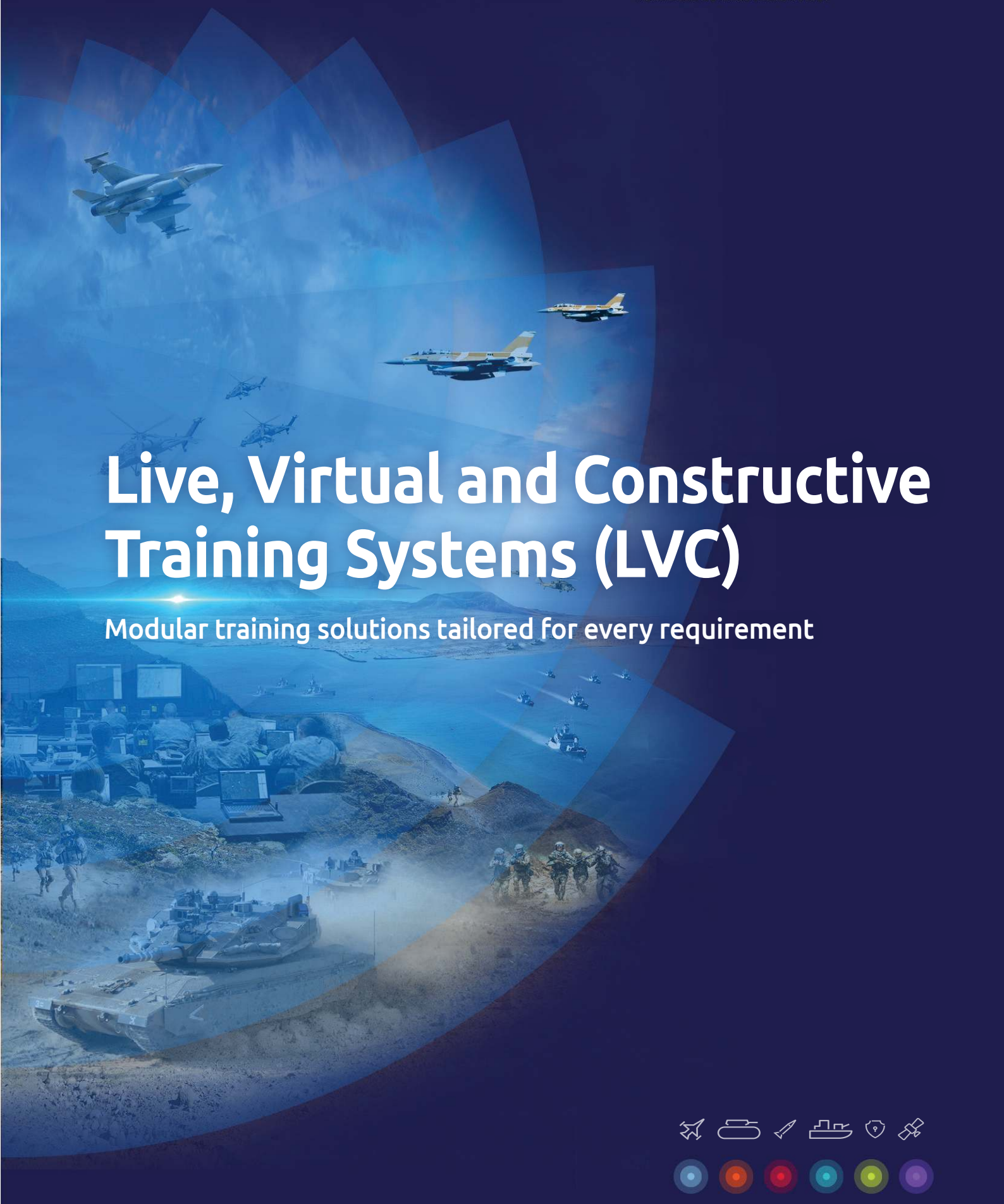
RAFAEL
ADVANCED DEFENSE SYSTEMS LTD.



Live, Virtual and Constructive Training Systems (LVC)

Modular training solutions tailored for every requirement

LVC Operational Training

Creating a true LVC training system is one of the major challenges facing developers of training and simulation systems. Meeting this challenge, RAFAEL's unique solution combines Live, Virtual and Constructive aspects for any arena - allowing trainees to train as they fight. The system seamlessly integrates multiple unique solutions that together create a holistic LVC ecosystem - enabling modular training at any scale within a single arena during a single exercise.

A Proven Training System Provider

For over 30 years, RAFAEL has been the main supplier of training products for the Israel Defense Forces (IDF) - one of the most sophisticated and experienced militaries in the world.

RAFAEL's LVC training systems, which are continuously upgraded, are used by the IDF in over 100 exercises each year, supported and operated by RAFAEL. These systems are used in all IDF Live, Virtual and Constructive exercises for Land, Air and Sea environments. Army Battle Simulation (ABS), SCOUTS, Tracer and other solutions, integrated with multiple 3rd party systems, are part of the LVC training scenarios created on a daily basis for the IDF.

ABS - Army Battle Simulation

RAFAEL's ABS is a constructive simulation system for training Commanders and Headquarters in Land, Air and Sea arenas. The ABS system is a proven operational system, with multiple installations and years of continuous evolution and improvements. In every exercise, the system is connected to and integrated with over 20 systems from various vendors using an array of interfaces.

ABS is cloud-ready and runs on any infrastructure using a Web-based application shared via the Internet. The system provides cost-effective, realistic and efficient training that challenges commanders' decision-making capabilities, procedural skills, and tactical knowledge – as well as adding AI to enhance training and allow complex scenarios.

ABS enables specific training across multiple areas of expertise and provides full simulation of the battlefield. Combining real and simulated forces, trainees face realistic operational challenges in Air, Land and Sea environments.

ABS has been adapted over time to handle very large scale simulations with millions of real and virtual entities. These simulations show how the war would be seen in the real world, enabling intelligent management of the most complex situations.

Benefits

- Decades of experience with constructive training solutions
- Open Architecture to connect to all types of systems (HLA, DIS, etc.)
- Modular; can be tailored to any customer and requirement
- Integrates civil scenarios together with military training
- Cloud-compatible architecture supports Air, Land & Sea training
- Incorporates AI and advanced technologies in all systems

Unique Solutions

Arena Coordinator

This software enables LVC integration - unifying all training worlds into one scenario which combines the aggregates of the constructive world with the individuals of the virtual and live worlds. A unit - which in the constructive world is viewed as a single entity - will be separated into individuals for the virtual world.

Doctrine Engine

This is an AI-enabled automation tool for modeling doctrine, tactical procedures and plans. Designed for both constructive and virtual environments, the doctrine engine supports any number of users from individual soldiers up to battalion or brigade level war gaming.

The Doctrine Engine, which saves time and manpower, provides realistic automation according to the relevant doctrine selected (enemy doctrine, specific area doctrine, etc.). The system includes the Doctrine Editor, an easy-to-use tool for SMEs that works with both ABS and SCOUTS, enabling doctrines to be created or changed.

SCOUTS – Synthetic Video Generator

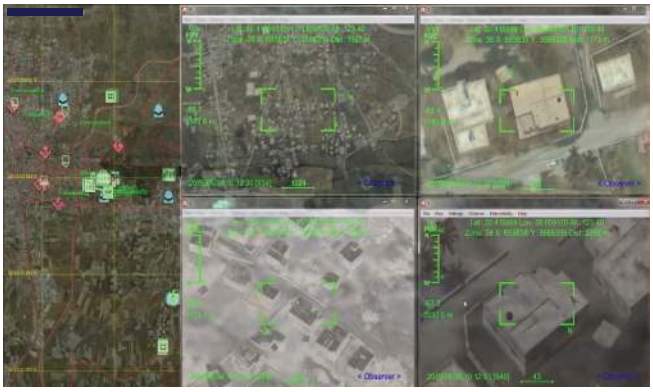
Strike Cell & Observation Unit Training System

SCOUTS is a computer-based training system designed to train and enhance the level of training of crews that are in charge of commanding and controlling UAV missions.

The system also provides realistic training for analysts handling Full Motion Video (FMV), Image Processing, Exploitation, and Dissemination.

SCOUTS works with any CGF application, allowing synthetic video to be generated autonomously on the operational screen to allow the crew to train as they fight. The system is connected today in every exercise to ABS using the Arena Coordinator. Every UAV created in ABS is automatically connected to SCOUTS to provide video on the operational screens.

SCOUTS also includes the Doctrine Engine, enabling the automation of tasks with minimal human involvement.



Credit: IDF Spokesperson's Unit

Open Architecture & Modularity

RAFAEL's LVC training systems use the microservices architecture and Web-based applications designed with the UX First approach. All systems are modular and can be tailored to any customer requirements.

Integration with other simulators can be achieved using an HLA bus or any other required interface. RAFAEL has accumulated extensive experience in the development of interfaces. Over the years, the company has integrated over 20 types of systems using multiple protocols - adapting them to all types of BMS, trainers, and systems.

RAFAEL enables the customer to develop new models and connect them as services - or to implement the company's services in the customer's system. All systems are cloud-compatible.

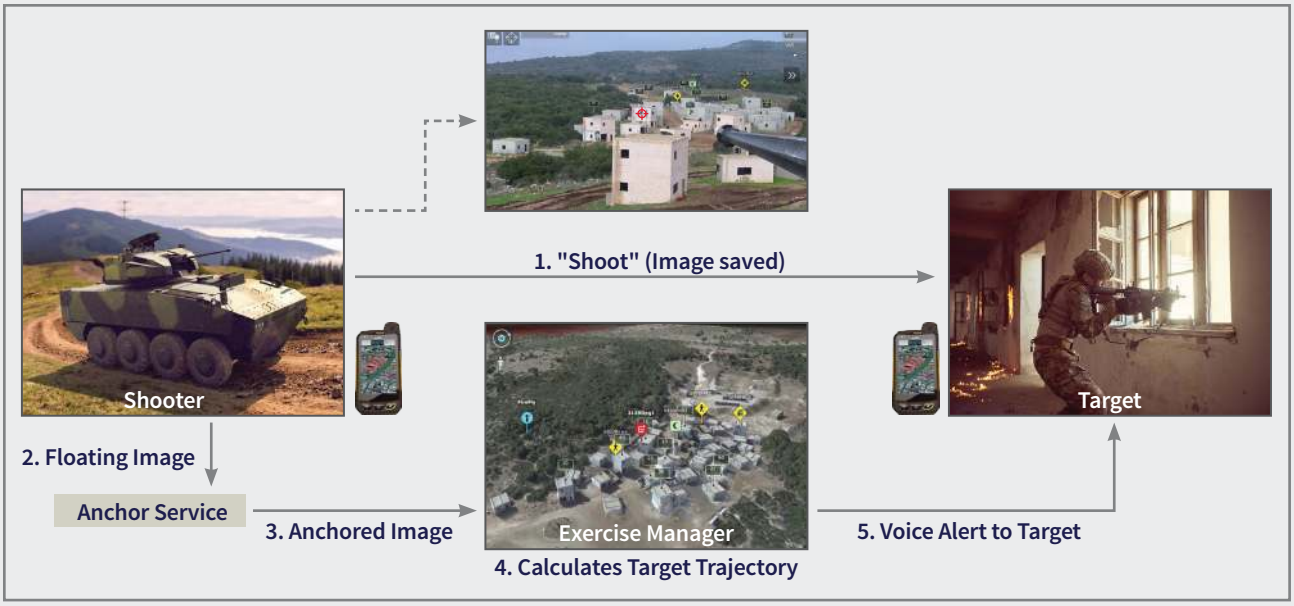
A Revolution in Live Training

A Next-Generation Replacement for Miles Technology

RAFAEL has developed a groundbreaking solution which incorporates multiple RAFAEL systems including ABS, Tracer, Footprint and Fire Weaver - leveraging decades of experience in computer vision algorithms.

Overcoming the limitations of the MILES laser-based solution, RAFAEL's system uses GEO-Pixel technology and smart algorithms to enable every system to precisely locate and point to targets without special hardware or lasers. Additional benefits of the system include improved accuracy, the elimination of obstruction issues as well as the need for special equipment or preparations, and cost-effectiveness. As shown in the chart below, the system provides an end-to-end solution for live training.


Augmented force and enemy location using computer vision



Tracer

Tracer is a real-time positioning and alert system that uses cellular or satellite infrastructure to enable simple and fast command and control of deployed forces. In operational use by the IDF, with thousands of player units employed together with a BMS, Tracer provides safe and controlled training exercises. Integrated with RAFAEL's Footprint, Tracer can work in a GPS-Denied environment to allow realistic training and include jamming systems.

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