WE DELIVER TO SOLDIERS

Association of the United States Army

Annual Meeting & Exposition

2022

Mr. Robert Monto, Jr

Deputy Director, Critical Technologies Office & Advanced Concepts and Experimentation

11 October 2022

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Thank You for Your Support












Partnership, Transparency, and Building on Shared Visualization and Common Understanding is Key to Our Success.

Army Rapid Capabilities and Critical Technologies Office Mission

MISSION: The Army Rapid Capabilities and Critical Technologies Office (RCCTO) will rapidly and efficiently **research, develop, prototype, test, evaluate, procure, transition, and/or field** critical enabling technologies and capabilities that address **near-term and mid-term** threats. The RCCTO will execute this mission **consistent with the Army's modernization priorities** that maximize Soldiers' capabilities to deploy, fight, and win on future battlefields.

Reference: 29 July 2020 Charter

Hypersonics | **Mid-Range Capability** | **Directed Energy** — Signature Outcomes

Rapid Acquisition | **CEID*** | **ACE**** | **CTO***** — Critical Outcomes

C-sUAS****** — Joint Outcomes

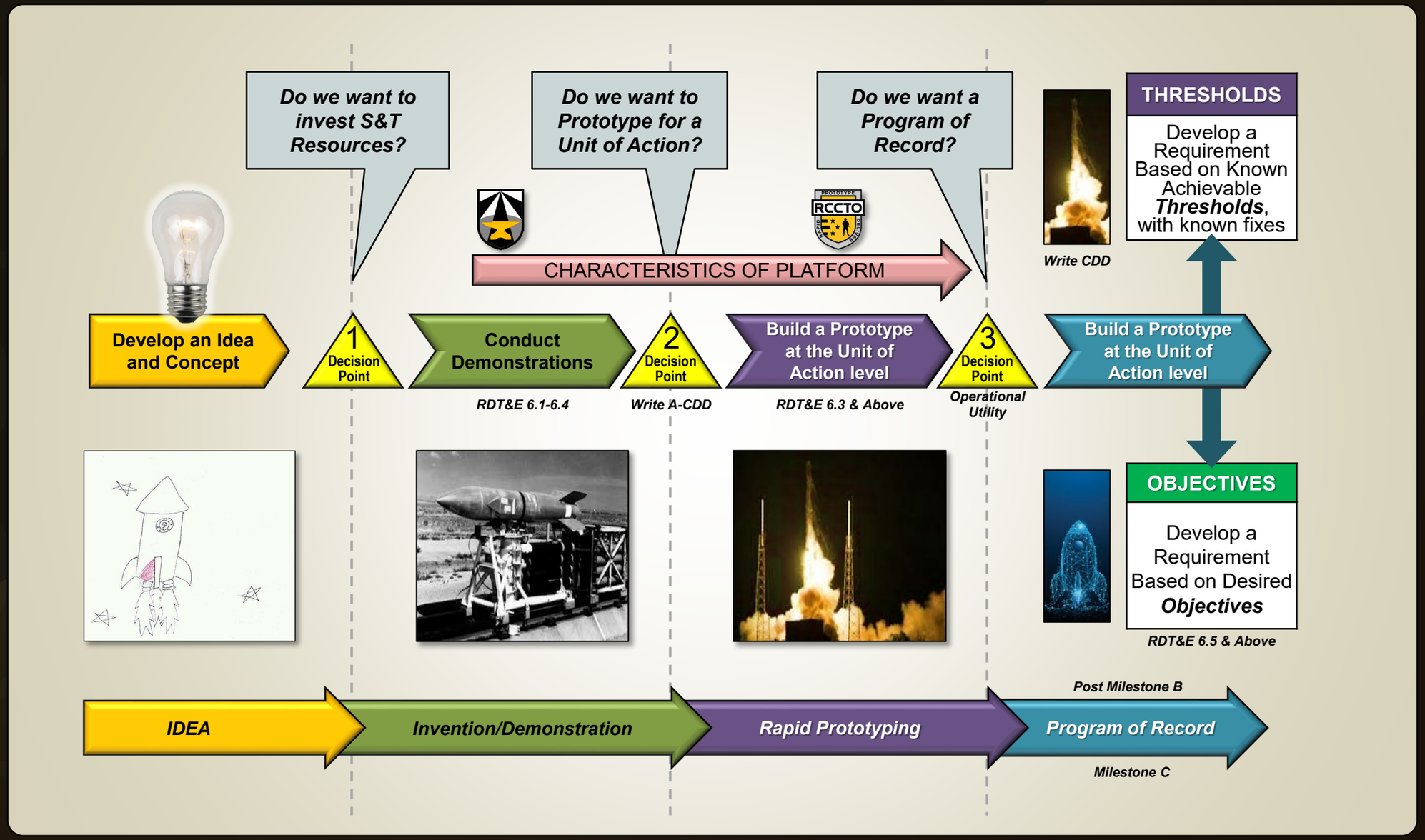
* Cyber, Electronic Warfare & Information Dominance (CEID)

** Advanced Concepts & Experimentation (ACE)

***Critical Technologies Office

****Counter-Small Unmanned Aircraft Systems (C-sUAS)

Modernization Continuum



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Critical Directed and Disruptive Technology Efforts

Current Efforts Examples

Army Responsive Tactical ISR Testbed (ARTIST)

- Intelligence, surveillance and reconnaissance (ISR) collaborative platform

Virtual Assistant for Mission Operations (VAMO)

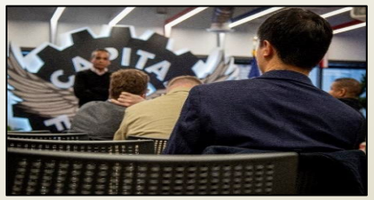
- Tactical voice & text enrichment AI services for processing of audio & unstructured text to reduce Warfighter's cognitive load in CPCE

Edge Processor Aided Target Recognition (ATR)

- Innovation Day contract to prototype tactical edge ATR on SWaP constrained devices

Edge Processor Exploitation and Dissemination (EdgePED)

- Innovation Day contract to prototype artificial intelligence/machine learning customizable ATR capabilities



Closing Comments/Questions?












We Deliver to Soldiers

Office of the Assistant Secretary of the Army

Acquisition, Logistics and Technology

From Mechanized to "Tech"anized Warfare – Artificial Intelligence/Machine Learning, and Autonomous Technology

COL Jeffrey Jurand
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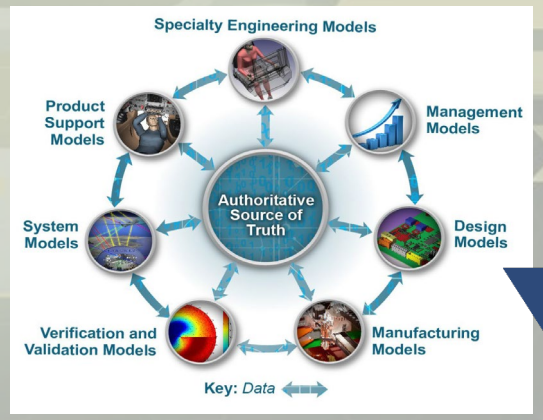
11 OCT 22

OMFV Digital Acquisition Approach



Digital Thread

- Cloud-Based Digital Acquisition Environment (DAE)
- Siemen's TeamCenter PLM tool-suite
- RFP directs integration of logistics product into digital thread

DIGITAL ENGINEERING

OMFV

OPEN ARCHITECTURE

AGILE SOFTWARE

Modular Open Systems Approach

- Army-developed & Industry-informed open architecture standard complete (GCIA)
- RFP requires strict adherence down to hardware / software configuration item level

Agile Software / DevSecOps

- Cloud-Based DevSecOps environment
- RFP directs all software developed under contract & existing commercial SW to reside in environment
- 6-week "Sprints" w/ ATEC supported evaluation during development

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From Mechanized to "Tech"anized Warfare – Artificial Intelligence/Machine Learning, and Autonomous Technology

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Project Linchpin: Operational View and Competitive Environment

Machine Learning Operations Pipeline enables rapid and continuous integration and continuous delivery of Artificial Intelligence

MODEL DEVELOPMENT

- GOVT-DEVELOPED
- INDUSTRY DEVELOPED

DATA HOLDINGS

- Secure, trusted government data
- Accessible for model training and tuning
- Labeled and unlabeled

Major Program Components:

DATA MANAGEMENT & MODEL TRAINING

- Labeling and curation
- Optimization by system for specific use cases
- Test and evaluation

VERIFICATION & VALIDATION

- Model repository for trust
- Confirmation with UI/UX
- Management and view of edge nodes

DEPLOYMENT

- Incorporates model sender and orchestrator
- Models sent via available tactical networks
- Model deployment decoupled from SW

EMPLOYMENT

- SW in each Model Receiver
- Inference engines run deployed models
- Models optimized for each sensor and sensor system and user needs

- Space and Aerial Sensors
- Terrestrial Sensors
- Analytic Platforms
- Sensor Ground Stations

Operational Data and Performance Feedback

End-to-end solution enables feedback that increases performance and trust

Office of the Assistant Secretary of the Army

Acquisition, Logistics and Technology

From Mechanized to "Tech"anized Warfare – Artificial Intelligence/Machine Learning, and Autonomous Technology

Dr. Robert Luke
PM IVAS User Experience Lead
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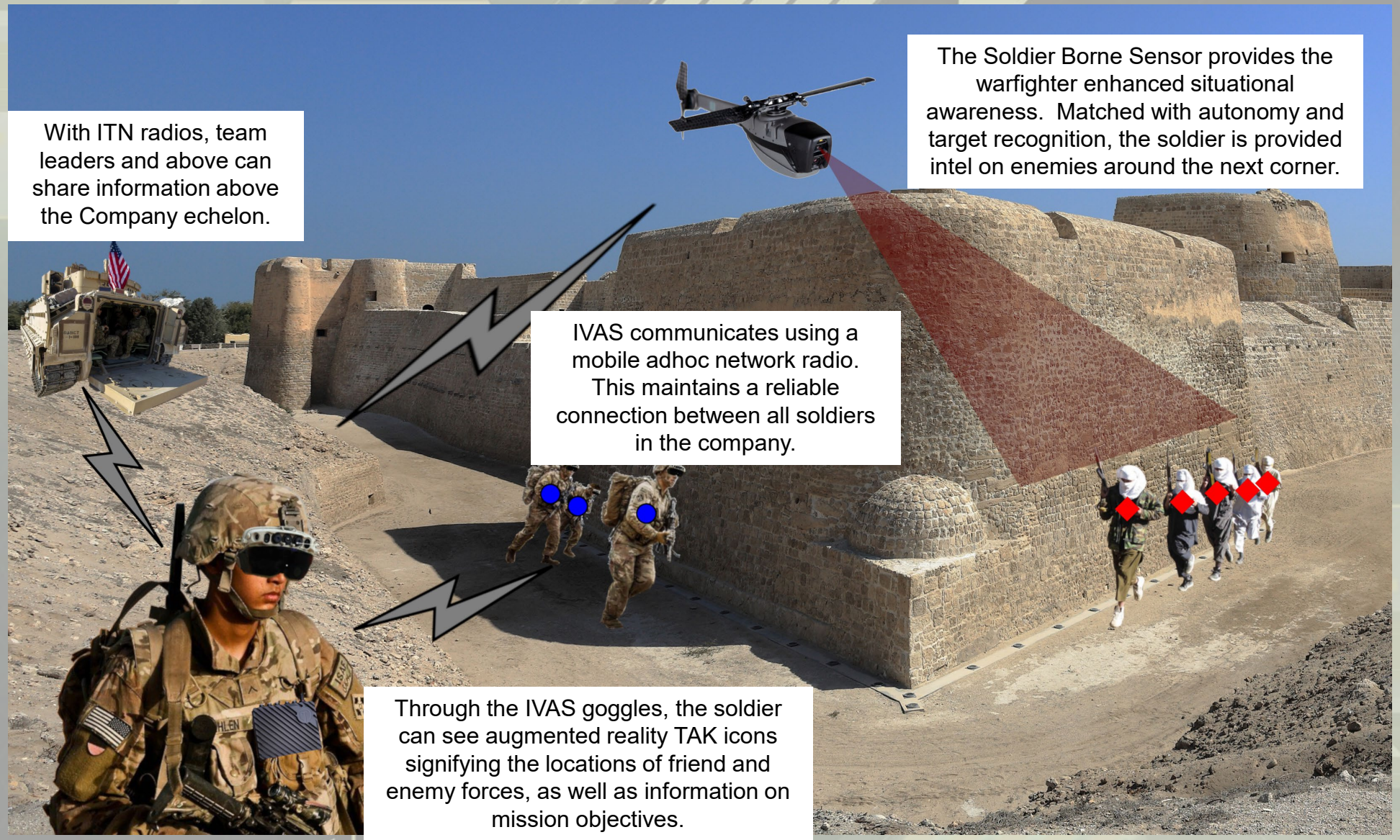
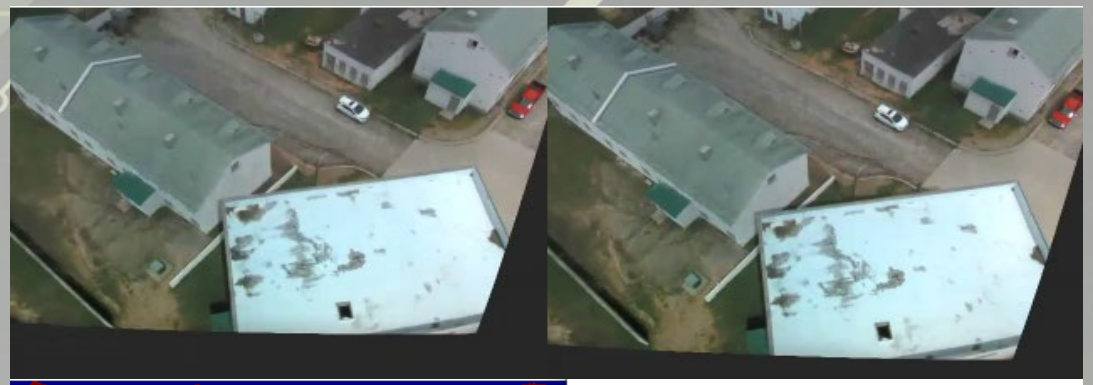
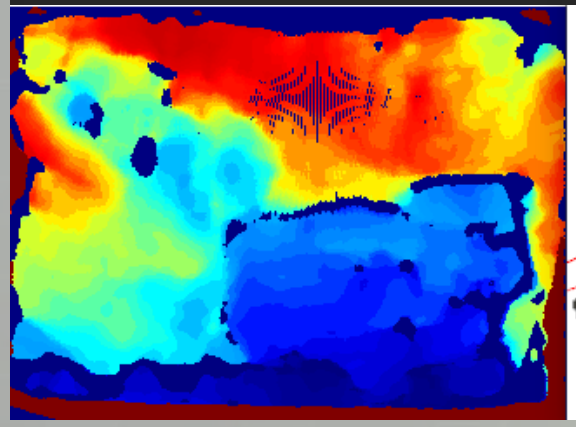
PM IVAS Autonomy Overview

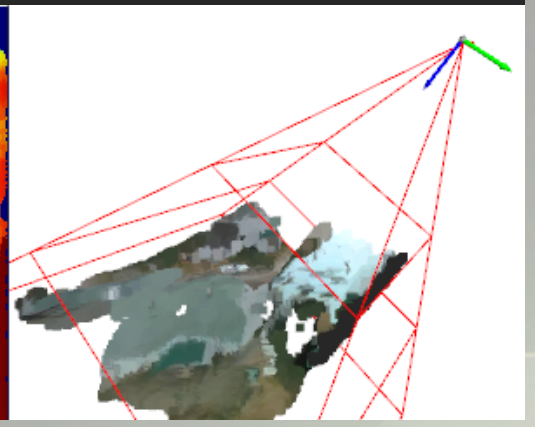


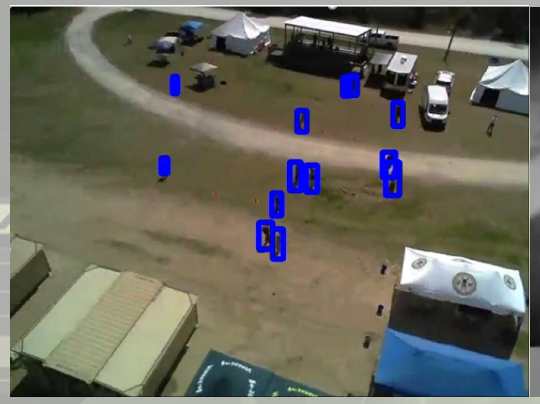
Autonomous Behaviors

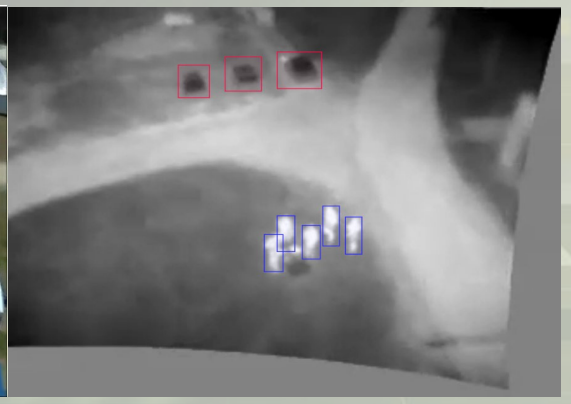
- Loiter
  - Stay within a given distance of the Soldier
- Scout
  - Investigate a specific area
- Surveil
  - Maintain overwatch of a specific location
- Vanguard
  - Navigate along a predefined route
  - Maintain 500m-1000m distance ahead of the Soldier
- 3D Model Generation
  - Fly over an area of interest in a lawnmower pattern
- ***Reduce Cognitive Burden***











Questions?