

Army Air Defence integration with **SitaWare**



Introducing Army Air Defence (AAD) into the Brigade organisation requires integration with the Brigade's C4I system. SitaWare can cope with this challenge and create added value both for the Brigade and for the AAD unit itself.

SYSTEMATIC

Army Air Defence at Brigade Level

Army Air Defence (AAD) is a manoeuvre component comparable to the other units organic to the brigade. However, it must also be seen as a part of an Integrated Air Defence System (IADS), which requires a high degree of coordination that extends beyond the brigade framework.

The primary purpose of AAD is to protect the brigade against airborne surveillance and attacks, be it from fixed-wing aircraft, helicopters, or unmanned aerial vehicles.

An integral part of brigade plans

Planning for the deployment of AAD units is an integral part of brigade operations, and air defence coverage must be ensured during brigade manoeuvring. Coordination and deconfliction of airspace and the use of terrain must be assured across all brigade units and coordinated with IADS.

While the brigade plans for ground movement and manoeuvres, plans for the use of airspace is typically the responsibility of the Air Component Commander and their headquarters, which submits the Airspace Control Order (ACO) to all units in the Area of Operations (AO). The ACO is based on requests from the different units operating in the AO, among others, and its generation requires close coordination and connectivity. Naturally, the AAD units require airspace to operate and thus need connectivity to the brigade and ideally also directly to IADS.



A generic Army Air Defence **unit** **set-up**

The following AAD unit set-up is generic and does not refer to a specific weapon system. An AAD unit typically consist of:

- One or more mobile fire distribution/control centre(s) able to follow brigade manoeuvres.
- A mobile sensor suite with radar and/or electro-optical and/or other sensors.
- A number of mobile launchers/guns/other weapons incl.. MANPADS.
- An integrated and dedicated cueing capability in the form of a fire control and communication system linking the fire distribution centre/control centre and launchers/guns.



AAD at brigade level typically consists of Short Range Air Defence (SHORAD) and/or point defence units with a short-to-medium range, whereas Area Air Defence - with medium-to-long range units - are in a separate organisational structure outside the brigade.

AAD and other ground based air defence units generates a Local Air Picture (LAP), which is the basis for their air defence operations. If the unit(s) is properly connected, the LAP can be disseminated to others and also contribute to the overall Recognised Air Picture (RAP) in the AO. Likewise, the AAD unit(s) benefits from receiving the RAP, delivering better situational awareness at longer ranges than the LAP provides. This enables coordination with other air defence units for target allocation and engagement.

AAD units are controlled via weapon control orders and by the designation of areas of responsibility (weapon engagement zones). When properly connected, target allocation can take place directly to the AAD unit from higher headquarters and/or from the IADS. However, AAD is fluid and must to the highest extent possible cover the brigades manoeuvres. This calls for a higher degree of autonomy than, for example, units designated to Area Air Defence, leaving weapon control orders and area designation as the primary means of control.

Contributing to the Recognised Air Picture

Integration of Army Air Defence units using SitaWare

The focal point for the integration of AAD units into the SitaWare C4I system is the fire distribution centre/control centre. Using SitaWare Headquarters in the fire distribution centre/control centre enables the dissemination of the LAP between the AAD and SitaWare Headquarters via any of the supported interoperability standards e.g. JREAP or NFFI. The LAP is shared in near real-time via SitaWare Headquarters Communication (SHC), SitaWare Tactical Communication (STC) protocols, and between all SitaWare entities.

SitaWare can also be used as the gateway between AAD and the IADS, enabling the AAD to provide their LAP and thus the IADS to produce the RAP for the AO. This can then be shared across the entire brigade for enhanced situational awareness.

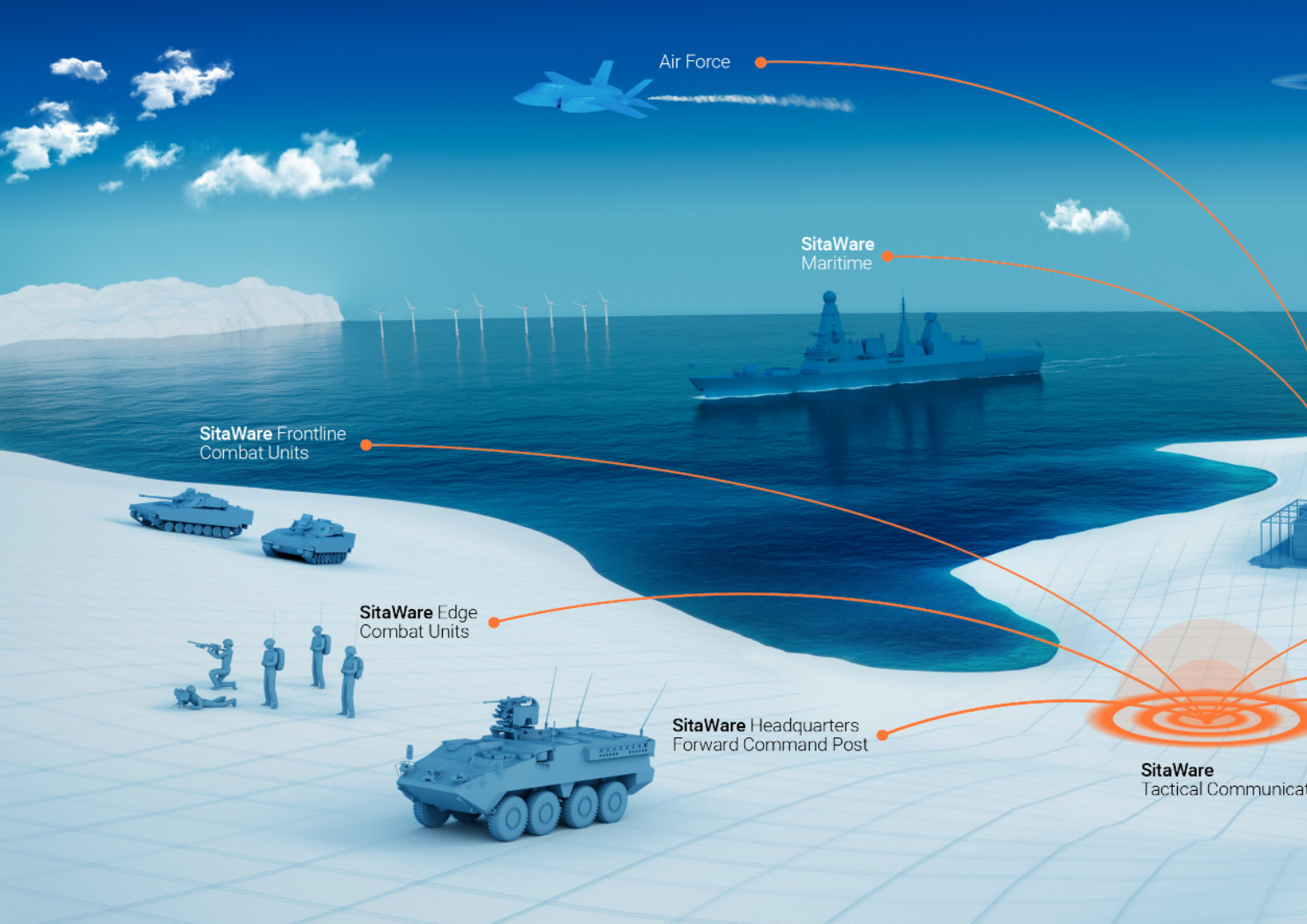
Concise information distribution across units

SitaWare Headquarters distributes the current ground situation, plans, orders and overlays and enables the AAD unit to collaborate in the planning process and to submit requests for, for example, airspace control means to be included in the next ACO or amended to the ACO in force. Furthermore, weapons control orders and air raid warnings can be distributed concisely to the AAD unit, from either brigade headquarters or the IADS using the chat in SitaWare.

SitaWare Headquarters cannot be used for cueing and fire control between the fire distributions centre and launchers/guns, but adds the necessary C2 functionality to the AAD unit.

All entities using SitaWare can be visualised on the situational map interface as tracks (Friendly Force Tracks). Equipping the launchers/guns with the SitaWare Frontline or SitaWare Edge mobile solutions will generate an overview of their current positions, which can be amended with weapons ranges for each unit, and give commanders unmatched situational awareness.

SitaWare Frontline and SitaWare Edge also give the launcher/gun personnel the opportunity to electronically report events and sightings directly to higher headquarters without delay, and still with the AAD unit commander in the reporting loop.



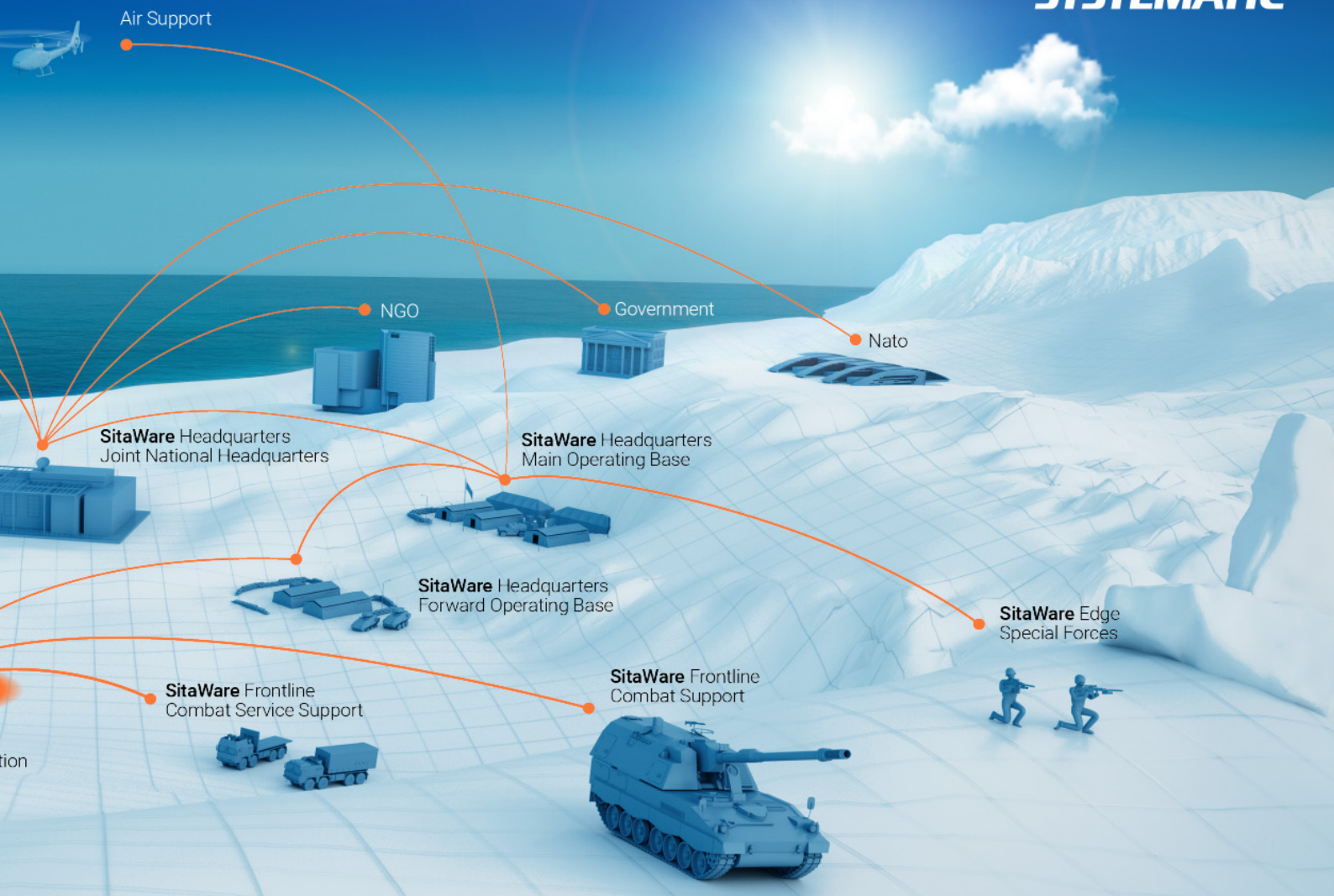
The SitaWare C4I suite provides command-and-control to all echelons, from top-level multinational headquarters to the individual vehicle and soldier. The SitaWare Suite consist of:

- **SitaWare Headquarters**, a scalable C4I system with an open architecture that provides full capabilities and interoperability for headquarters and staffs.
- **SitaWare Frontline**, a battle management system that supports company and platoon commander levels.
- **SitaWare Edge**, a simple, lightweight C2 system designed for dismounted commanders and soldiers.

The SitaWare suite enables all units and echelons to communicate and exchange data seamlessly via built-in communication mechanisms:

- **SitaWare Headquarters Communication (SHC)** for inter-connecting SitaWare Headquarters sites over medium- and high-bandwidth networks, enabling very rich command-and-control data exchange, and
- **SitaWare Tactical Communication (STC)** for interconnecting all mobile units and the headquarters over challenged networks using radios.

SitaWare C4I



SitaWare Headquarters hosts the interoperability gateway that enables information sharing with coalition partners through all the important interoperability standards – both military and civilian. The SitaWare interoperability standards have been tested and proven in exercises and operations since 2003.

SitaWare Headquarters converts data from one standard to another, for example, from Link 16 tracks to NFFI tracks or vice versa. The open architecture and the Software Development Kit (SDK) enables the use of APIs for integration with third-party applications and systems.

The SitaWare suite enables all units to see their own (FFT) and reported enemy tracks on the map interface as well as plan overlays and other relevant information. With this, commanders can maintain situational awareness and disseminate plans and orders through the built-in chat-function.

IRIS Forms is the Systematic tool for writing and reading structured military messages (MTF). IRIS Forms is integrated with SitaWare Headquarters, which enables all the messages in NATO's APP11 message catalogue to be created and read.

Of special interest in the framework of AAD is the ability to import and visualise in 3-D Air Tasking Orders (ATO) and Air Space Coordination Orders (ACO).

About SitaWare and IRIS

About Systematic

Systematic delivers world-leading command-and-control, military messaging, and electronic warfare solutions – providing commanders at all levels of the battlespace with comprehensive situational awareness and advanced mission management tools. Operating across domains, our reliable, user-friendly, and operationally proven C4I software has been delivered to more than 35 customers worldwide.

Systematic is the only software company in the Nordic countries certified at CMMI level 5. Systematic employs more than 1,100 talents across the globe and has offices in 11 countries.

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