



**dh/**PurePixel

**dh/**KeyFrame

# Pure Pixel

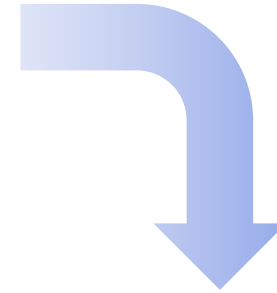
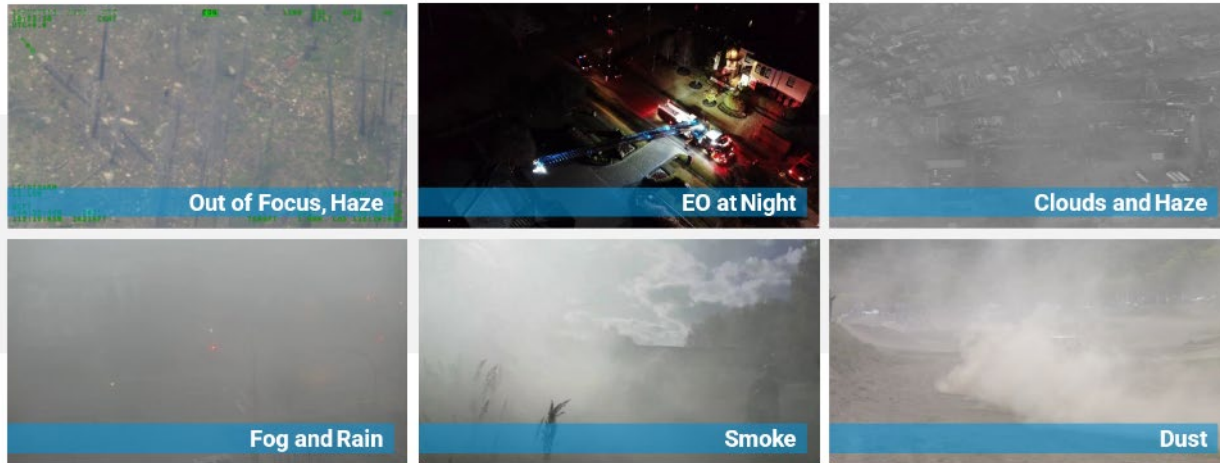


PPxl is designed to detect faint anomalies or unperceivable details through intelligent scoring and adjusting of pixels for both static imagery and Full Motion Video (FMV).

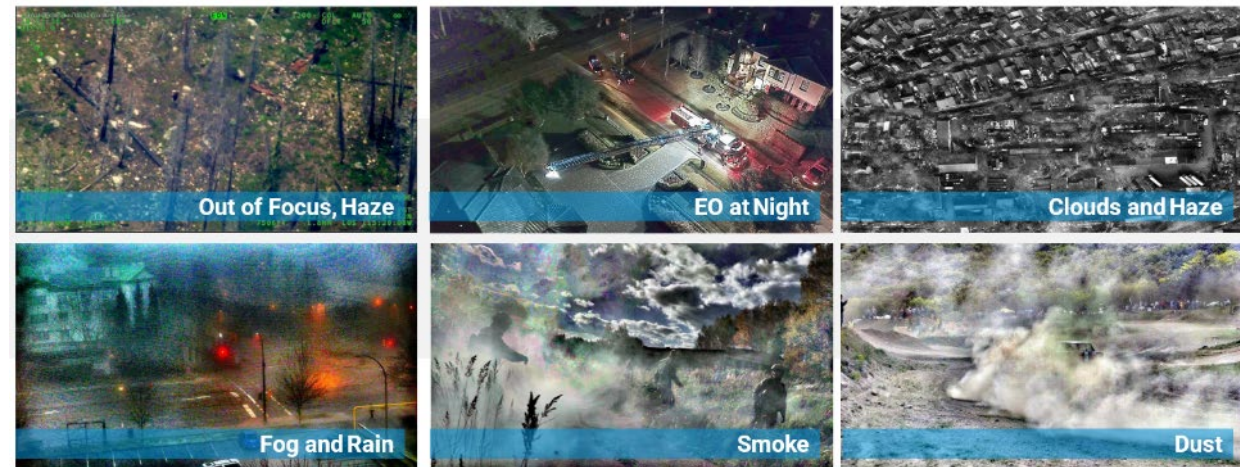
## PurePixel can:

- ✓ Process and enhance video in real-time
- ✓ Remove effects of adverse weather conditions
- ✓ Remove haze from images
- ✓ Extract information from under- and over-exposed images
- ✓ Algorithmically support target recognition
- ✓ Enhance images in forensic applications
- ✓ **Be a bump in the wire** (REST API, CLI) for automated streaming, video, and image processing workflows
- ✓ **Run in Windows and Linux**

# Pure Pixel Results



Pure Pixel enhances downstream AI/ML inference without the need for retraining computer vision models, offering a streamlined solution for optimizing performance.



# Keyframe

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An on-device software plugin library –  
supports PC, TV, browser, edge, and mobile devices:

*Send video at significantly reduced bandwidth with no loss in quality*

Bandwidth reduction with  
existing encode pipeline

**20% - 80%**

**Less bandwidth,  
same quality**  
or  
**Same bandwidth,  
higher quality**

**Big Cost  
Reduction**  
and  
**Better UX**



SEA • AIR • LAND • CYBER

# SensorOps Origin

- **Originated** in a SOFWERX / TEAMWERX Challenge for next-gen unattended ground sensors,
- **Matured** under SOCOM J-24F funding into an open, complete, and adaptable TRL 7 sensor ecosystem,
- **Expanded** in a CRADA with SOCOM S&T to capture rapid collection opportunities.



# SensorOps Mission-Ware Suite

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## TacOS

Hardware-agnostic smart sensor operating system with user-centric command and control platform enabling human-machine teaming at the edge.



## TargetModeler

End-to-end model training platform empowering non-technical personnel to build and deploy ML models in hours without a data scientist.



## SynISR

Simulation platform enabling for dynamic mission creation within a digital twin environment for human and machine training.

# SynISR

- **JSOC Funded Initiative:** Synthetic training environment for ITC operators to master surveillance techniques and protocols.
- **Mission-based Training:** Design and configure complex mission scenarios for synthetic training via Group 3 UAS and CCTV perspectives.
- **Future Roadmap:** Extend to support dynamic mission training for autonomous platforms (UxVs).

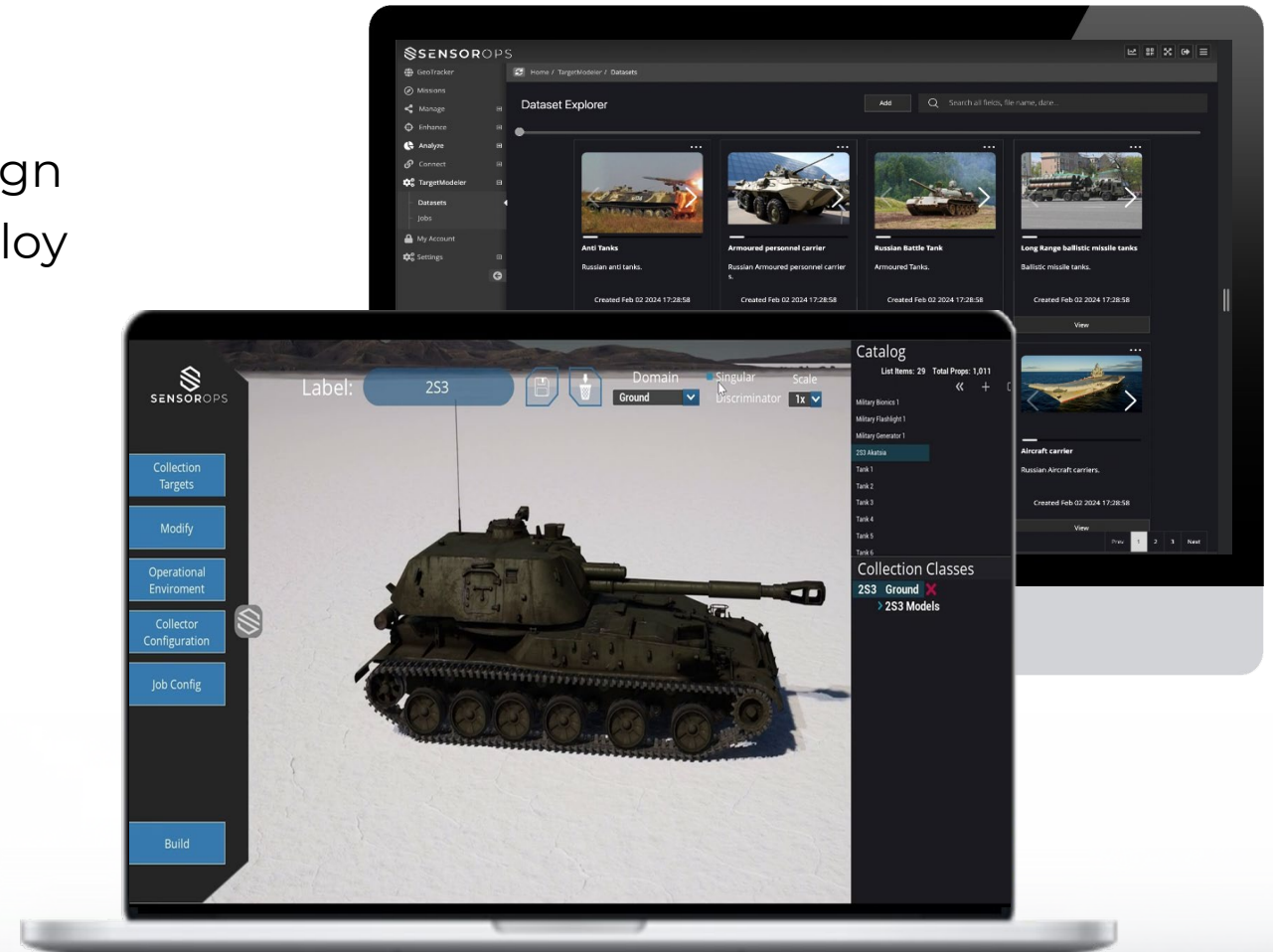




# TargetModeler

TargetModeler is a ***self-service***, no-code ML pipeline enabling ***non-technical*** users to design rich synthetic environments, to build and deploy ***custom ML models*** in minutes.

- Empowers non-technical users
- Automate inefficiencies
- Reduce “time-to-field” new ML models
- Build once, deploy everywhere
- Data and models remain GOTS



# TargetModeler Capabilities

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## Rapid Response ML

*Design, adjust, and train ML models on the battlefield that are deployable across the battlespace – no need to wait for rear echelon assets to create a new model.*

Examples:

*“locate an HVT in a red pickup truck with right rear bumper damage in congested AOI”*

*“an adversary releases a new UAS with novel form factor, require immediate update to ATR algos”*

## Dataset Augmentation

*Close dataset gaps reducing the enemy’s ability to maneuver and increase kill chain lethality.*

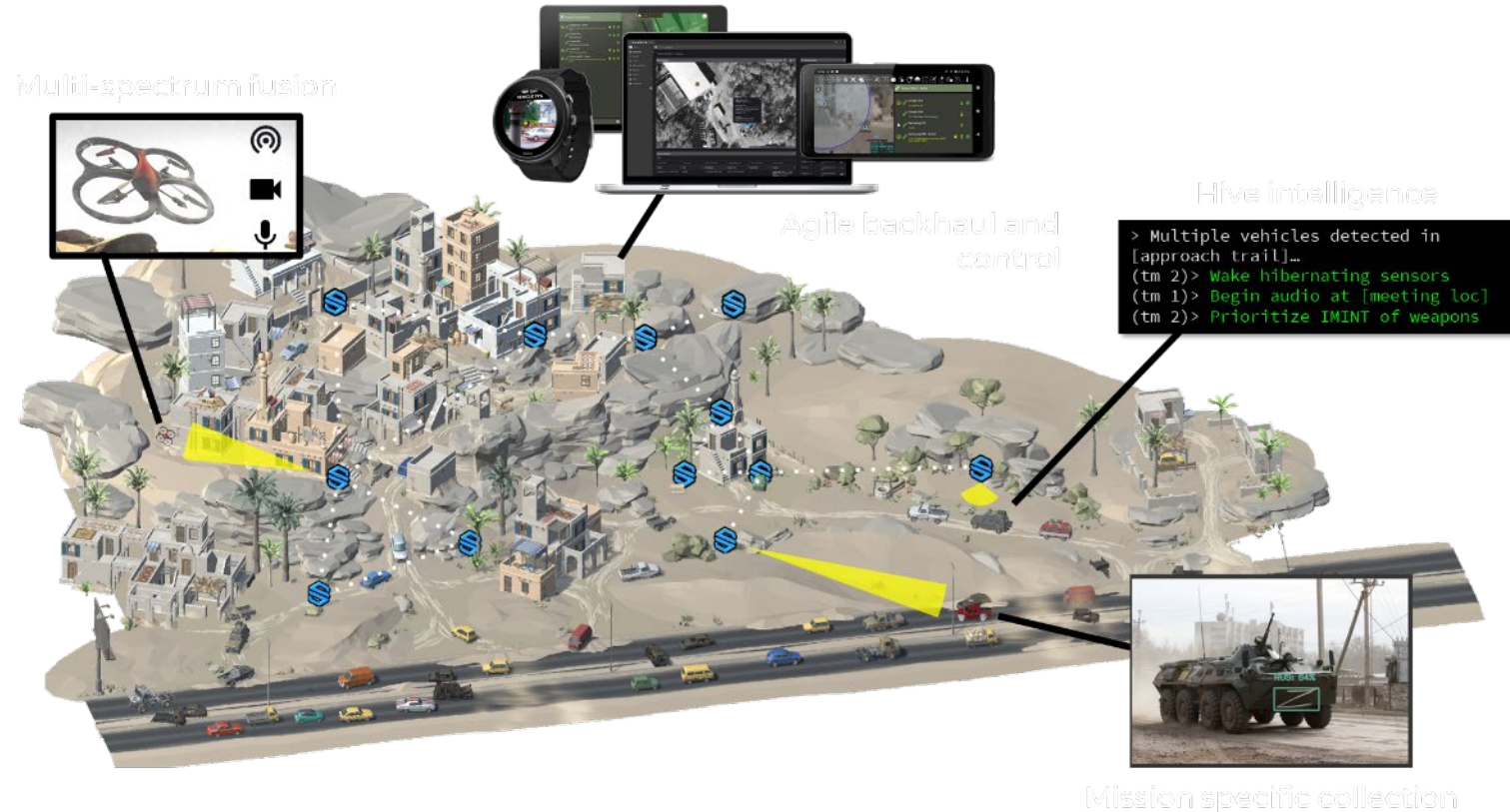
Examples:

*“require specific dataset on quick turnaround to supplement existing target data to expedite decision making*

*“synthesize realistic data to perform ATR when unable to collect on actual adversary targets in desired environments”*

# TacOS Platform

- 1. Planning** - Build and forward deploy mission plans consisting of teammates, tasks, and targets.
- 2. Collect** - Enable access and collection from sensors anywhere in the battlespace.
- 3. Execution** - Devices collaborate autonomously enabling operations, even when disconnected from ops centers.



# Questions?

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