SAAB

MISSION SUPPORT SYSTEM

In control of tactical information.

MISSION SUPPORT SYSTEM

When in control of tactical information you're in control of a whole lot more

Gripen MSS - Superior pre-mission situation awareness

Today's combat scenarios and peacekeeping operations demand mission support officers to assess complex information from various intelligence sources to be able to conduct a comprehensive mission planning. The MSS is a vital companion for this assessment.

The MSS is designed for flight operations performed with fighter aircraft.

The MSS supports the tactical loop, part of the OODA* loop. The focus is to provide situational awareness and planning support before execution of missions. After completed mission, the focus is on analysis, evaluation and reporting.

The ability to distribute tactical information within an MSS network provides for efficient information share between tactical units. This facilitates common briefing and debriefing session for interaction in the battlefield. The MSS can be integrated with a Mission Trainer network to provide the pre-planning for training missions.

Optionally, the MSS network integrates with an FMN*.

Basic operation

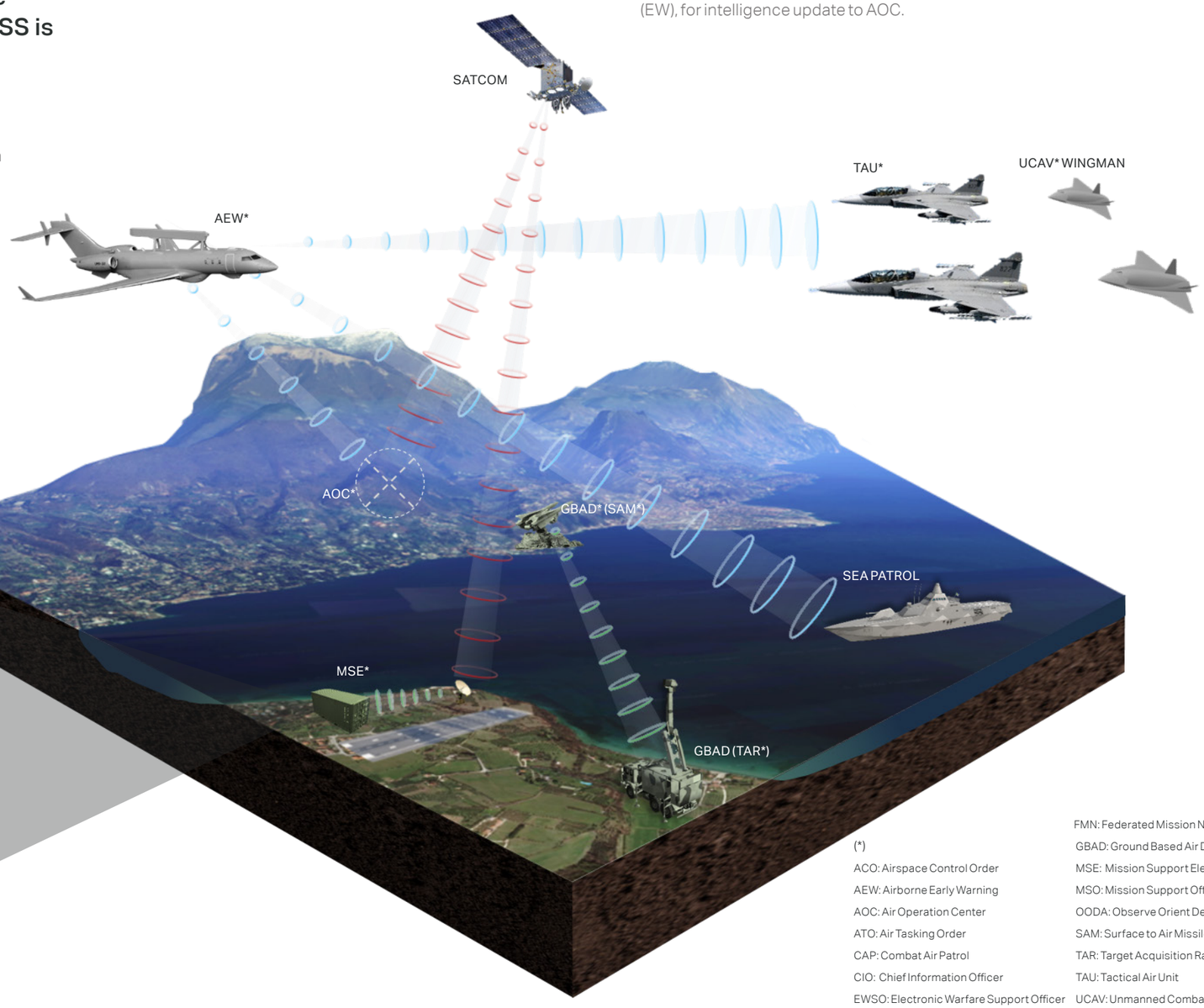
The MSE* receives orders (ATO*/ACO*) from AOC* and composes situational awareness based on intelligence activities.

The MSO* creates the mission plan (such as attack, CAP*, reconnaissance), performs rehearsal and modifies the mission plan if needed.

The mission plan is stored at the Data Transfer Unit (DTU) and then loaded into the aircraft.

After performed mission the MSE receives the complete recorded data for mission evaluation. Evaluation is time synchronized with display of mission and sensor track recordings along with replay of all cockpit displays and pilot interactions.

The MSO, EWSO* and CIO* create reports with complementary information from the mission, such as image interpretations from reconnaissance data and Electronic Warfare (EW), for intelligence update to AOC.



(*)
ACO: Airspace Control Order
AEW: Airborne Early Warning
AOC: Air Operation Center
ATO: Air Tasking Order
CAP: Combat Air Patrol
CIO: Chief Information Officer
EWSO: Electronic Warfare Support Officer
FMN: Federated Mission Network
GBAD: Ground Based Air Defence
MSE: Mission Support Element
MSO: Mission Support Officer
OODA: Observe Orient Decide Act
SAM: Surface to Air Missile
TAR: Target Acquisition Radar
TAU: Tactical Air Unit
UCAV: Unmanned Combat Air Vehicle

Reduce turnaround time & enhance survivability

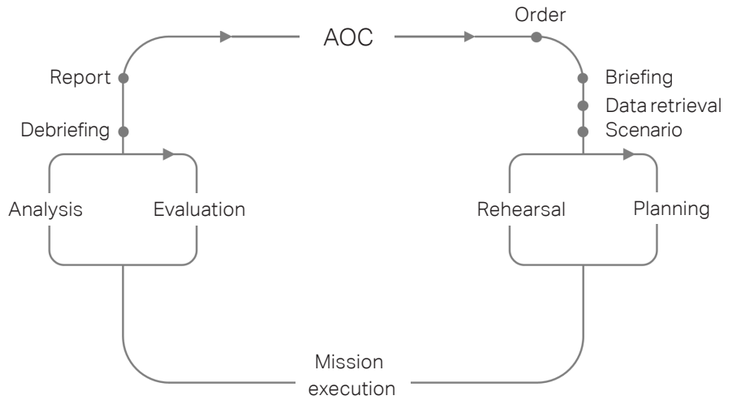
The MSS is a customer-adaptable product offering multiple options. With a semi- to fully automatic assessment of the operational parameters, the pilot receives a comprehensive support from order to report. In addition, an optional AI in MSS uses the experience from previous missions to facilitate a more autonomous system behaviour.

Basic Capabilities

- Order handling (ATO/ACO)
- Intelligence handling (EOB*, Targets, Threats)
- Mission planning and preparation
  - Navigation and Weather
  - Weapon load validation and fuel calculations
  - EW and radar sensors
  - Communications (IFF, Links and Radio)
  - Weapon attacks
  - Reconnaissance
- Pre-mission briefing and simulation (rehearsal)
  - Supported by various weapon and threat models
- Recorded mission data from DTU, replay, evaluation and EW technical analysis
- Report handling (mission, weapon, EW)

Optional Capabilities

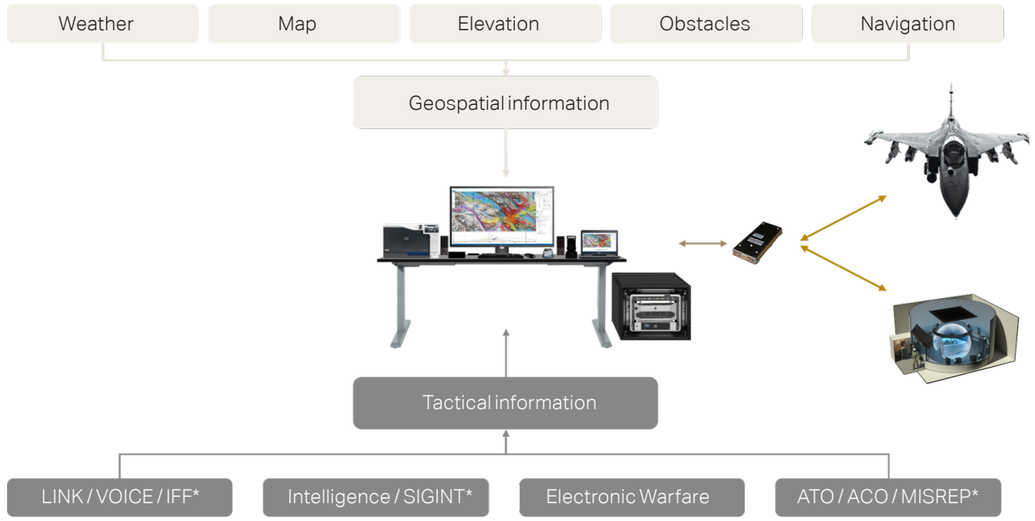
- Rules of engagement assessment
- Targeting (high-resolution position)
- Collateral damage analysis
- Target Oriented Planning
- Auto routing, taking advanced factors (weather, threat, terrain, ATO/ACO etc.) into consideration
- Use of rule-based decision support in rehearsal mode (such as aircraft behaviour based on EW and threat exposure)



The tactical loop events.

External interfaces

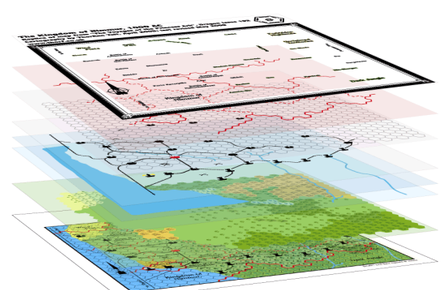
The MSS is compatible with different kinds of information from various sources and support standards such as RTCA DO-200/201, MIL-STD-2525B, APP-11, ADatP-3, MIL-STD-6016, GPX and AIP.



Map-Oriented Planning

Situational information in MSS disseminates in separate layers stacked on the same background. Each layer represents a separate domain, such as ATO/ACO, intelligence, weather, waypoints, routes, sketch, geospatial- and navigation data.

Multiple users in an MSE can work simultaneously with the same mission plan. The map graphical style in MSS represent how it will be presented in the aircraft.



(*)
FMN: Federated Mission Network
IFF: Identify Friend or Foe
SIGINT: Signal Intelligence
MISREP: Mission Report

Tools in MSS

Threat objects, manually placed in the terrain or imported as part of an EOB*, can be analysed by means of Line-Of-Sight (LOS) calculations.

The convenience of the planned route is analysed in a detailed map where rehearsal (fly-through) is possible, both in 2D and 3D.

Characteristic parameters of the threats are possible to tweak and instantly retrieve as a modified LOS calculation in the map.

Map layer with information for different purposes such as satellite imagery, intelligence, LOS, detailed terrain elevation and obstacles can easily be displayed or hidden.

(*) EOB: Electronic Order of Battle

PROVEN PERFORMANCE. The Mission Support System is now in use in:

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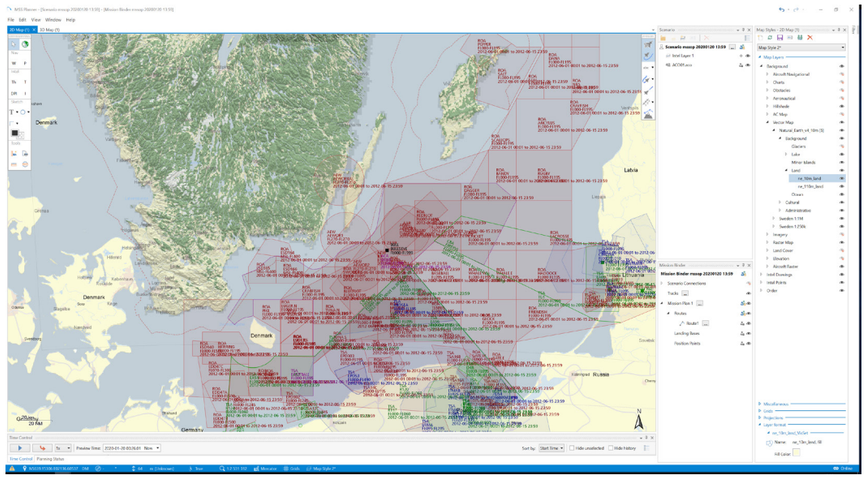
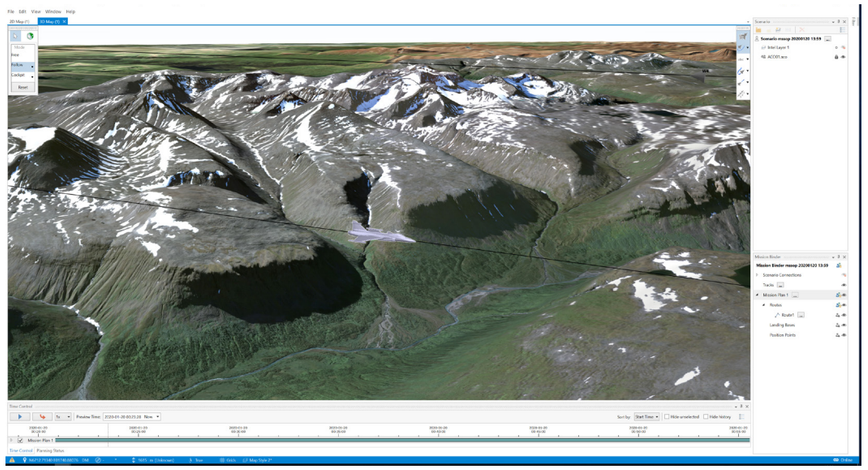
MISSION SUPPORT SYSTEM



Assessment of an ACO in the 2D-map, where data disseminates in layers by different colours.



Fly-through of the planned route in 3D map with satellite imagery and elevation data to analyse details of the terrain.

Post-mission evaluation and cockpit replay of recorded mission data during flight.

MSS advanced routing

To enhance the operator's mission planning capability for a highly complex scenario and to decrease planning time, the MSS optionally provides support for an automatically calculated trajectory.

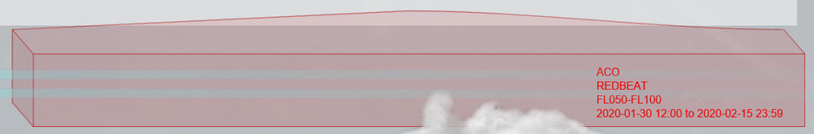
As an option the MSS can provide support for an automatically calculated trajectory through an environment with a tactical situation of high complexity.

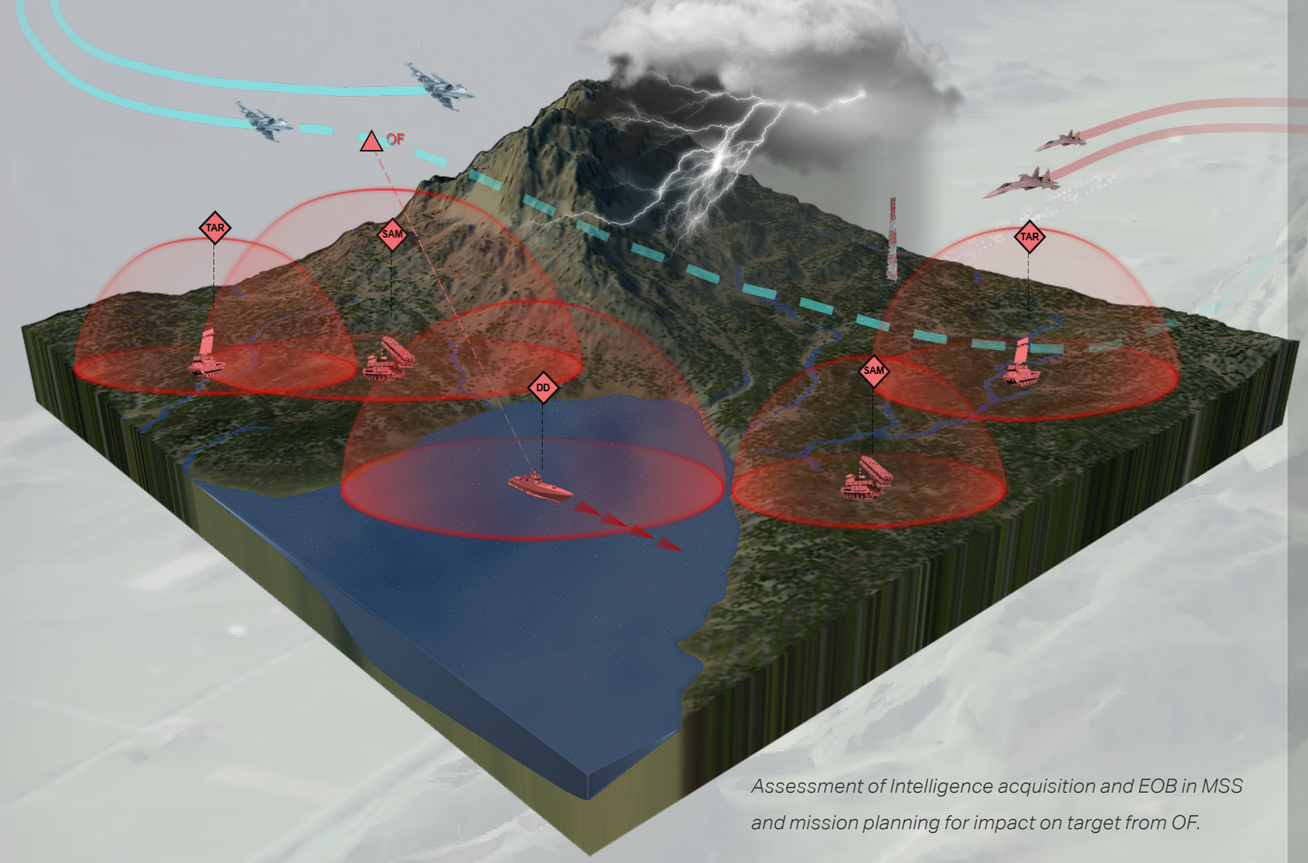
The pilot rehearses the proposed route to analyse the possibility for a successful outcome of the mission, to adapt and re-rehearse if needed.

Based on factors such as follows, the MSS automatically proposes eligible routes for a TAU*:

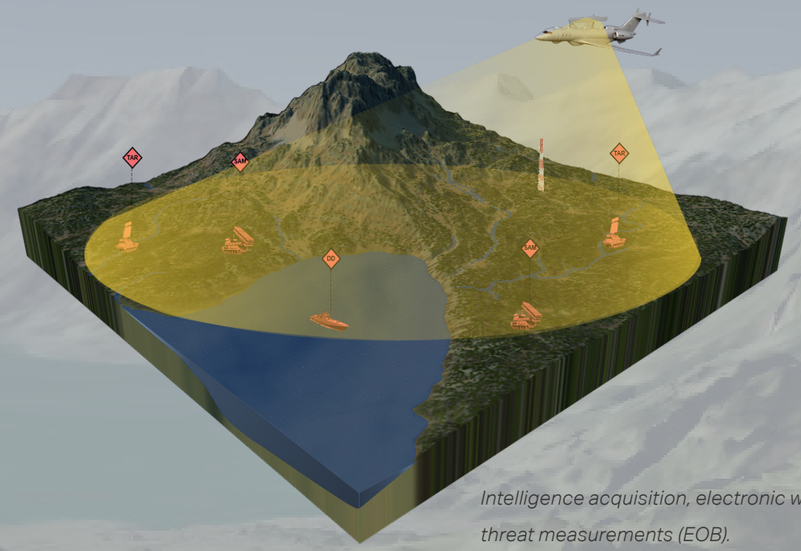
- ATO/ACO
- Threats
- Probability to encounter enemy airforce
- Deconfliction of TAU
- Weather
- Terrain
- Obstacles
- ARINC 424
- Performed missions

(*)TAU: Tactical Air Unit





Assessment of Intelligence acquisition and EOB in MSS and mission planning for impact on target from OF.



Intelligence acquisition, electronic warfare, target and threat measurements (EOB).

MSS locations

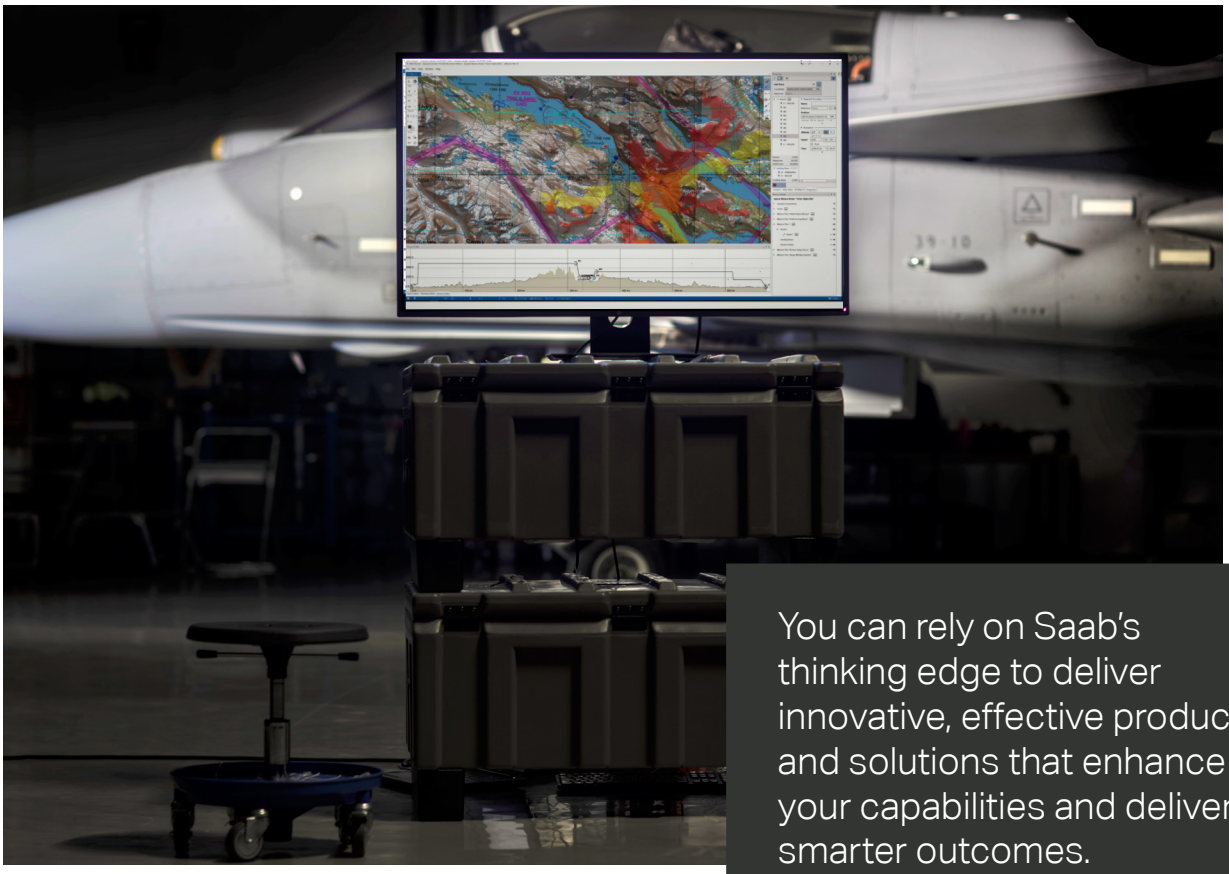
Typically, operation locations are divided in Main Operation Bases (MOB); Forward Operation Bases (FOB) and Dispersed Location (DL)/field usage.

MSS deployable server with clients for teamwork use can be selected to disconnect from airbase LAN for field operation use.

The MSS is deployable in a network or used as standalone. An easy process prepares for fast offline deployment. When re-connected to the network it is possible to select which information to upload to the network servers.

Distributed tactical information within an MSS network makes it possible to efficiently share interconnected information between tactical units.

An implication of this is that units deployed at different geographical locations in an area can take advantage of common "online" briefing and debrifing sessions for efficient interaction in the battlefield.



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General features

Layered architecture and design (separation of concerns)
Modular software architecture – plug-in capabilities
COTS hardware and operating system
Client/server system (possible to operate client as standalone, e.g. laptop)
Multiple stations distributed over a network
Light deployment (easy to detach for mobile use)
Multiple external interfaces capability
Compliant with MIL-STD-810
Possibility to integrate MSS application software in customer defined hardware
"Drop-box" assessment for external system information exchange
ATO and ACO support with "IRIS Form" for ADatP-3

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