



SKY-WATCH

HEIDRUN MINI FIXED WING UNMANNED AERIAL SYSTEMS EXAMPLES OF USE CASES, COY-LEVEL (ARMY & HOME GUARD)

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HEIDRUN USE-CASES

This document highlights tactical all arms use-case examples at the company and below level in the army and home guard forces not excluding possible use of Heidrun in similar cases in law enforcement and disaster relief operations.

Danish Army (1 Bde & 2 Bde) equipped with Heidrun

The below organigram shows exemplary figures of Heidrun distribution, mini-UAS in the Danish Army structure anno 2022 as agreed in the current political defence agreement.

Table 1: Danish Army 1 and 2 Bde

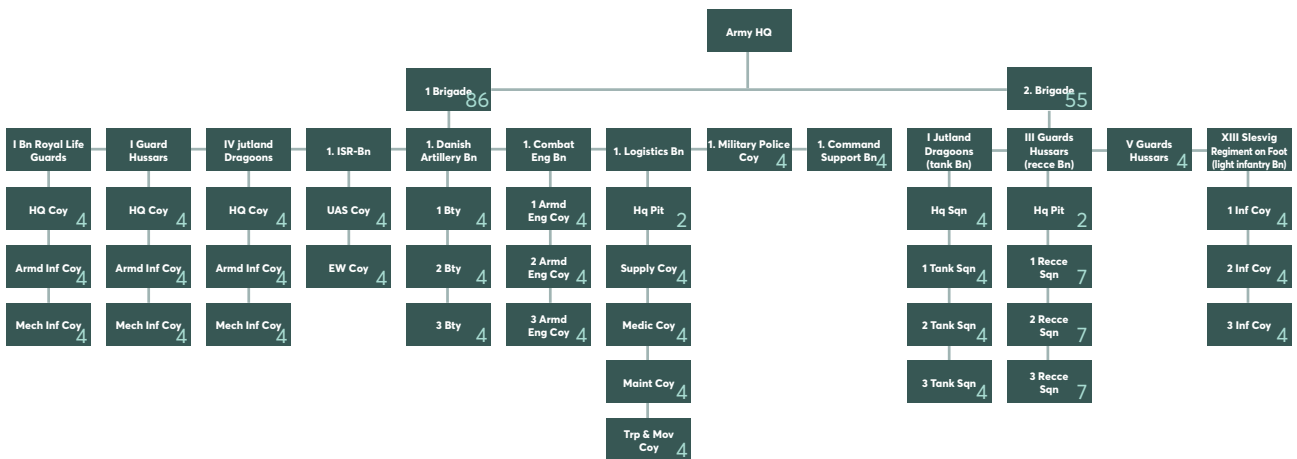
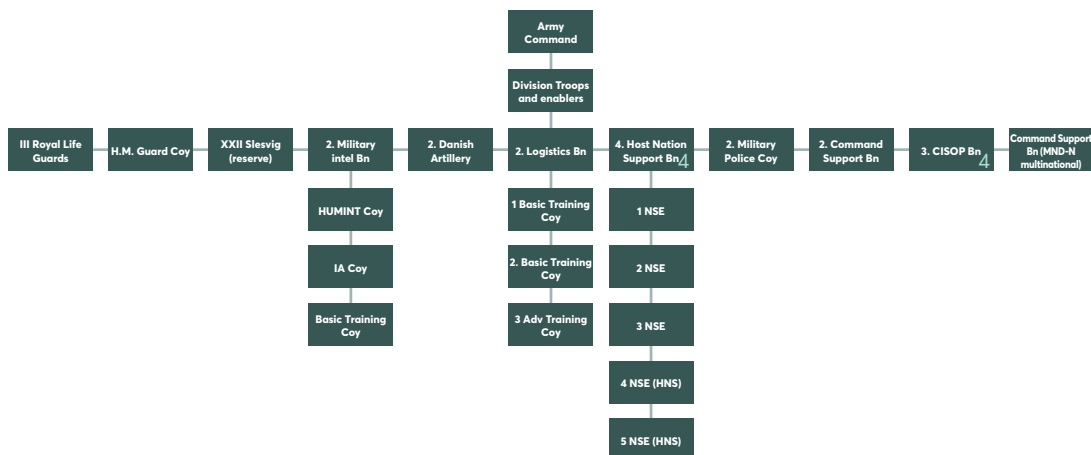


Table 2: Danish Army Div Trps





The resulting numbers are exemplary but will enable an increased situational awareness at the lower tactical echelons evolving around the company and squadron level of tactical activities. Already, the Heidrun system has been procured by special operation forces (SOF) in different European defences, not least because of the ease-of-use and man-packability of the system. Dispersed unmanned aerial sensors offer vital SA supplementing larger ISR sensors, often serving higher command and less redundant due to small numbers of high value assets. Sensor fusion and integration is key to linking a network of drone systems both to legacy system and new procurements.

Given the above division in classical different arms, the below examples are developed accordingly. Unit types below are prepared for a larger range of activities than listed but the Heidrun use-cases are meant to be exemplary not exhaustive. Many examples described apply to more than one type of unit. Language and definition according to NATO effects terminology.

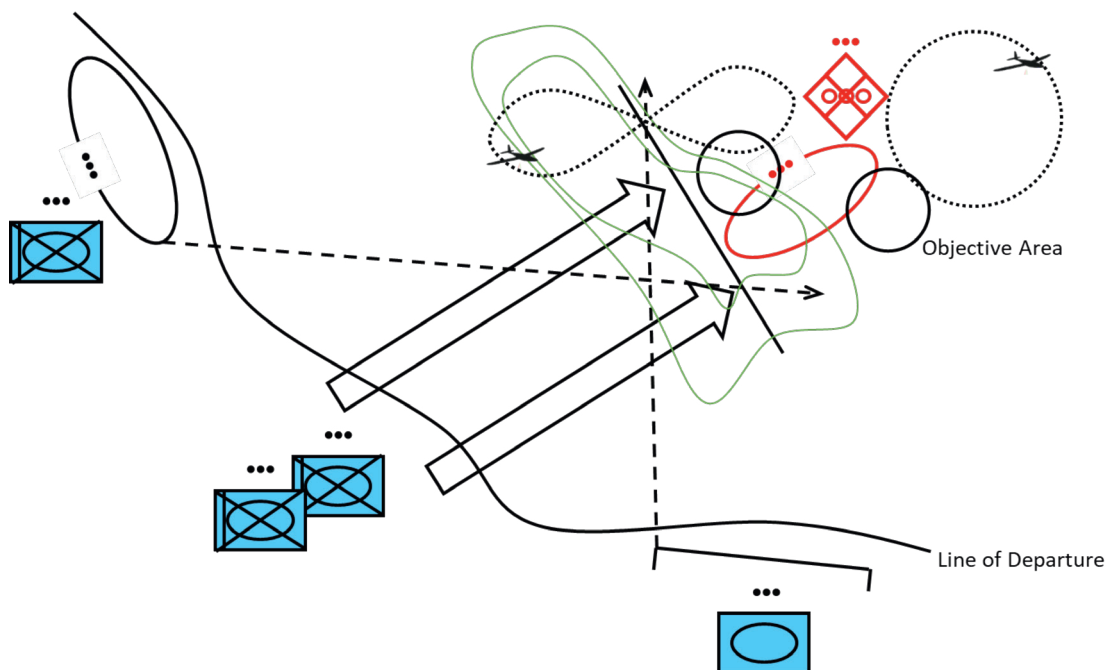
COMBAT TROOPS

Infantry

Armoured Infantry Companies (CV90 Infantry Fighting Vehicles)

1. Deliberate attack: mass combat power at the expense of time; using Heidrun to map terrain and obstacles, stealthy recce of axes of advance and objective areas, and during execution flank security and defensive action in the objective area.

ARMED INF COY – DELIBERATE ATTACK:



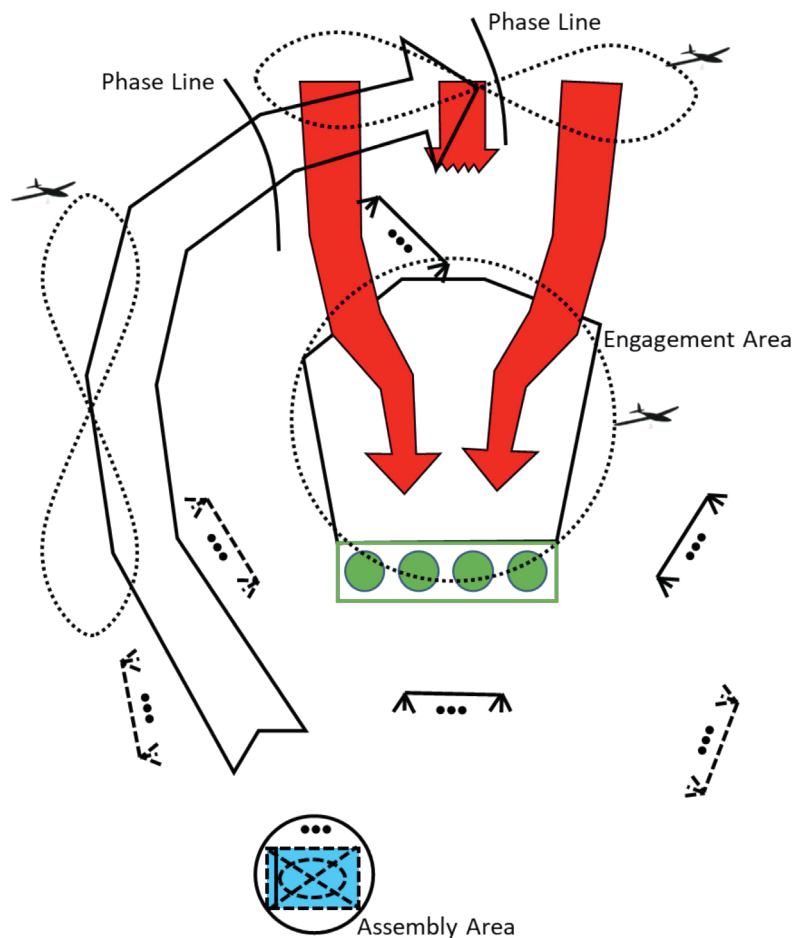
2. Counterattack: scouting enemy force made vulnerable by its own offensive action utilizing Heidrun as a decision support tool.

3. Raid: swift penetration of hostile territory to secure information, confuse the adversary, seize a high value individual or target and utilizing Heidrun both as a launch decision tool and for target acquisition throughout.

Mechanized Infantry Companies (PIR5 Armoured Personnel Carriers)

4. Demonstration: distract an enemy's attention without seeking contact to fix the enemy or obtain psychological as well as physical effects obtained by means of Heidrun either visible to convey "we know where you are" or as a decision tool on what to do.

5. Area Defence: denial of ground by taking up battle position through concentration of force and counter-mobility effects utilizing Heidrun to map terrain and natural obstacles, to achieve early warning of adversary choice of avenue of approach, enveloping movements, and SA during execution to constantly assess the best distribution of force.



6. Delay: trading time for space, reducing adversary's momentum and inflicting damage without becoming decisively committed using Heidrun to maintain contact with the advancing adversary and as a decision tool on when to reposition, eventually demolish key infrastructure and withdraw.

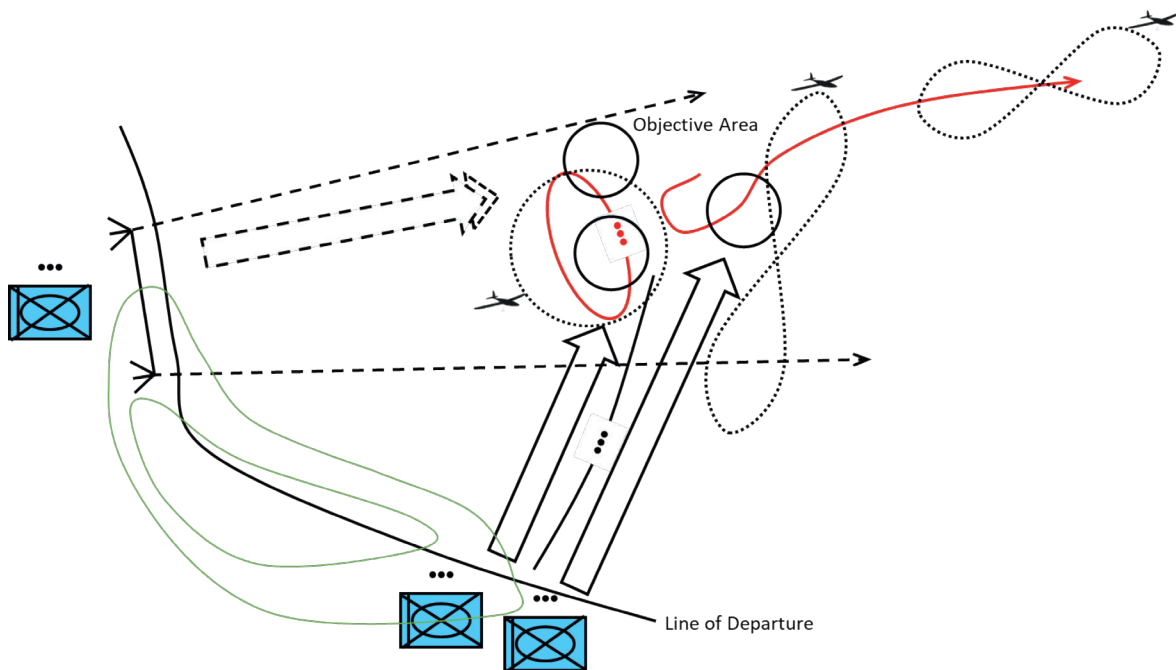
Light Infantry Companies

7. Infiltration: movement through or into an area or territory controlled by the adversary avoiding contact using Heidrun to stealthily overwatch and scouting of assembly areas providing perimeter surveillance.

8. Ambush: inflict damage on the enemy while denying them an opportunity to counterattack utilizing Heidrun to synchronize direct and indirect fire in time and space.

Tank Squadrons

9. Hasty Attack: trade time and detailed preparation for speed to seize fleeting opportunities. Recce in front of the attacking force, early warning of meeting engagement, flank security, squadron commander SA. Using Heidrun to recce in front of the attacking force, early warning of meeting engagement, flank security, squadron commander SA.



10. Feint: distract an enemy force by seeking combat or contact with it using Heidrun to find the enemy and to assess effects.

11. Covering Force: operating apart from the main force for the purpose of intercepting, engaging, delaying, disorganizing, and deceiving the enemy before the enemy can attack the force covered using Heidrun to map terrain and natural obstacles, act as early warning tool, and guide decision on disengagement and withdrawal.



12. General Reserve: portion of a force that is kept to the rear or withheld from action to be available for decisive action. Often entails several prepared and anticipated tasks using Heidrun to map terrain, obstacles, and objective areas when preparing tasks and Heidrun as top cover during execution.

Reconnaissance Squadrons

13. Area reconnaissance: undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of an adversary, or to secure data concerning the meteorological, hydrographic, or geographic characteristics of a particular area utilizing Heidrun to collect and forward analyse geography, infrastructure, and obstacles, and to detect adversary presence and activity.

14. Special Reconnaissance: Special Operation Forces collecting information of potential strategic or operational level importance by means of stealthy employment of Heidrun to supplement other sensor and human collection of information on select high value targets.

Sniper detachments

15. Surveillance: The systematic observation of aerospace, surface, or subsurface areas, places, persons, or things, by means of Heidrun elevated sensor suite.

COMBAT SUPPORT

Intelligence Support

Electronic Warfare Company

Unmanned Aerial System Company (Battalion-level UAS, Puma, support)

Human Intelligence Company

16. Local security: Measures taken by a military unit, activity, or installation to protect itself against all acts designed to, or which may, impair its effectiveness using Heidrun as stealthy overwatch to establish SA in and around the contact area to minimize risk of adversary intervention.

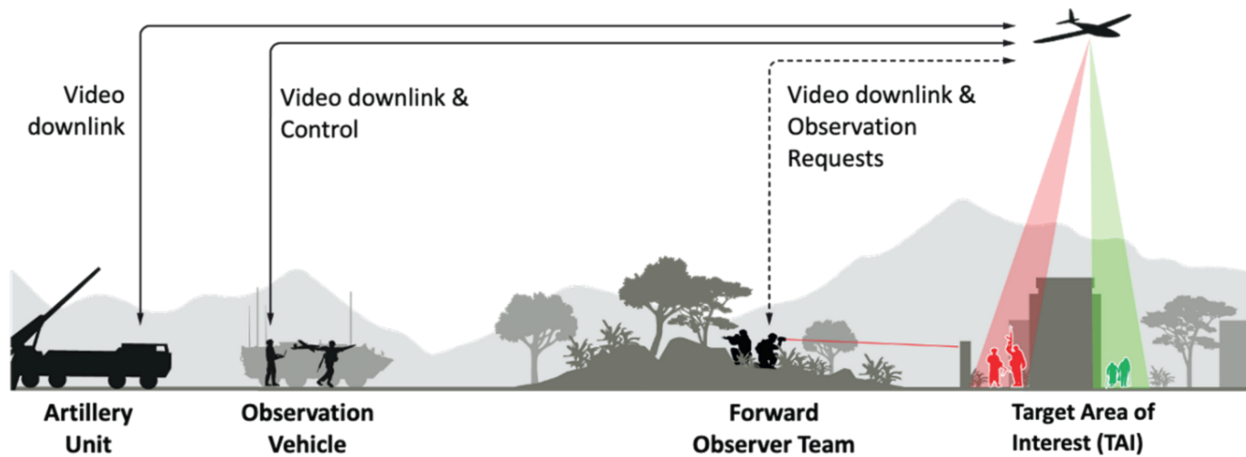


FIRE SUPPORT

Artillery Battery

17. Target Acquisition: detection, identification, and location of a target in sufficient detail to permit the effective employment of fire support to create the required effects using Heidrun to prepare the battlespace mapping and modelling in the fire planning and scheduled targets.

18. Artillery Manoeuvre Area and replenishment point recce with Heidrun surveying and mapping terrain and infrastructure.



Mortar Battery

19. Forward Observer: calls for fire, priority of fires, targets of opportunity using Heidrun to extend the range of ground-based observation technology with a semi-automated workflow between the observer and drone operator, i.e. the observer digitally defines a way-point or a point-of-interest in the Sky-Watch Drone Manager guiding the drone without voice communication, click-to-guide.



ENGINEER SUPPORT

Engineer Intelligence

20. Collection of information on adversary and own engineer works, weather, and military geography needed for the planning and execution of engineer tasks using Heidrun mapping to present geographical information on terrain features, infrastructure status, crossing sites, obstacles and breach and Heidrun as overwatch securing work sites and acting as early warning of adversary activity.

Armoured Engineer Companies

21. Mobility support: in combat engineering to ensure freedom of manoeuvre during an operation, obstacle breaching using Heidrun to gain SA on and around the obstacle and crossing sites, and guide local security measures to safeguard the works when executing.

22. Armoured Vehicle-Launched Bridging: crossing point recce and securing the bridgehead using Heidrun Mapping modelling capacity to assess the feasibility of different crossing sites and Heidrun as overwatch to guide ground-based local security measures.

Mechanized Engineer Companies

23. Demolition Guard: Local force positioned to ensure that a target is not captured by an adversary before orders are given for its demolition and before the demolition has been successfully executed using Heidrun as early warning on adversary approach and as a decision tool on when to recommend destruction of the guarded crossing and subsequent withdrawal.

24. Route Maintenance: ensure road and infrastructure availability during operation using Heidrun for route recce and battle damage assessment executed at much higher speed with less exposure of involved personnel to risk than ground-based route recce, even in rear areas.

Explosive Ordnance Disposal Company

25. Explosive Ordnance Disposal: Recce by means of Heidrun high-resolution camera recordings with overlaid still pictures obtained through patterned flight adjusted to the search area and security overwatch when working the ordnance.

Search Detachment

26. Advanced Search: systematic reconnaissance of a defined area, so that all parts of the area have passed within visibility first covered by Heidrun Mapping and modelling analysis to decide main effort of the search.



COMMAND SERVICE SUPPORT

Logistic support

27. Assembly Area: sustainment operation, reconstitution of combat power. Airborne recce of suitable areas supplementing map recce and stealthy overwatch guiding ground-based security measures, executed from outside the assembly area to uphold a covert digital signature made possible because of Heidrun range.

28. Logistic Trains: securing of replenishment operations with Heidrun as advanced party flying ahead of the front vehicle and as flank security.

Medical Support

29. Casualty Evacuation: recce of casualty collection points, transportation of casualties between aid posts and role 2 / 1 medical treatment facilities using Heidrun to obtain evacuation status SA and act as early warning on aid points and treatment facilities.

Transportation and Movement Support

30. Transport management: surveillance of goods movement in rear area overwatched by Heidrun providing SA to logistic commanders.

Host Nation Support

31. Guard Force perimeter defence of key infrastructure, ports / airports of debarkation (POD / APOD) by utilizing Heidrun for perimeter surveillance in a soldier-saving flight pattern providing early warning on approaching threats.

COMMAND SUPPORT

Headquarter Support

32. Battlespace Management: dispersed Heidruns in concert with other sensors provide commander and staffs with an updated common operating picture through data fusion.

Military Police Support

33. Supply Route traffic management by means of Heidrun providing overwatch and constant open route clarification.



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