



VIRTUAL C2ISR FOR NATO INTEL TRAINING

Concept and Application

22 Oct 20

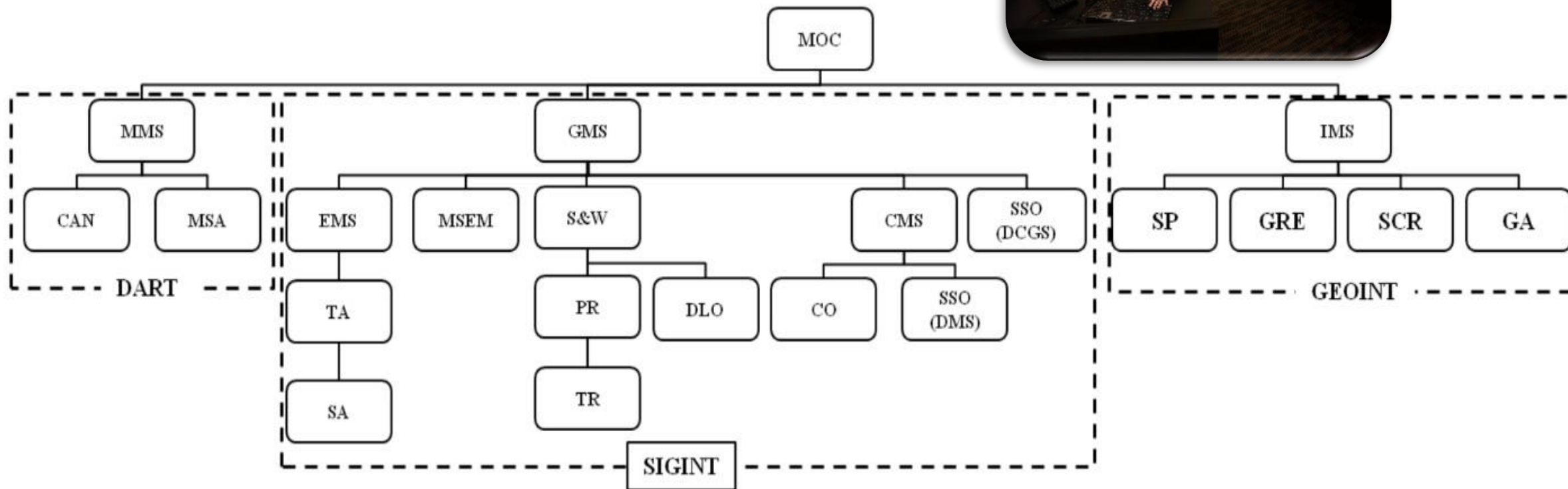
Matt "Killjoy" Martin
RPA/ISR Enterprise Strategist

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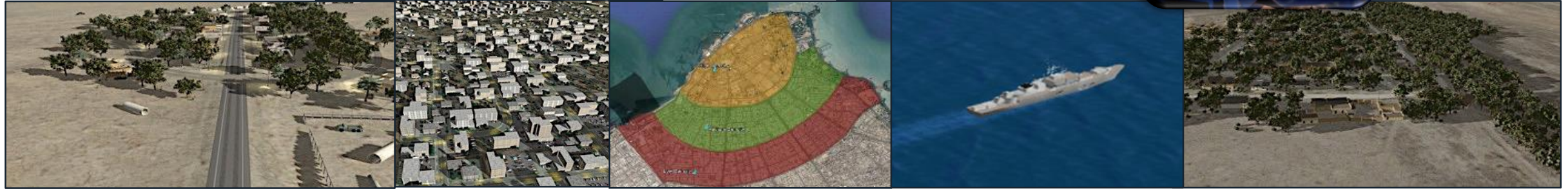
NON-EXPORT CONTROLLED

THESE ITEM(S) / DATA HAVE BEEN REVIEWED IN ACCORDANCE WITH THE INTERNATIONAL TRAFFIC IN ARMS REGULATIONS (ITAR), 22 CFR PART 120.11, AND THE EXPORT ADMINISTRATION REGULATIONS (EAR), 15 CFR 734(3)(b)(3), AND MAY BE RELEASED WITHOUT EXPORT RESTRICTIONS.

Typical Training Audience



ISR Training Technology from MQ-9 and other Programs



Databases and Terrain Types



Selectable Color DTW

False Color SWIR

Weapon Impact IR

Image Sharpening Algorithms

Multiple Geopoint Markers



Laser Spot Paint Color

VNIR

Destructible Buildings

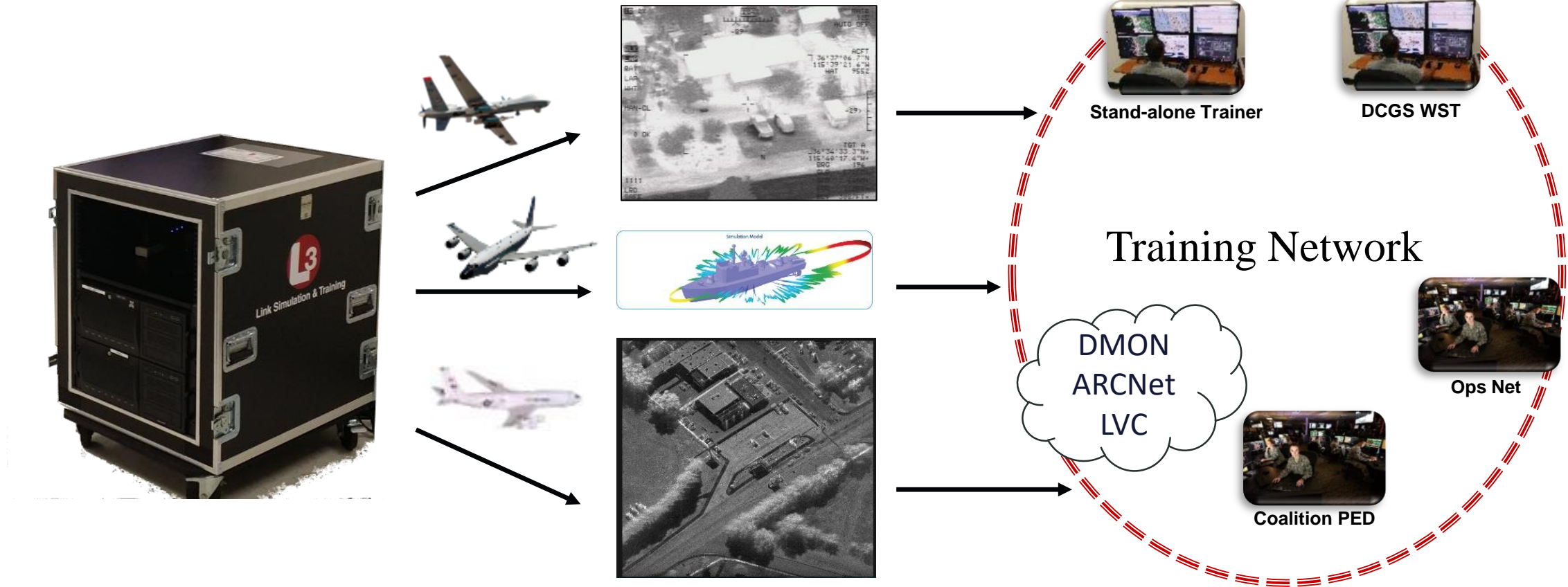
Physics-Based Atmospheric

3D Weather

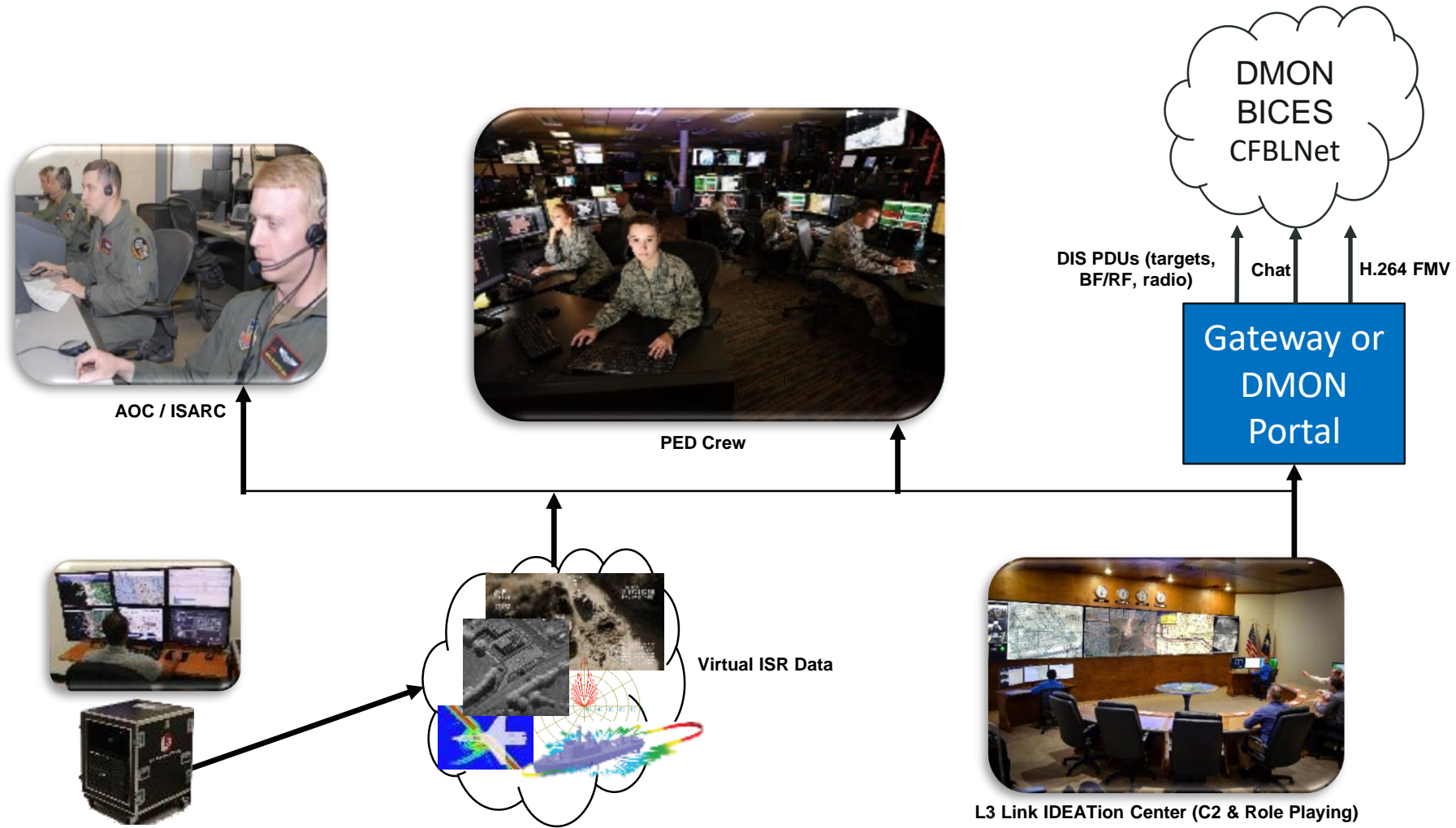
The VISTA Virtual ISR Training Application



- Provides taskable assets generating exploitable ISR data
 - Creates virtual MQ-1/9, Manned ISR, and RQ-4 entities
 - Creates or shares databases, RF/BF/WF entities, and targets
 - Same certified WST data used for aircrew training



Training for Downstream Users



Virtual ISR Capabilities



- Create up to 3 independently-controllable airborne ISR assets
 - Real-time control of orbit, altitude, sensor point, zoom and camera
 - Auto, manual iris, manual focus, polarity, and data overlays available
 - Controlled by station operator via keyboard, joystick, or chat recognition

Data Type	Virtual Assets Available								
	MQ-1/9	MALE	RQ-4	HALE	KingAir	Saab 2000	E-3	Small UAS	Other Manned ISR
EO	✓	✓	✓	✓	✓			Under Development	Under Development
IR	✓	✓	✓	✓	✓			Under Development	Under Development
SWIR	✓	✓			✓				
Low Light	✓	✓							
SAR	✓	✓	✓	✓					
GMTI	✓	✓	✓	✓					
ELINT						Under Development	Under Development		
Voice Communications				✓	✓	✓	✓		✓

UV18 By the Numbers





Unified Vision 2018

NATO's Joint Intelligence, Surveillance & Reconnaissance trial.

Joint Intelligence, Surveillance and Reconnaissance (ISR) is a vital capability that provides NATO decision-makers with a better situational awareness of what is happening on the ground, at sea or in the air.

Unified Vision 2018 (UV18) is designed to ensure that joint ISR assets from NATO Allies and partners are able to operate together to counter security challenges ranging from conventional threats to terrorism.

Facts and figures.

11-26

2018

JUNE



1250

Personnel
both civilian and military

17



NATO Allies

30



DATA SERVERS

2



Partners

10




NATO Bodies

25



intelligence cells



Live activities' locations - Belgium, Czech Republic, France, Germany, Italy, the Netherlands, Norway, Poland, Spain, the United States, and the North Atlantic.

How does it work?

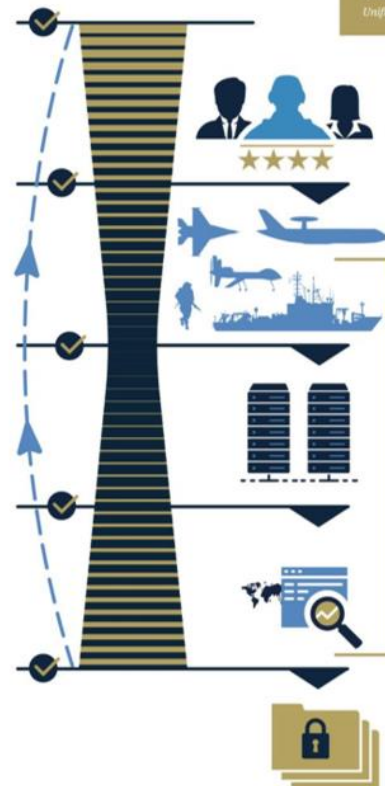
Testing the art of the possible.

During **UV18**, NATO Allies and partners connect and test collective and national joint ISR assets distributed across Alliance territories to ensure they can work seamlessly together.

All this is tested in a fictitious scenario, where the latest technology and capabilities are used to locate and identify fictitious adversaries.

Did you know?

Unified Vision takes place every two years.



Task
Decision-makers task to collect information in a specific area or on a specific target to answer specific questions.

Collect
NATO and national assets (air, land and maritime) collect the data.

Process
The collected data is processed through NATO's joint ISR systems and networks, and passed to analysts.

Exploit/Analyse
Specialists analyse and correlate the data with other sources to generate the intelligence needed to answer the initial request for information.

Disseminate/Report
The findings are disseminated as intelligence reports to decision-makers and shared across the Alliance.

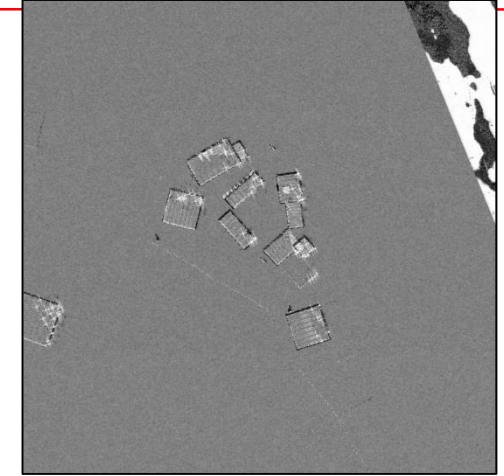
Virtual ISR Trainer Setup and Data Support Provided



WPC Setup



CCTV Images

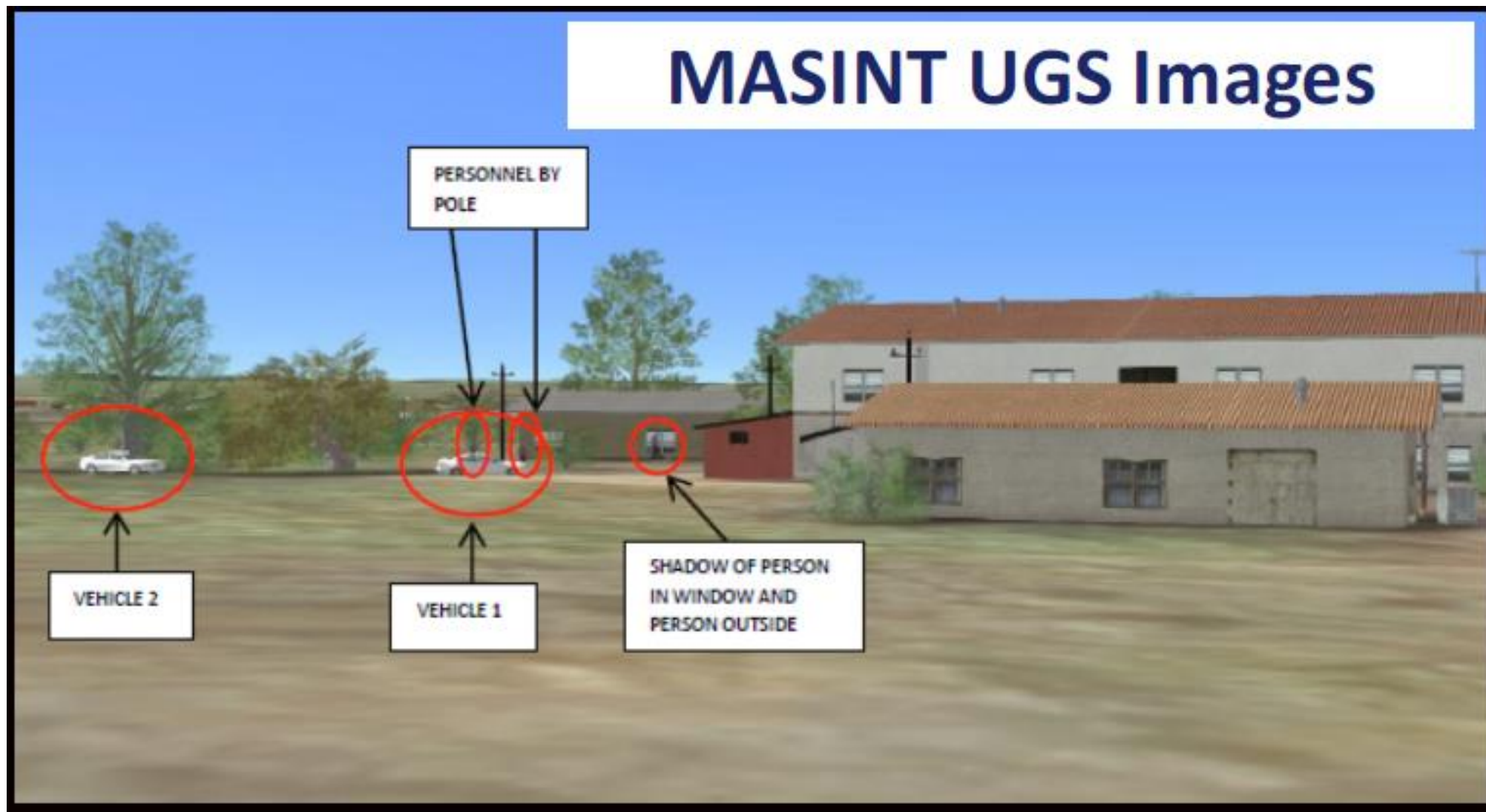


SAR Images with GMTI



Unattended Ground Sensor (MASINT) Images

Intel Products Produced Using VISTA Data



Individualized Web-Based VISTA Presentation



Adaptive Learning Environment



- Provides Real-time, objective assessment and feedback on student performance
- Incorporates biometrics and machine learning to assess cognitive workload and mental states
- Enables tailoring of training to each student



Conclusion / Recommendations



- NATO host additional industry demos during Large Force Exercises
- Identify funding and support (such as cyber security compliance) for high-potential prototypes
- Establish alliance standards for Modeling & Simulation on NATO operation networks
- Make NATO mission tools (such as JCOP and JChat) available to industry for M&S development
- Incorporate requirements for embedded M&S on future operational networks such as AFSC



Matt Martin
L3Harris, Aviation Systems
702-324-8476
Matthew.Martin@L3Harris.com