

## CONCEPT-TO-CAPABILITY (C2C) FACILITY

**SELEX Galileo has a depth of knowledge and engineering capability across air, land and sea. Utilising this experience and expertise, the Company has developed its synthetic environment ability to become a leader in simulation and ground based training systems.**

As a result SELEX Galileo is able to provide its customers with a comprehensive offering in modelling & simulation and virtual reality ranging from sensors, integrated sensor development & validation and computer based training to tactical scenarios and 'BattleLabs' up to full mission simulators.

SELEX Galileo's Concept-to-Capability (C2C) facility is a state-of-the-art synthetic environment resource where integrated sensor solutions can be developed and deployed. The C2C provides cost efficient and demonstrable operational capability across disciplines as diverse as C4ISTAR, land, maritime and air operations, Electronic Warfare (EW) and security and resilience.

The C2C is designed to support all stages of a sensor system lifecycle, from very early concept demonstration through development (particularly integration and qualification) to in-service support training, mission rehearsal, evaluation of product enhancements and technology insertion benefit analysis.

# LEADING FACILITIES CAPABILITY

SELEX Galileo has core facilities for Hardware-in-the-Loop (HWIL) and Synthetic Environment (SE) modelling. As a Finmeccanica company, SELEX Galileo's C2C facility has access to a range of resources available internally including:

- A dedicated and trained team of highly skilled engineers and modellers with experience of working with HWIL and SEs
- Cutting edge modelling and simulation software including Artificial Intelligence (AI) capabilities
- Facility contains a suite of rooms including an RF-Screened lab, meeting room and demonstration room
- Links available to other Finmeccanica sites including SHORE facility in London with further links planned.

## KEY CAPABILITIES

### De-risking

- De-risking of product development by early, more thorough testing of software and interfaces
- Demonstrate full integration of testing systems in a synthetic environment
- Demonstrate system performance.

### Cost efficiencies

- Greatly reduces the requirement for expensive trials
- Mission planning and demonstration
- Training without need for real equipment.

### Proof of concept

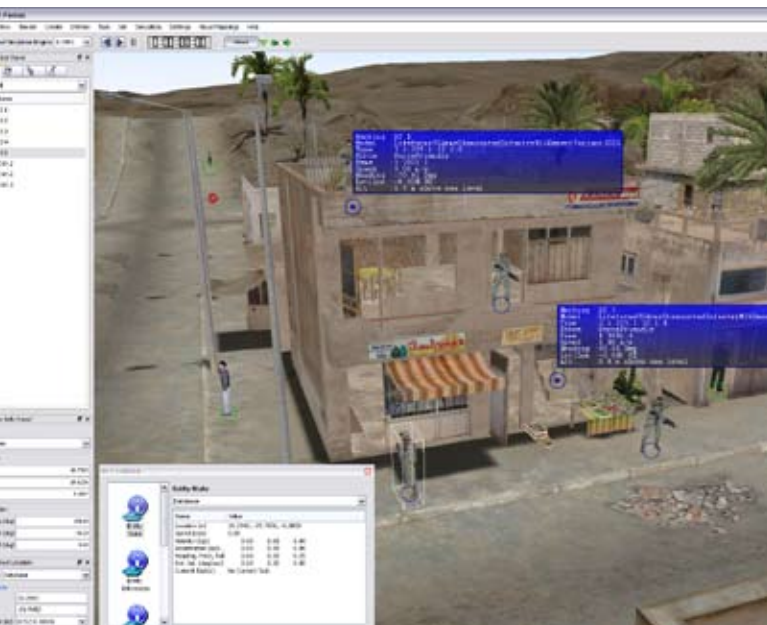
- The demonstration of the potential capability of new concepts in an operational context
- Demonstrates benefits of potential system enhancements.

### Networked capability

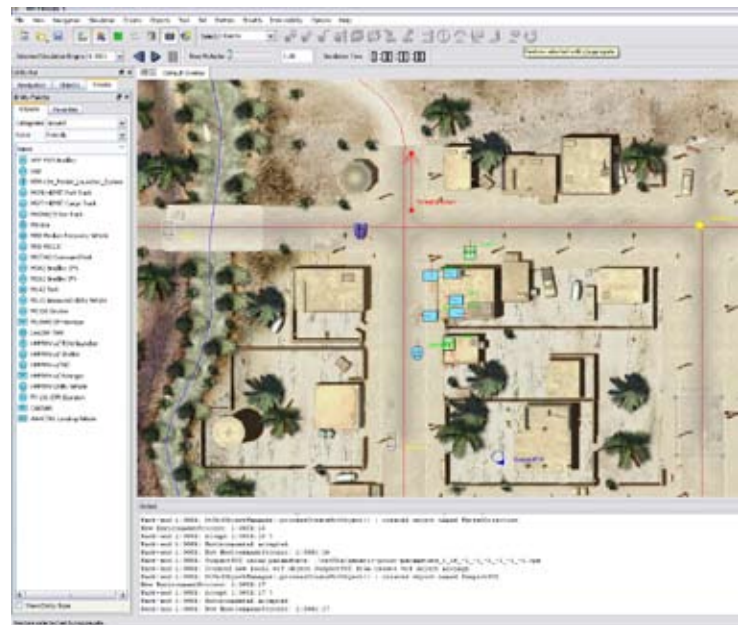
- Facility has full broadband link capability
- Ability to meet in a virtual world across sites to demonstrate capabilities.

### Visualisation

- By representing results in a 3D synthetic environment you can give a more compelling demonstration
- Reduces the requirement for real life models to demonstrate equipment capability.



Creating a battlefield scenario in VR forces



VR village scenario



## THE C2C FACILITY PROVIDES A BROAD CAPABILITY COVERING A WIDE RANGE OF CUSTOMER NEEDS



Fully interactive terrains and environments

### SOFTWARE

#### IMAGE GENERATORS

- The C2C can rapidly configure, create, and deploy advanced 3D simulation applications
- Fully interactive terrain and environments can be created with easily accessible data on all aspects of the simulation.

#### FLIGHT MODEL SIMULATORS

- C2C features the industry standard for creating high-fidelity PC-based rotary and fixed-wing flight simulations.

#### CONTENT GENERATION

- Highly optimised high-fidelity real-time 3D content for use in visual and urban simulations as well as in other applications
- Advanced 3D Data Translation, Rendering & Scene Composition
- Commercial-off-the-shelf (COTS) software for adding lifelike humans and animals to real-time simulations.

#### COMPUTER GENERATED FORCES

- Able to build a tactical database and to then simulate dynamic, interactive, complex, and real-time tactical or operational environments for land, air and sea
- Can create scenarios for military and civilian applications.

#### SENSOR SIMULATION

- C2C can simulate real terrain and real physics
- Advanced sensor modelling toolkits and run-time library for real-time sensor effects.

#### DATA REPLAY & OPERATIONAL ANALYSIS

- Ability to record, playback and analyse scenarios.

#### BEHAVIOUR/A.I. SIMULATORS

- Able to add Artificial Intelligence (AI) to any scenario.

#### COMMUNICATION SIMULATORS

- Communications simulation packages across the spectrum for wireless, RF and satellite communication.

#### MAPPING & GIS

- The C2C has a full mapping capability and can create new maps, upload existing maps or piece shards of data together.

#### HUMAN MACHINE INTERFACE SIMULATION

- The C2C can build high-fidelity graphics and fully interactive controls into its software products, enhancing the level of realism and sophistication of development efforts.

#### SIMULATION NETWORKING

- Can quickly and easily network simulators and virtual reality applications using either the U.S. Department of Defence (DoD)'s High Level Architecture (HLA) or the Distributed Interactive Simulation (DIS) protocol.



### SIMULATION AND TRAINING FOR HIDAS

SELEX Galileo has created a training package to help pilots of Apaches familiarise themselves with the Company's Helicopter Integrated Defensive Aids System (HIDAS).

This was created by connecting the DAS processor to a VR-Forces Synthetic environment using both COTS and bespoke software.

For in-flight training, a rugged laptop/dedicated processor synthetically injects threats into the DAS system.

These are injected directly into the helicopter's DAS processor which, based upon the Pre Flight Message (PFM) and threat type, will recommend appropriate evasive action.

For Ground Based training the same laptop is used and configured with an actual DAS Processor.

Stimulating real equipment with synthetic data and feeding back the results in this way is known as Hardware-in-the-Loop (HWIL).

HWIL capabilities were used to stimulate the DAS processor using "open" High Level Architecture (HLA) or Distributed Interactive Simulation (DIS) protocols.



The larger Rotary Wing Simulator consisting of pilot's display, joysticks, foot pedals, and representative collective