

# ROBUST AUTONOMY PLATFORM FOR TACTICAL OPERATIONS & RECONNAISSANCE (RAPTOR)

EDGE-BASED, PLATFORM & SENSOR AGNOSTIC AUTONOMY SOFTWARE STACK THAT DRAMATICALLY SIMPLIFIES UAS OPERATION ALLOWING ONE OPERATOR TO CONTROL MANY ASSETS

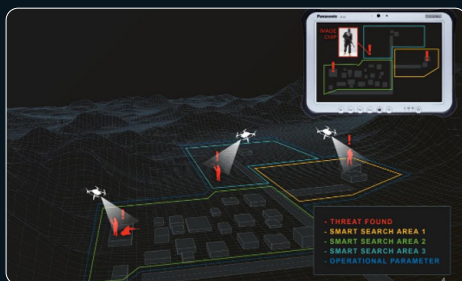
RAPTOR is TRL 7 modular software that enables teams of UAS to combine onboard Automatic Target Recognition (ATR), Target Geolocation and Tracking and Closed-Loop Autonomy to accelerate the OODA loop from observation to action.

- ✓ ATR: Detects and classifies targets of interest including personnel and vehicles. Edge processing supports rapid response in austere comms environments.
- ✓ Tracking: Geolocates targets of interest to ensure continuous situational awareness and support target engagement.
- ✓ Closed-Loop Autonomy: Utilizes platform mobility to complete operator assigned tasks and objectives without supervision.
- ✓ MOSA Compliant: Built on an open plugin-based architecture that allows rapid integration onto different platforms and systems and incorporation of third-party capabilities.

## EXAMPLE MISSION AUTONOMY BEHAVIORS

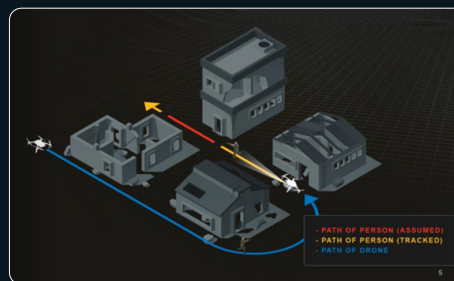
### SMART SEARCH

Performs terrain-aware search for targets of interest



### TRACK AND FOLLOW

Moves UAS and points sensor to maintain clear line-of-sight to a non-cooperative target of interest



### ACCEPT CROSS CUE

Enables UAS to send and receive information with teammates to trigger action



## ATAK PLUG-IN FOR HUMAN MACHINE INTERFACE (HMI)









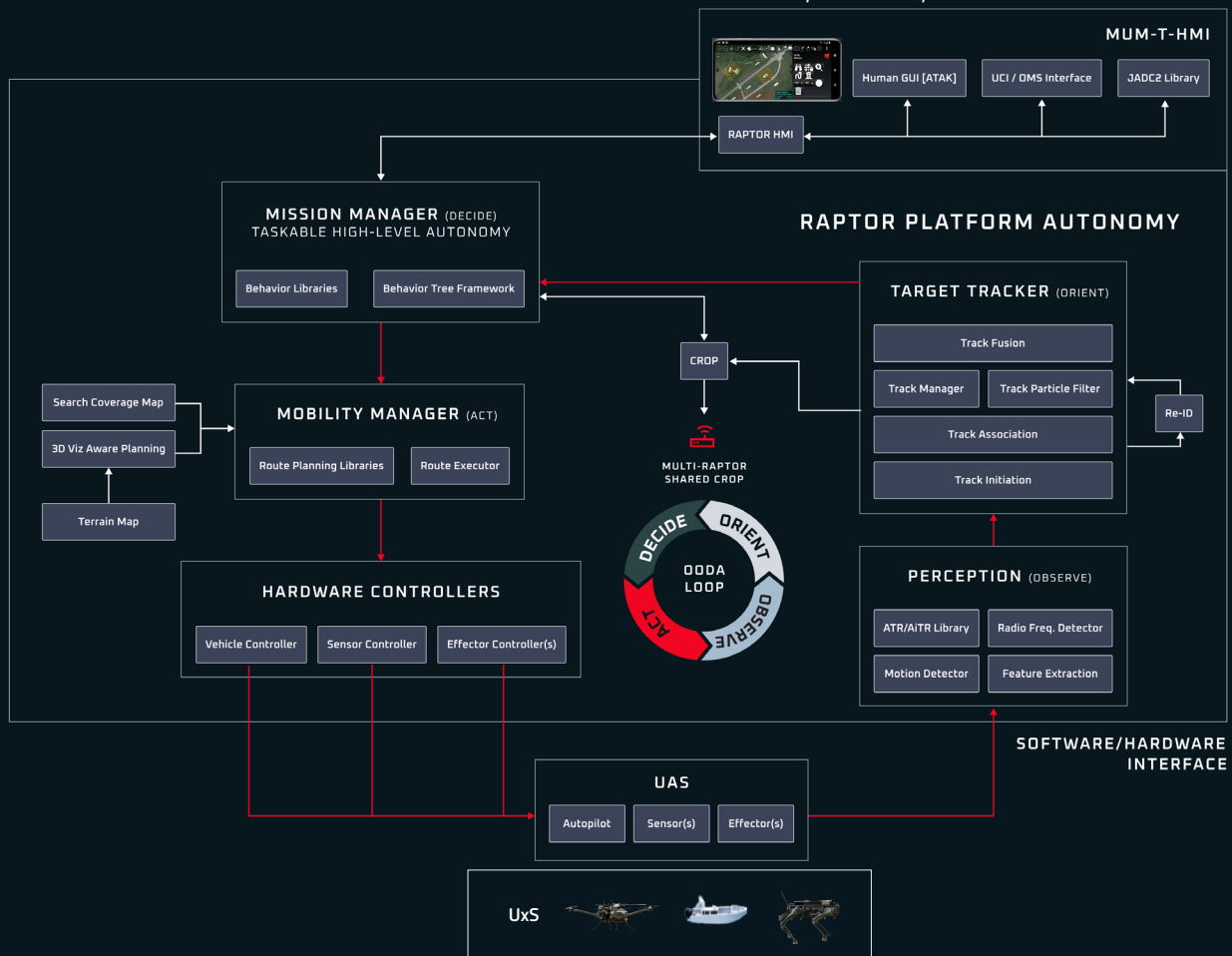
Using an ATAK plugin, end-user devices already carried by operators can be leveraged to control teams of UAS and display real-time information and alerts in a single interface.

## AUTONOMY SOFTWARE THAT SCALES

# RAPTOR MODULAR OPEN SYSTEM ARCHITECTURE

Built around six independent and composable core modules that provide an extensible platform level autonomy solution:

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**MISSION MANAGER:** Adaptive behavior trees enable operators to define mission priorities and objectives and select which actions will trigger behaviors and support mission execution.
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**MOBILITY MANAGER:** Provides terrain-aware route planning and execution that uses on-the-fly line-of-sight estimation to support mission objectives in complex environments like urban spaces. Autonomous launch and land provide one-touch mission execution.
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**PERCEPTION:** Uses selectable libraries of ATR for targets such as personnel, ground vehicles, ships, aircraft, buildings, doors, windows, etc. Supports rapid integration with AI models produced from Scientific Systems' ML Ops pipeline or third-parties for best-of-breed performance and maximum flexibility.
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**TARGET TRACKER:** Converts raw data into actionable information using physics-based modeling and data fusion to geolocate and track targets in challenging environments. Target tracks populate a common relevant operating picture (CROP) in a format that allows rapid sharing of information with other operators and systems for coordinated decision making and action.
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**HARDWARE CONTROLLERS:** Acts as an adapter for easy integration with hardware systems that control autopilots, gimbals, cameras, or other devices like drop controllers or illuminators, making the autonomy agnostic to platforms, sensors, and effectors.
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**MUM-T-HMI:** Human-Machine Interface provides a standard plugin-based interface to RAPTOR that speeds integration with third-party User Interfaces or System-of-Systems.



## CONTACT US

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## Government users:

scan this QR code to access RAPTOR's VULCAN SCOUT CARD for more info  
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