

MSHORAD - Live Firing demonstration

Mobile Short-Range Air Defence

Press brief

Mats-Olof Rydberg

Head of Marketing and Sales
Business Unit Missile Systems

Anders Wadsten

Maj. Ret. Swedish Armed Forces
Senior Product Manager, GBAD
domain

Ground-based air defence



Future GBAD systems should provide

Protection on the move

Detection, identification, acquisition,
assignment, tracking and engagement of
a variety of targets

Fighting in open, urban and rural terrain

Instant deployment and redeployment



Flexibility

Mobility

Modularity

Saab's MSHORAD System

Mobile Radar Unit (MRU)



Mobile Firing Unit (MFU)

Flexibility

- One or several MRU can support one or a multiple of MFUs

- Easy integration into higher-level command and control systems
- Autonomous operation

Mobility

- Rapid (re)deployment
- Rapid target designation
- Rapid target engagement

MANPAD



Modularity

- MFU is easily transformed into MANPAD system, utilizing the same sight and missile

Graceful degradation

Mobile Radar Unit

Three main components:

Giraffe 1X radar sensor



GBAD Command
& Control solution



Communication
equipment



- Two operator workstations
- Provides situational awareness and time to act



SAAB

Giraffe 1X - Small size, great performance

- Low weight, compact volume -> high mobility
- Unmatched performance for its size
- Volume coverage and update rate provides time to act
 - 75 km instrumented range
 - 360°, 60 rpm, > 70° elevation coverage
- Multi-mission functionality gives tactical versatility and flexibility
 - All target capability > 600 air tracks
 - Drone / Rocket, Artillery & Mortar shell (RAM) detection
 - True simultaneous multi-functionality



SAAB

Small-sized sensor components

- Three main units
- Easy integration



Power Distribution Unit

Signal and Data processing Unit



SDU + PDU < 40 kg
28 VDC < 2500 W



Antenna + Turntable = 100 kg

Compact Radar Module

- Robust
- Agile
- Ready for installation onto vehicle of choice



RBS 70 NG Mobile Firing Unit



FLEXIBLE DEPLOYMENT

- Vehicle-mounted
- Autonomous operation, stand alone

HIGH EFFECT

- High probability of kill
- Unjammable guidance

RAPID ENGAGEMENT

- Built-in, decision-making support
- No lock-on required before launch



SAAB

RBS 70 NG: Modular concept

MSHORAD



MANPADS



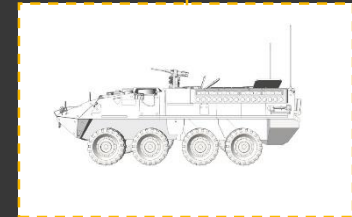
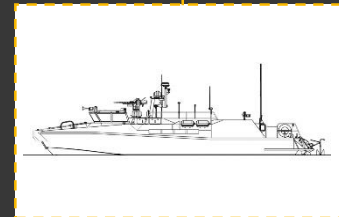
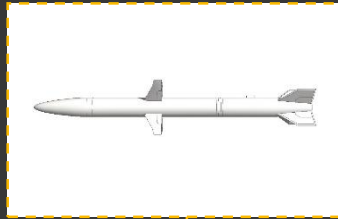
Remotely controlled



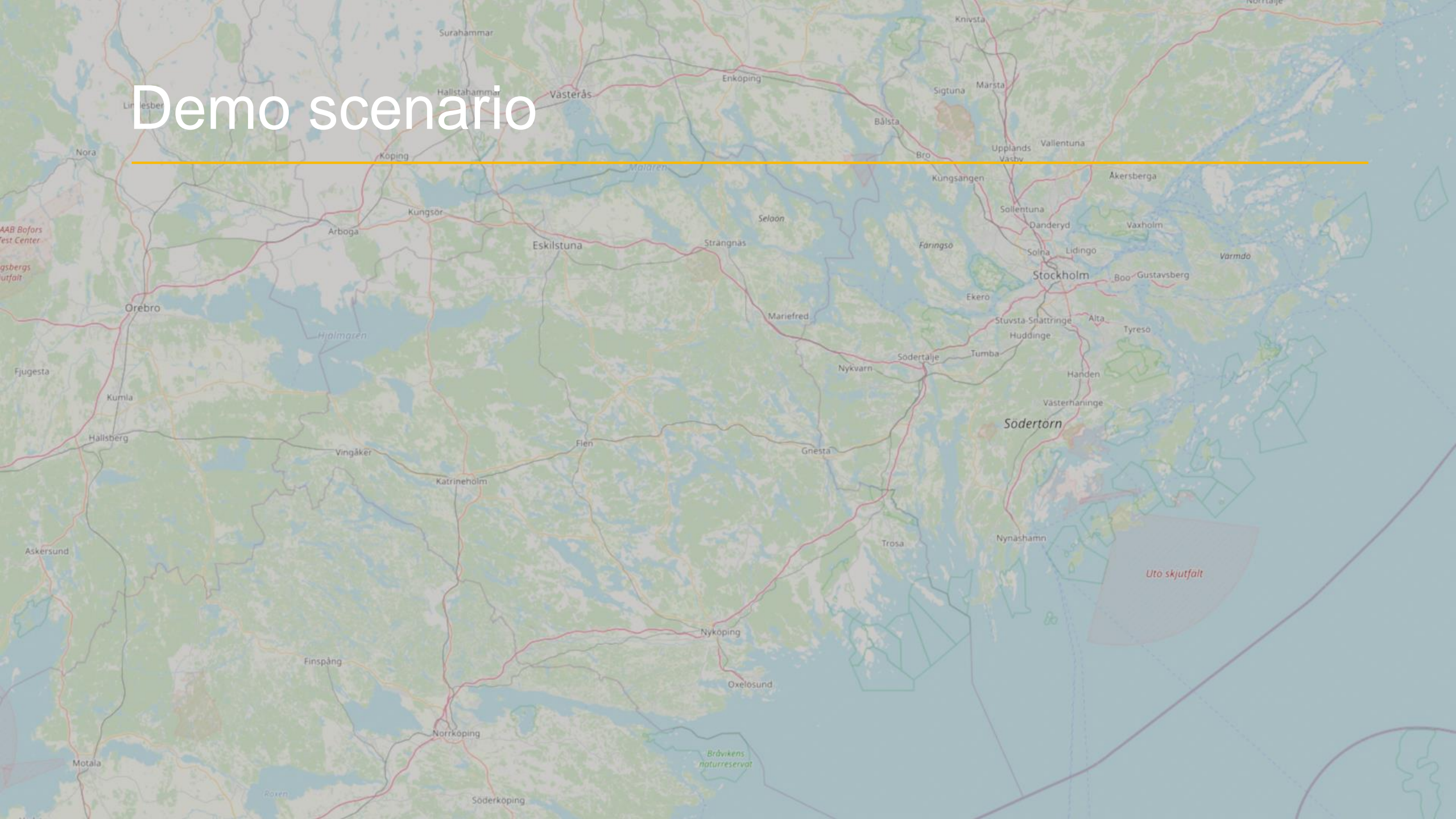
Common sight module

Multi-target capability

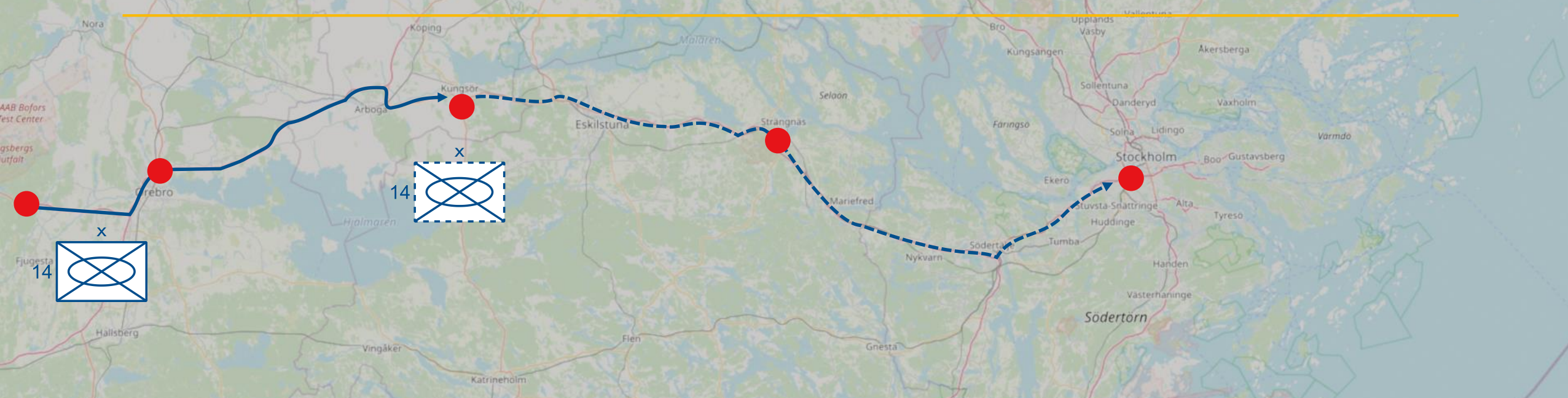
Multi-purpose missile - One target, one missile - Unjammable



Demo scenario



MSHORAD: supporting a mechanised brigade



Mission for MSHORAD

- Protect: preserve friendly activity
- Combat: limit enemies' freedom of movement
- Disrupt: obstruct opponents' activities
- Prevent: stop enemy from conducting activities

Targets differ over time:

- Cruise missiles
- Helicopters
- UAV
- Rockets
- Fighter aircrafts

Brigade assets to protect:

- Artillery systems
- Mechanised units
- Logistics
- Command posts

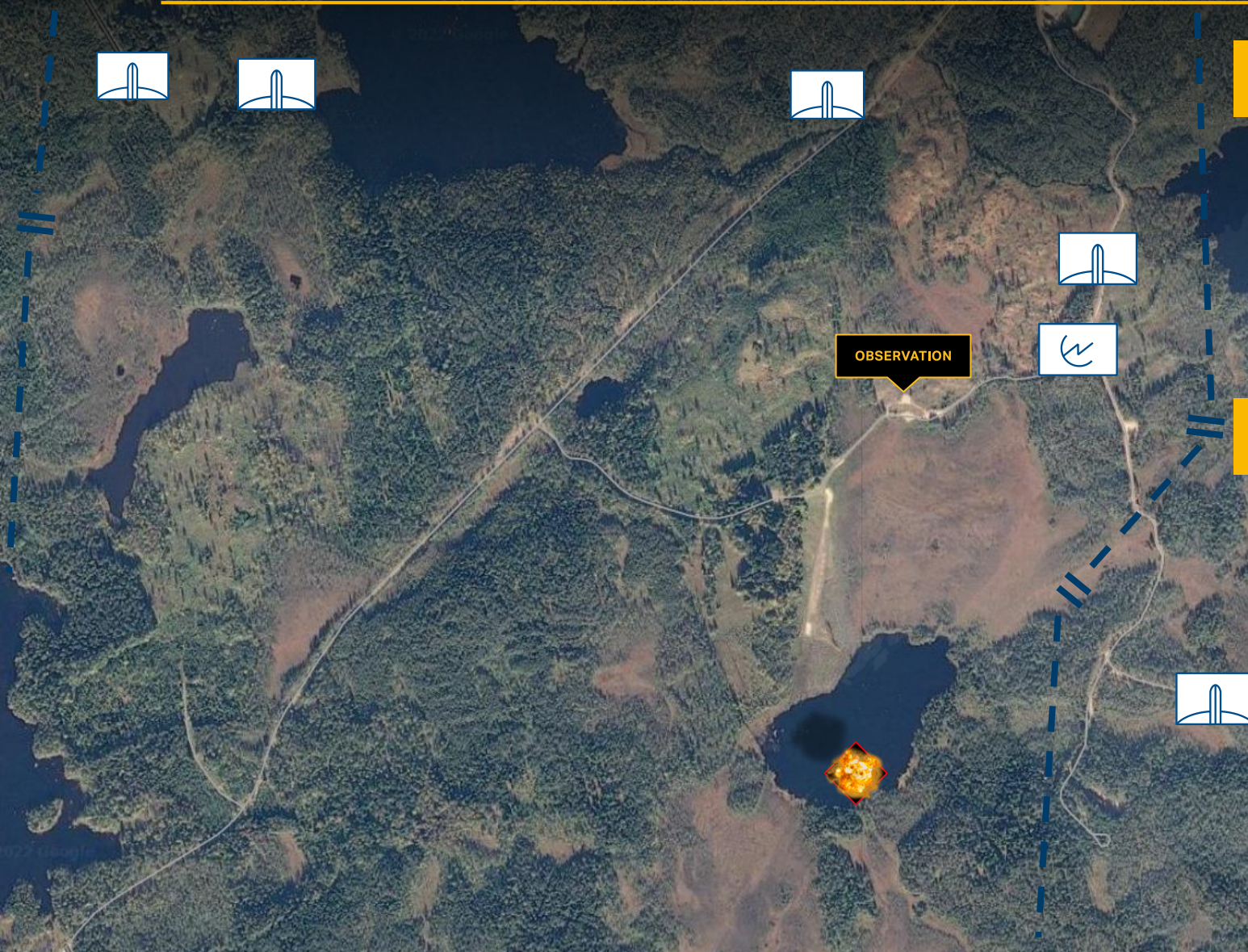
Brigade key areas to protect:

- Roads
- Bridges
- Open areas
- Hills/high terrain



SAAB

MSHORAD: live firing, concept of operations 1



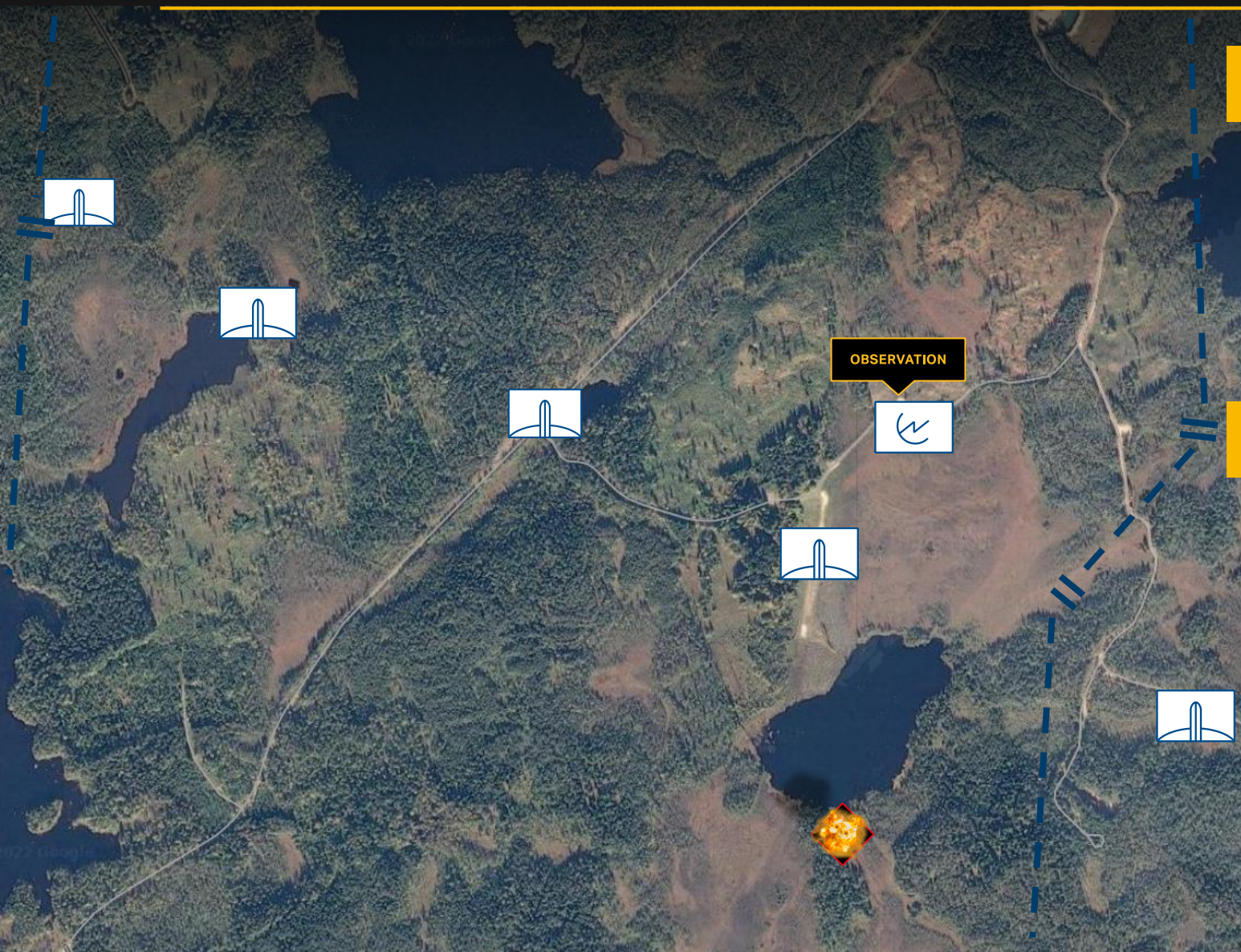
Mission

- **Protect:** Protect mechanised battalions' movement to KGA
- **Combat:** limit enemies' freedom of movement
- **Disrupt:** obstruct opponents' activities
- **Prevent:** stop enemy from conducting activities

Task

- 2nd MSHORAD platoon (+)
4 MFU and 1 MRU are on the move and have the mission to protect a mechanised battalion
- **Engage UAV**
- MRU detects, tracks, identifies and classifies the target (hostile UAV)
- MFU receives cueing information: track and lock on target
- MRU and MFU: fire permission and engagement

MSHORAD: live firing, concept of operations 2



Mission

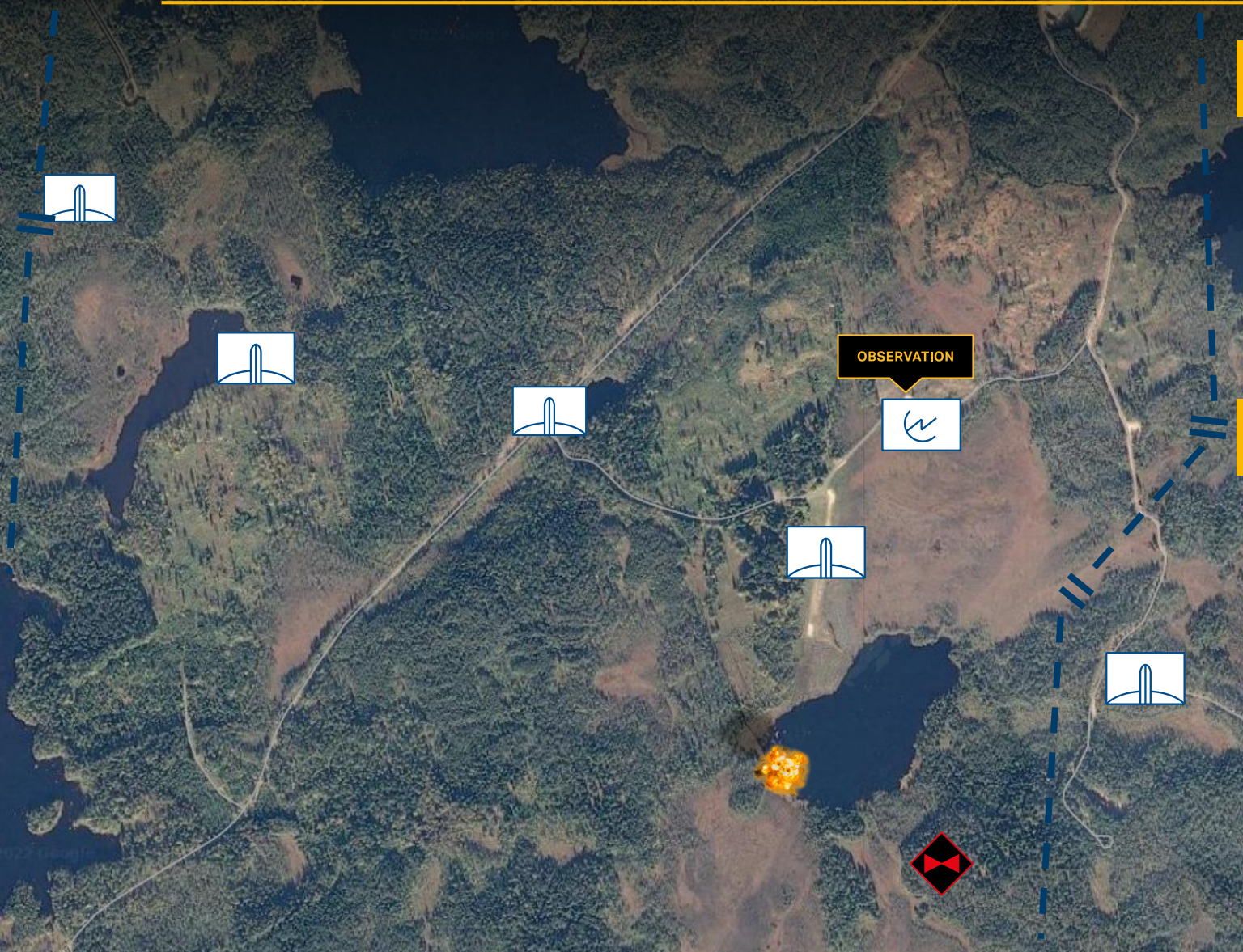
- Protect: protect friendly activity
- Combat: limit enemies' freedom of movement
- Disrupt: obstruct opponents' activities
- **Prevent**: stop enemy helicopters from attacking moving forces

Task

- 2nd MSHORAD platoon (+)
4 MFU and 1 MRU are on the move and have the mission to protect a mechanised battalion
- **Engage HCP**
- MRU detects, tracks, identifies and classifies the target (hostile HCP)
- MFU receives cueing information: track and lock on target
- MRU and MFU: fire permission and engagement

**SAAB**

MSHORAD: live firing, concept of operations 3



Mission

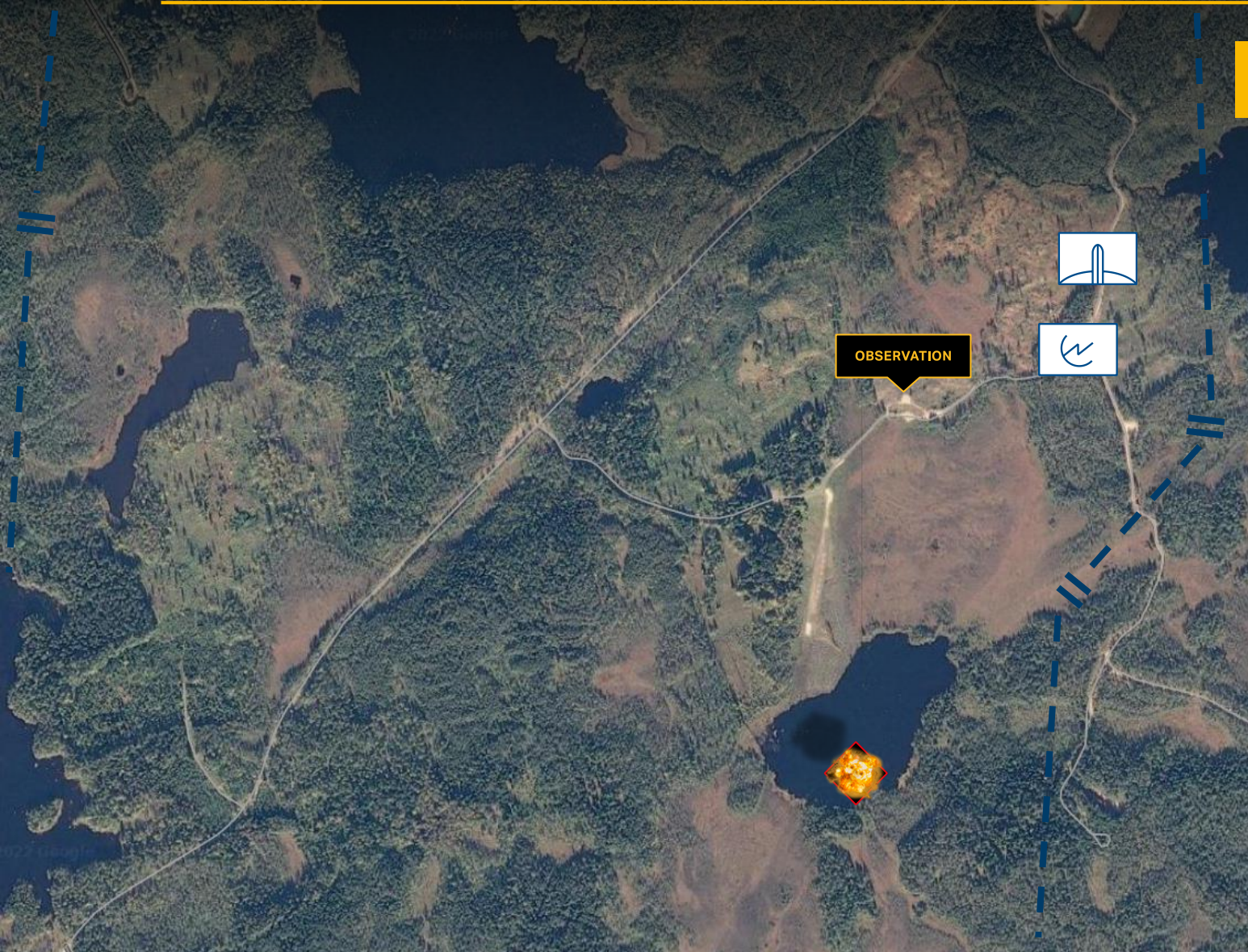
- Protect: protect friendly activity
- Combat: limit enemies' freedom of movement
- **Disrupt**: obstruct close air support (CAS) attack on artillery
- Prevent: stop enemy from conducting activities

Task

- 2nd MSHORAD platoon (+)
4 MFU and 1 MRU are on the move and have the mission to protect a mechanised battalion
- **Engage CAS**
- Redeploy as MANPAD, hostile CAS
- MRU: detects, tracks, identifies and classifies the target. Hostile CAS
- MFU: receives cueing information. Track and lock on target
- MRU and MFU: fire permission and engagement

**SAAB**

MSHORAD: live firing summary



Task

- MRU detected, tracked, identified and classified the targets (drone, elevated helicopter airframe and towed target)
- MFU received cueing information: track and lock on target
- MRU and MFU: fire permission and engagement

Live firings

Firing one

- Drone (DJI Matrice 300 RTK)
- Size: 670*430*810 mm
- Speed: 15 m/s
- Intercept distance: 2000 m

Firing two

- Helicopter body (AS365 N3)
- Size: 1.9*2.35 m
- Speed: 0
- Intercept distance: 1908 m

Firing three

- Towed sleeve target
- Size: 8000*950 mm
- Speed: 90 m/s
- Intercept distance: 3506 m

Firing four

- Towed sleeve target
- Size: 8000*950 mm
- Speed: 90 m/s
- Intercept distance: 3841 m

Firing five (night)

- Towed sleeve target
- Size: 8000*950 mm
- Speed: 90 m/s
- Intercept distance: 3481 m

Result of firings: All targets destroyed

Summing up

Flexible

For any vehicle

Mobile

Air defense on the move

Modular

Future ready



SAAB

Questions?



SAAB

Thank you!