VELOCE 15 (V15) Simulator System

Enabling the future of V15 UAV Operator Training

ST Engineering

Introduction

Driven by technological advancements, Unmanned Aerial System (UAS) are gaining adoption across various industries, including logistics, defence, public security and commercial sectors, for applications such as last mile delivery, surveillance, perimeter security and military operations.

Proper training is essential for ensuring that UAV operators are skilled in operating the controls and systems effectively and can complete their operations and missions efficiently and safely.

V15 Simulator - Mission Training System (MTS)

V15 simulator provides a risk-free virtual training environment where UAV operators can train and hone their skills in various scenarios. This includes (1) procedural training for Human Machine Interface (HMI) familiarisation, (2) malfunction handling for type proficiency, (3) autonomous or integrated mission scenarios and (4) environmental effects that are challenging to replicate in the real world or on opportunity basis. Post flight training, observations would be captured in debriefing station for flight debrief and assessments.

Payload View

Map View

Simulation Environment

LAN

V15 GCS Operator

Glass Partition

IOS Instructor

V15 Classroom Mission Trainer (MTS)

V15 - Light Weight Portable Instructor Operator Station (LiP-IOS)

Innovative and compact, Lightweight Portable Instructor Operator Station (LiP-IOS) transforms the operational V15 GCS into a comprehensive simulator. LiP-IOS incorporates customisable visual scenarios, ad-hoc injects, sensor simulation and Computer Generated Forces (CGF) which allows UAV Operator to have the flexibility to conduct V15 simulator training in both outfield and classroom scenarios. LiP-IOS is also configurable to support integrated training mode for team training.
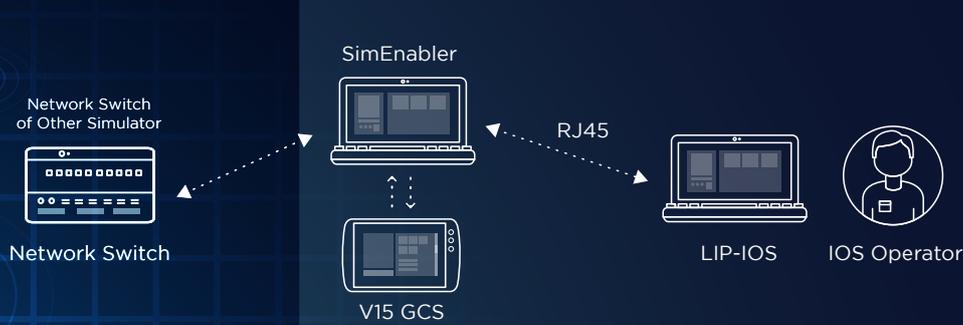

Figure 1: Portable UAV Simulator

V15 - Simulator Enabler (SimEnabler)

V15 SimEnabler is a groundbreaking solution that allows operational V15 GCS to be capable of performing autonomous training in real time with pre-loaded terrain and image visualisation. This distinctive capability also empowers scalability for V15 UAV operators to participate in integrated training mode and elevate the realism of training.

Simulator Variant	MTS	LiP-IOS	(SimEnabler)
Display	✓ 2 x 49" Display	✓ 2 x 15.6" Display	1 x 15.6" Display
Computer Generated Forces (Entities)	✓ (Up to 450)	✓ (50)	X
UAV Ownship Simulation (Including Datalink Simulation and EO/IR Visualisation)	✓	✓	✓
Briefing and Debriefing Capability	✓	✓	X
Dashboard for Displaying Grading Assessment	✓	✓	X
Manual Trainee Grading	✓	✓	X
Semi-Automated Grading Assessment	✓	X	X
Voice Communication Capability	✓	X	X
Health Monitoring System	✓	X	X
Platform Integrated Training	✓	✓ (supported)*	✓ (supported)**
Server Racks Requirement	✓	X	X
Cybersecurity	As per CIS Guideline		
Distributed Simulation Platform	HLA 1516 Compliant		
Software Development Standards	IEEE 12207:2008		

* LiP-IOS must be connected to MTS simulator server for integrated training.

** SimEnabler must be connected to IOS and MTS simulator server for integrated training.

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