidelity spatial simulations of transportation devices.

## **SALI – Software for Airframe Loading Investigation (2013-2015)**

The SALI project follows the activities related to the CESAR project realized in the 6th Frame Program of the European Commission. The ALAN software was developed within the frame of this project. The goal of the SALI project is to enhance the versatility of this software, improve the calculations, optimization of computational procedures and databases, validation based on flight tests and above all preparation for its commercialization. An important outcome of the project will be the user's guide and a detailed analysis of implemented calculation methodology. The new software should replace the well-known SAVLE software, which was created in the 1980's and its architecture does not correspond to current needs. The consortium of the project partners intends to utilize their experience with the software SAVLE and ALAN as a basis for creating the new software, which has the ambition to become a common software tool for aircraft certification according to CS-23 regulation, and which is accepted by aviation authorities. The aim is to create flexible, adaptable and extensible software, which will help to accelerate development, will be able to archive input data and calculate results transparently and will also improve critical aircraft loading calculation. As a consequence, it will also reduce costs of development and modification of aircraft, enhance air traffic safety and optimize airframe weight.



# Past Projects

## 2013

### **Simulation technology utilization in emergency management**

Simulation technology utilization in emergency management staff education and training (2010-2013)

## 2012

### **SIMPRO**

System design and verification of interconnection of simulation devices for individual training in the environment of recent operations (2010-2012)

### **SIMNEC**

Capabilities development support by means of modelling and simulation (2009-2012)

### **CONTROL CENTRE**

Instrumentation abilities of a training environment (2009-2012)

## 2011

### **TOOL**

Low-cost simulation tool for education and training (2011-2012)

**2010**

## **DISTANCE**

Distance education of military professionals (2007-2008)

**2008**

## **SIMUL**

Interoperability of simulation systems and computer models to support troops training for real operations (2007-2008)

## **NEC SIMULATOR**

Implementation of Network Enabled Capability environment into simulation technologies (2007-2008)

**2005**

## **Analysis of the Simulation Technology Utilization**

The Analysis of the Simulation Technology Utilization for the Education and the Training in the Crisis Management, the Population Protection and the Integrated Rescue System Areas (2005)