Teledyne FLIR
Defense Technologies

PROJECT WINGMAN

BLACK RECON VRS

05/2023

[redacted]

PRODUCT DIRECTOR VRS

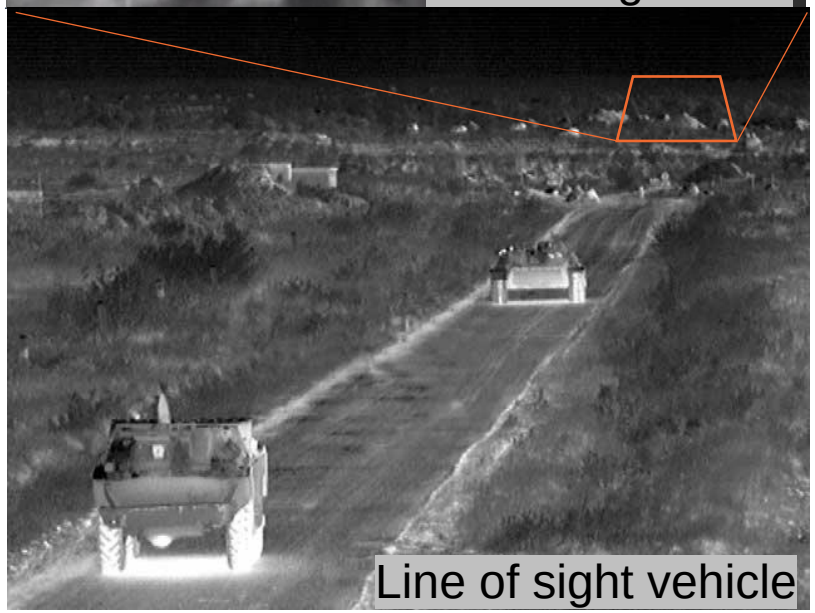
TELEDYNE

FIRST MOVER

The Black Recon will challenge how modern RSTA is performed. We aim to provide Military Operators and Low Enforcement with capabilities that extend their sphere of situational awareness to increase survivability and lethality.

Black Recon is moving from the industry standard eyes on live video to eyes on actionable intelligence.

- Organic immediate operational availability
- Increase situational awareness and operational tempo
- Increased force protection and reduced combat fatigue
- Increased stand-off and survivability



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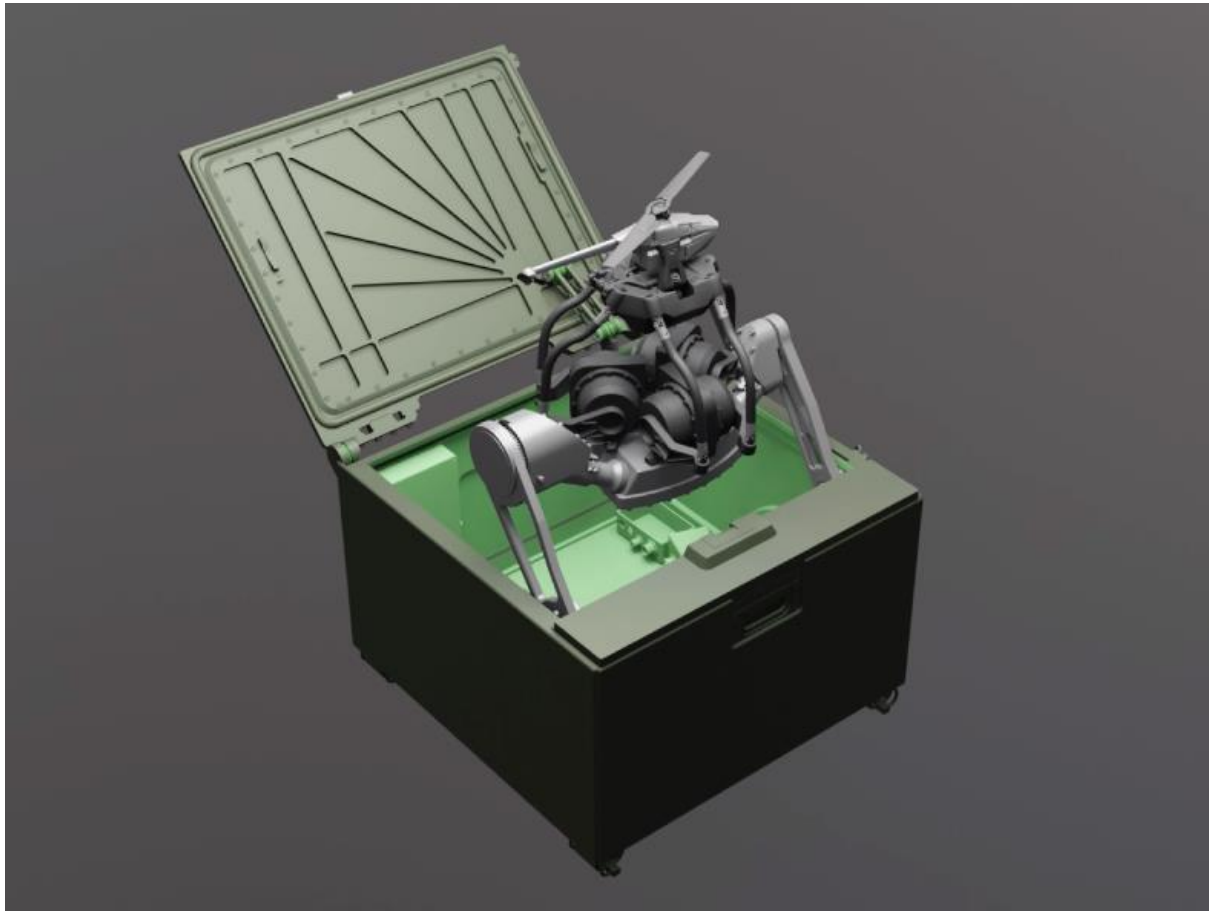
BLACK RECON VRS

Key Capabilities

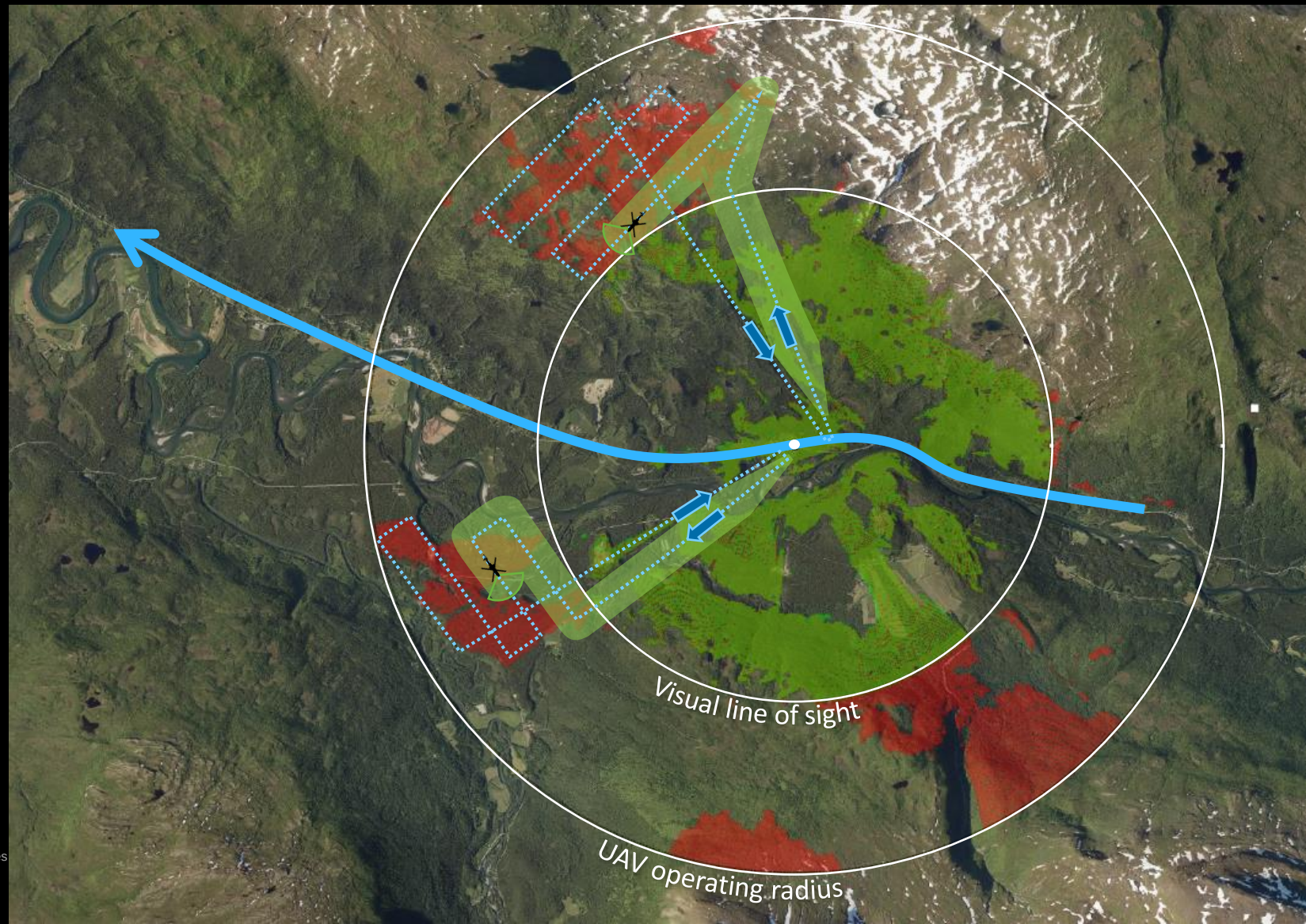
- Robust UHF radio link for 5-6 km range
- Automatic launch, land and re-charge
- Automatic mission execution and object detection
- Day/night GPS denied operation
- Radio denied and radio silent EMCON operation
- Precision object localization
- Endurance time >50 min per UAV
- Remotely operated by use of Ethernet
- 5G networking capability on the roadmap



INCREASE SA AND OPERATIONAL TEMPO

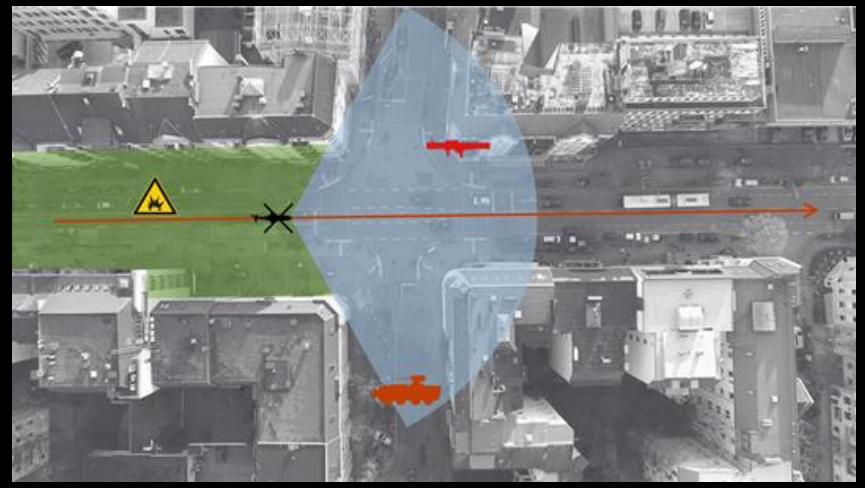
Fast reconnaissance of search area (km²/h)

- Quick parallel search using three UAVs.
- High transit airspeed >24m/s (86 km/h).
- Wide EO and TI FoV for effective search and detect across terrain.



INCREASE SA AND OPERATIONAL TEMPO

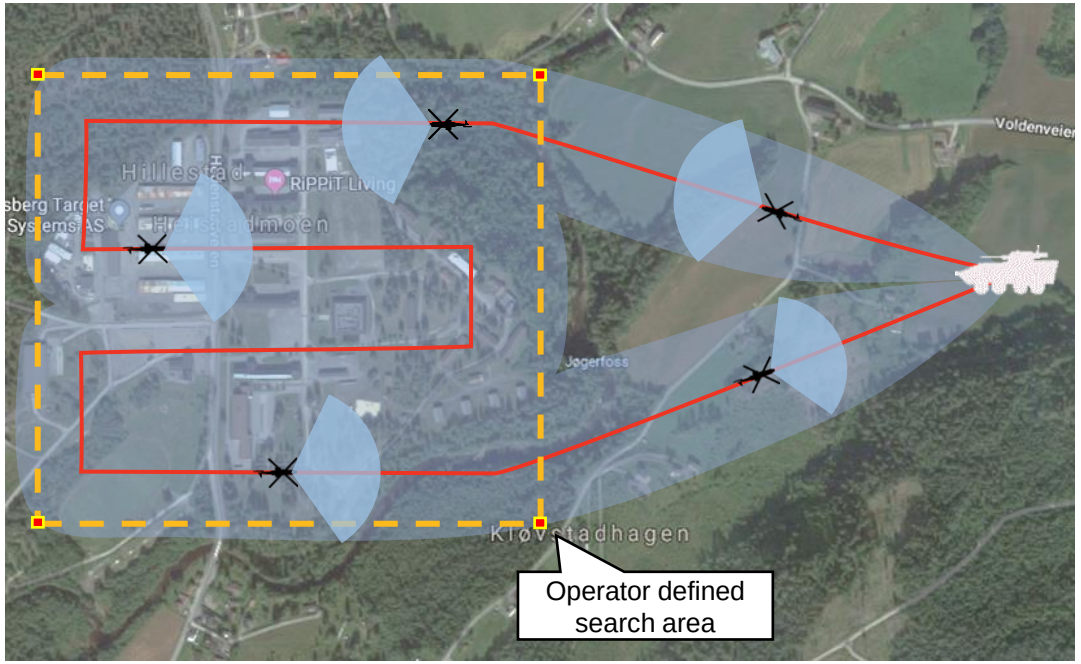
- Wide FoV improve operation in urban terrain and close quarters
- Achieve aspect angles other UAVs cannot
- Overhead sensor coverage
- LED illumination for close inspection

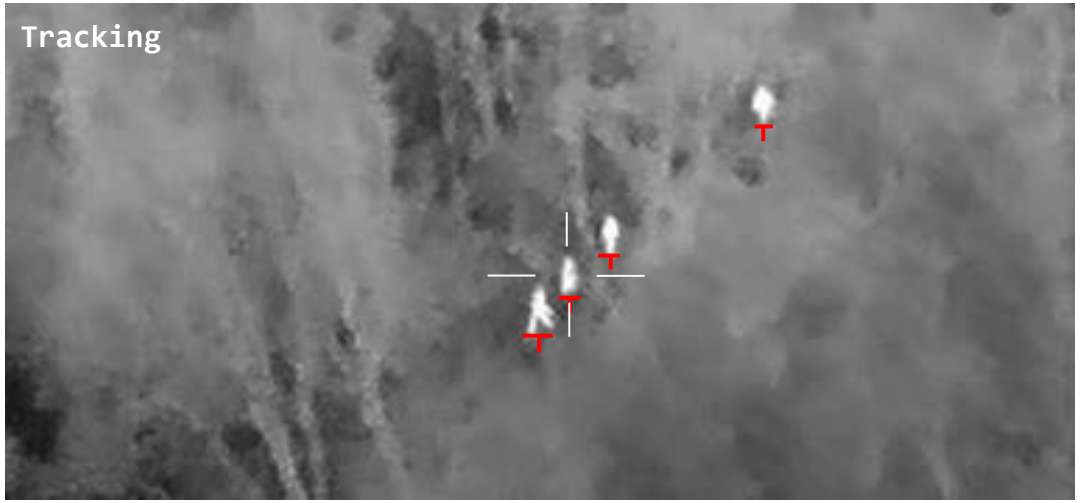


LOW COGNITIVE BURDEN

Manage missions and objectives

- **Define search areas and wait for results**
- **Scout ahead of advancement**
- **Track targets automatically**
- **Automatically build aerial photography even outside of radio range**
- **Integrate with BMS for immediate correlation and deconfliction with common operating picture.**
- **Integrate with BMS for immediate alignment between systems**
    - **Sensor slew-to-cue**
    - **Tasking of UAS for closer inspection.**





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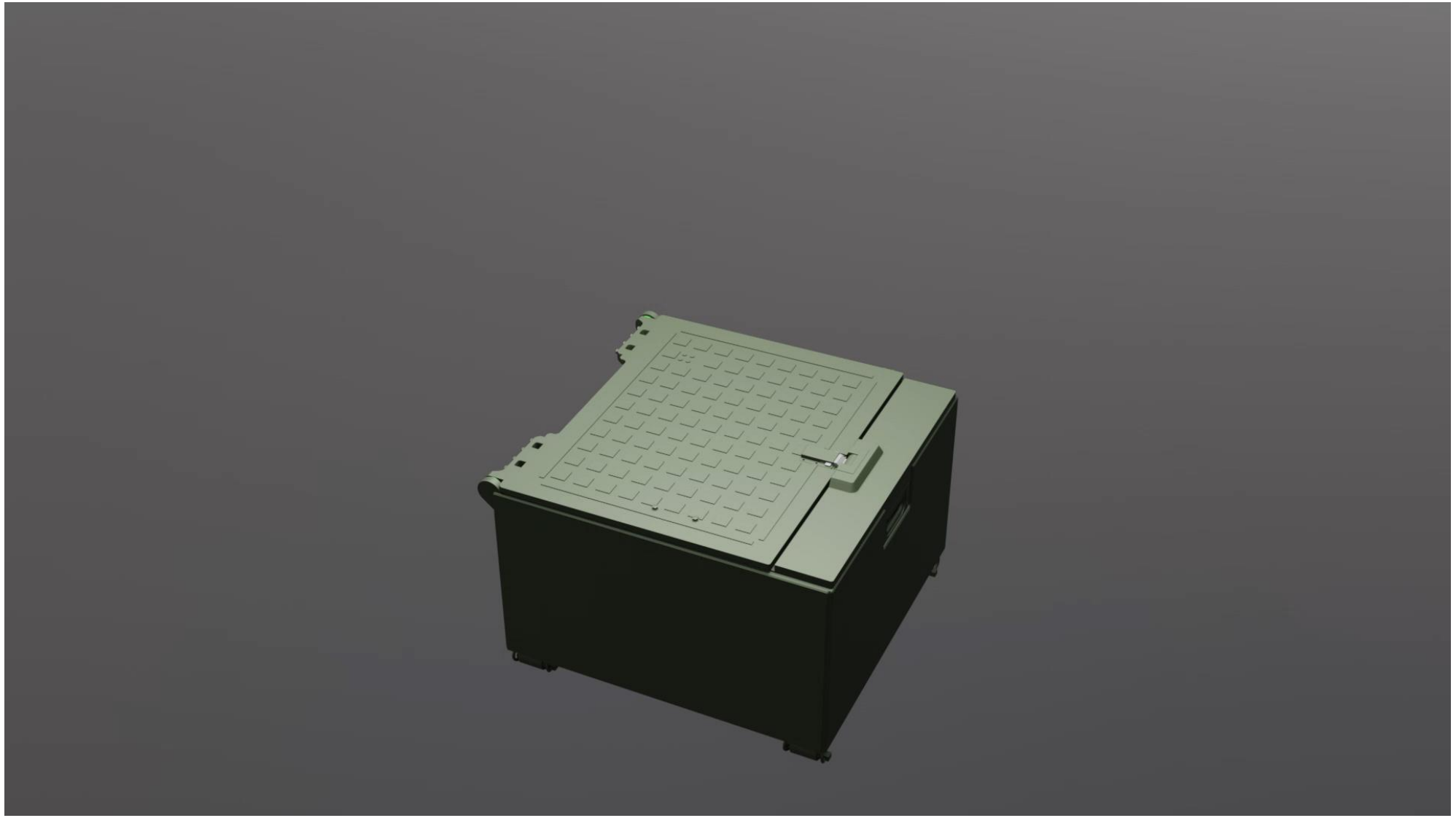
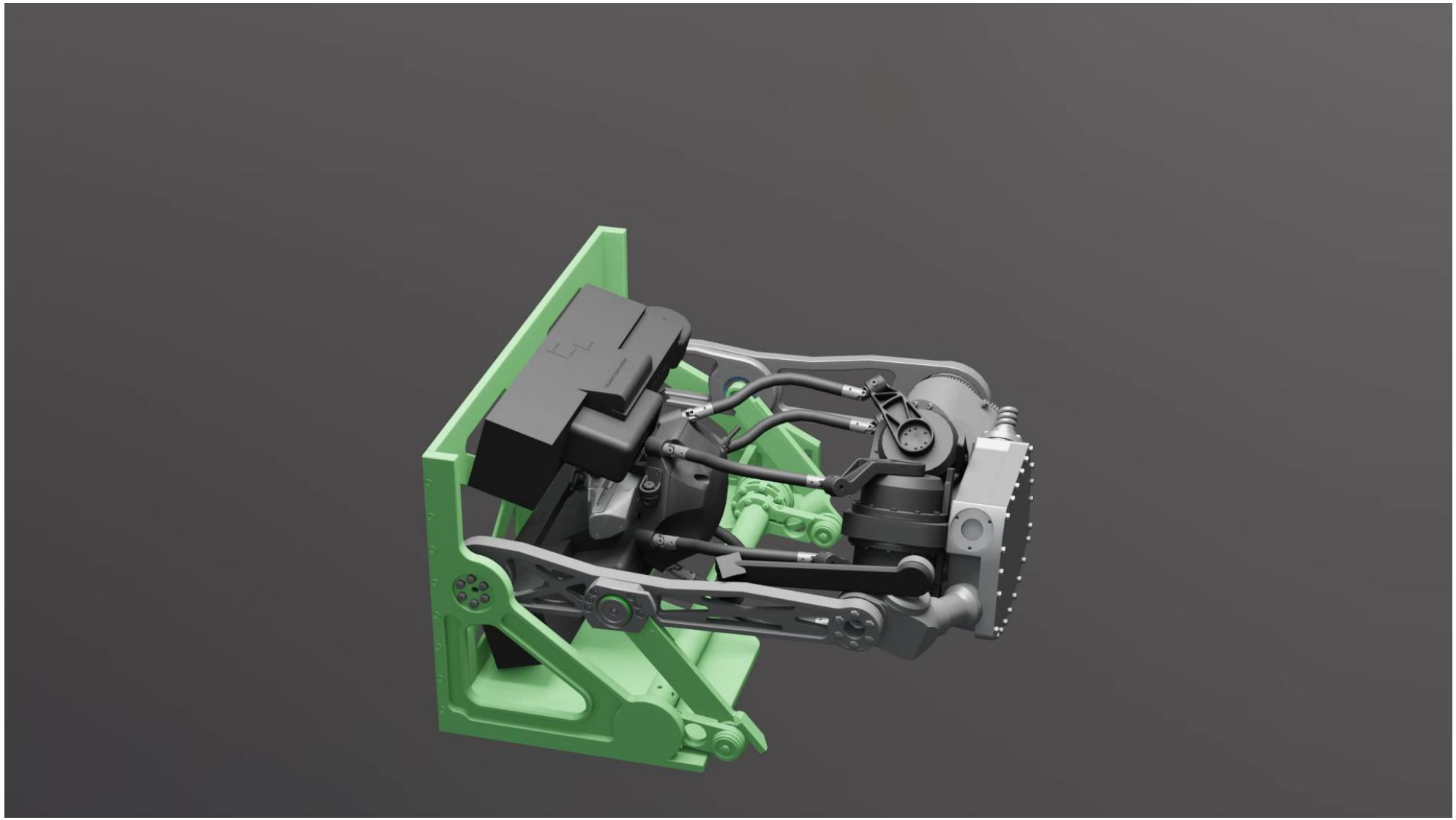
LOW COGNITIVE BURDEN

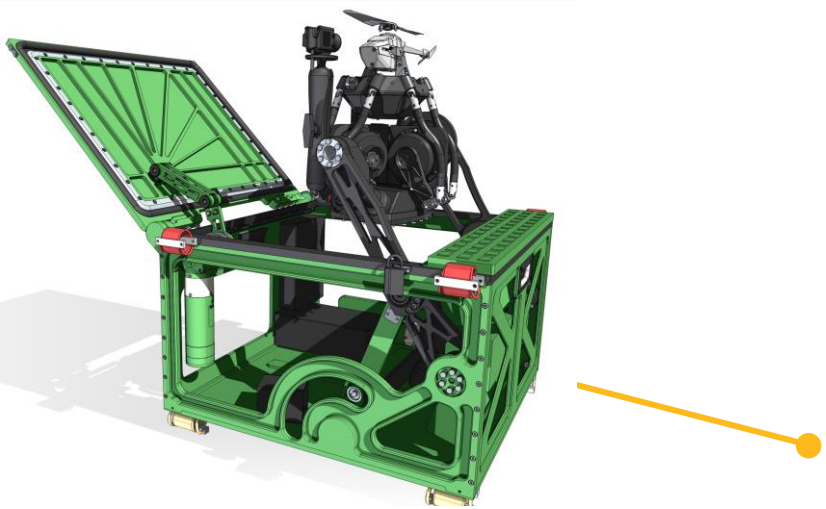
- AI detection support
- Automatic collision avoidance
- Automatic launch, land and re-charge
- Automatically relieve-and-replace cycling of UAVs
  - **Enables continuous eyes on target/object**
  - **Enables continuous surveillance**





INCREASE SAFETY

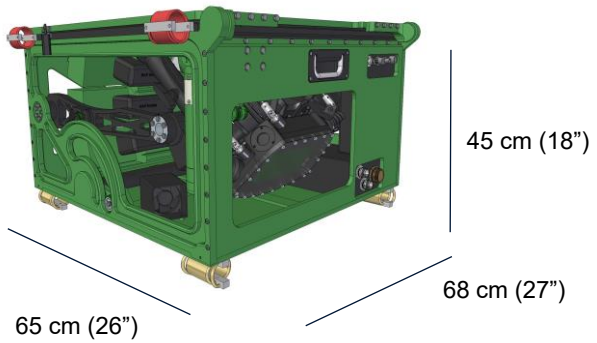
- Avoid compromising vehicle dynamics and signature
  - **Dimensions – 70 x 70 x 43 cm**
  - **Weight < 80 kg**
- Automatic launch and recovery without exposing personnel
  - **Launch < 30 seconds**
  - **Recovery < 45 seconds**
  - **Up to 15 degrees vehicle inclination in any direction**
- UAVs can be pulled out for manual launch and recovery



BLACK RECON SYSTEM SPECIFICATION

Feature	Black Recon
Number of UAVs	Up to 3
Automatic Launch, Land, Charge	Yes, without operator assistance
Endurance	>50 min per UAV
Datalink range	5-6 km (3,3-3,7 miles) Radio Line of Sight
Continues operation/eyes on target	Yes, by cycling 3 UAVs with automatic relieve-and-replace
Beyond Line-Of-Sight (BLOS) capability	Yes. High penetration radio for short and medium range BLOS, and radio relaying for long range BLOS operation using an intermediary UAV. UAVs are capable of completing deep missions without radio coverage.
EMCON and radio denied operation	Yes, capable of radio silent missions and smart contingency plans in event of radio jamming
Speed	Minimum 12 m/s / 23 Knots ground speed within wind envelope
Wind Performance	Steady: 12 m/s / 23 knots Gust: 14 m/s / 27 knots
Rain tolerance	Up to 7.6 mm/h (moderate rain)
Weight	~350gram

Imaging payload	EO /TI Data on request
Qualification	MIL-STD-810H, IP67 (Launch Unit), IP 54 (UAV), MIL-STD 461G
Integration and architecture support	NGVA, MIL-STD-1275E, GbE, STANAG 4609, DEF STAN 00-82, COT (Cursor On Target) MAVLINK
Collision avoidance	Yes, using onboard sensors and digital elevation models
GPS denied navigation	Yes, day and night
Mission specific payloads	Yes, with reduced flight endurance. Payloads to be announced.
Remote controller	Yes, through MAVLINK
FAA compliant	Yes, anti-collision lights for peace-time night operation can be enabled



HIGH AVAILABILITY AND RELIABILITY

- Environmental MIL-STD-810H qualified.
  - **UAS operational in most climatic zones. I.e.: -21 to +49°C.**
  - **Vehicle mounted equipment operational from -40 to +49°C**
  - **Launch unit IP67**
  - **AV operational up to 7.6 mm/h (moderate rain).**
  - **Operation in salt fog maritime operations.**
  - **Launch unit withstands freeze/thaw cycles, snow and ice.**
  - **Wheeled and tracked vehicle vibration; Shock 20g/11ms all axis**
- EMC MIL-STD 461G qualified.
- Operational service ceiling 3600m (12000ft)
- High wind and gust tolerance
  - **Steady wind: 12 m/s (23 knots)**
  - **Gust: 14 m/s (27 knots)**
- FAA compliant collision avoidance lights for peace time night operations.
- ~ 300g EU2019/947 C1A1 category equivalent – possible to operate without safety radius to uninvolved people.

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