



**SAAB**

# **9AIR CRS**

CONTROL & REPORTING SYSTEM

# ANY NEED – ANY TASK

The 9AIR C4I concept: complete control for all weapons, sensors and communications.

The missions that air forces face today, and those that will come tomorrow, demand the ability to seamlessly implement different strategies. This can range from peacekeeping operations, air policing missions and border patrol to full combat and joint war scenarios.

The 9AIR C4I family is scalable and flexible, providing control for all missions, air forces and operations.

It provides the situational awareness and communications that operators need to make the right choices, and to act on them swiftly and effectively.

## THE 9AIR C4I PRODUCT FAMILY

### 9AIR TOCCS

Tactical Operations Command & Control System

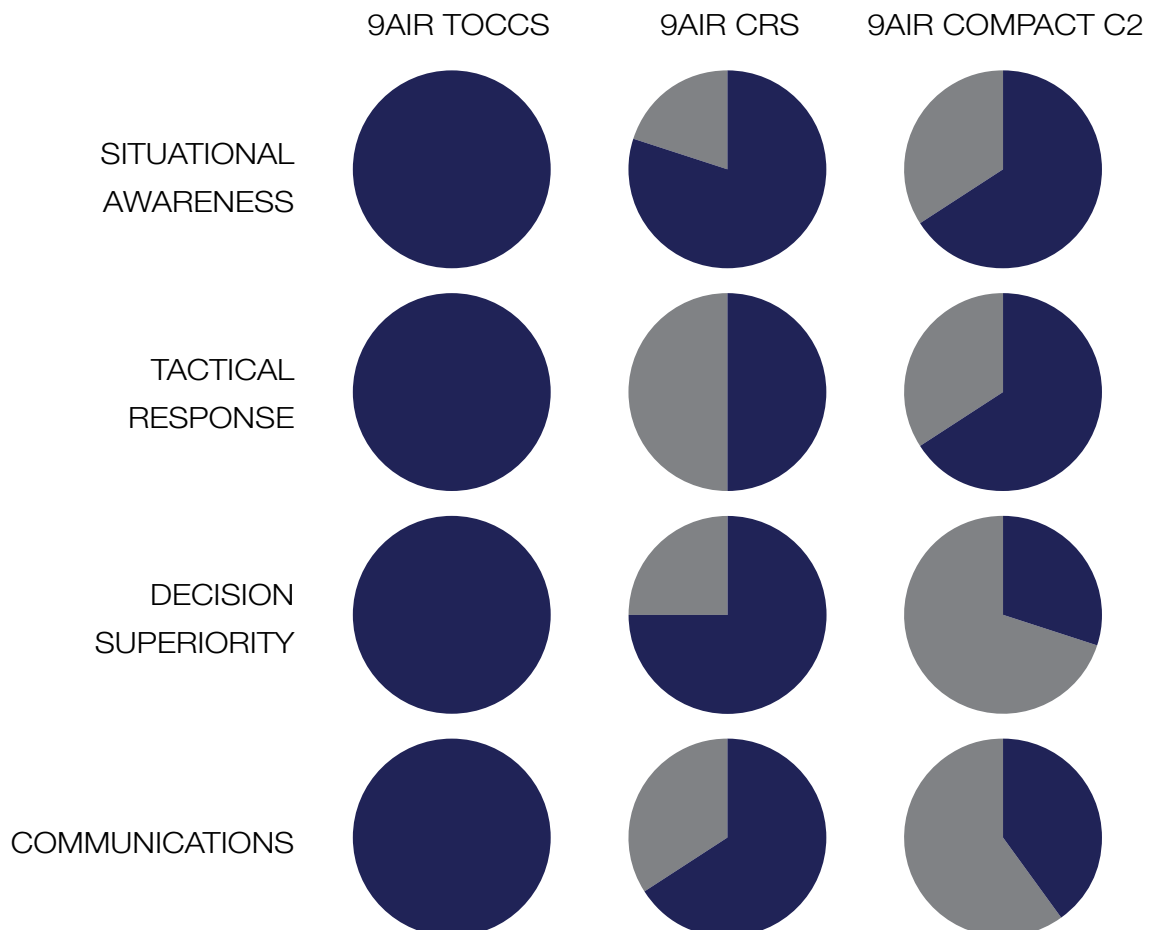
### 9AIR CRS

Control & Reporting System

### 9AIR Compact C2

Command & Control

## ANTICIPATE TOMORROW ●●●●



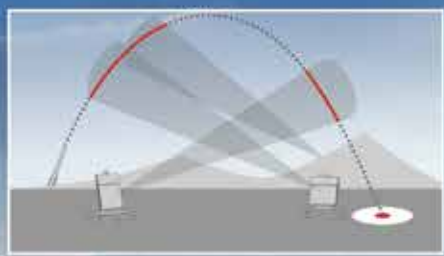
# YOUR FORCE MULTIPLIER

9AIR CRS is the best way for air forces to adapt to new operations.

Whether it's an aircraft fleet with Tactical Data Links that do not work with the existing legacy C4I system, the need for AEW capabilities or the necessity for ballistic missile tracking or Remote Radar Management, 9AIR CRS uses a modular approach to cater to every need.

Acting as a force multiplier between your existing C4I system and the desired capability, the system can scale from a single workstation to as many workstations as required.

9AIR CRS is based on operationally-proven technology and represents a subsection of the complete 9AIR TOCCS interoperable functionality.



BALLISTIC MISSILE TRACKING



AEW&C

FIGHTER

SENSOR TACTICAL DATA LINK

TACTICAL DATA LINK



SENSOR MANAGEMENT



9AIR CRS

EXISTING C4I SYSTEM



# START FROM WHERE YOU ARE

When it comes to developing superior Command & Control capabilities, there's a simple formula for success – don't start from scratch. Start from where you are.

It's important to get the best possible return from the resources you invest in, and 9AIR CRS will enable you to build on your previous investments. In fact, with our modular solutions, upgrading or adding new command and control capabilities is as easy as it is cost-effective.

As the technology around us evolves, the ability to resolve operational tasks effectively becomes more challenging. A system that has been running for 10 to 15 years will no longer be capable of meeting all new requirements.

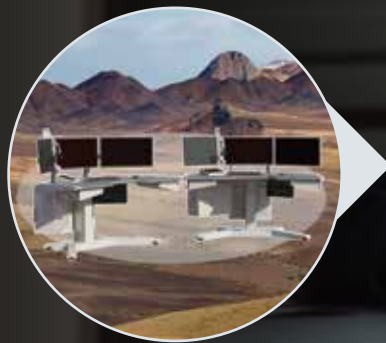
Rather than replace the whole system, a cost-efficient solution is to simply add on the functionalities that are missing. By integrating new applications within your existing systems, it is possible to dramatically improve your air defence capabilities in a way that is both simple and effective.

Changes are sometimes unavoidable. With 9AIR CRS, it's possible to make these changes in a way that is financially viable.

**1 OLD SYSTEM**  
No longer capable of meeting all new requirements.



**2 INTEGRATE**  
Add new 9AIR CRS functionality within your existing systems.



**3 UPDATED**  
Air defence capabilities dramatically improved.



# TACTICAL DATA LINKS

The use of Tactical Data Links in operations offers multiple benefits, including improved situational awareness and mission effectiveness.

9AIR CRS uses a highly intuitive, operator-friendly HMI to access Tactical Data Link operations. The weapons control offered by Tactical Data Links is integrated alongside 9AIR CRS, and the correlated air picture is then exchanged with the existing C4I system.

9AIR CRS enables integration with your national proprietary Tactical Data Links, as well as new internationally interoperable Tactical Data Links such as Link 16 and Link 11.



# AIRBORNE EARLY WARNING

Airborne Early Warning (AEW) offers a whole range of operational benefits, including access to vital information, early warning over a long distance and detection of targets with small radar cross section. It provides a gap-filler for the ground sensor chain, and can be quickly deployed anywhere in your area of operation.

Remote control of the AEW radar is enabled by 9AIR CRS, allowing your AEW asset to perform to maximum effect in response to enemy tactics and threats, including the use of electronic warfare measures. 9AIR CRS also remotely controls the sensor Tactical Data Link connection between the ground radio site and the aircraft.

9AIR CRS will merge and correlate the air picture from your existing C4I system together with sensor data from AEW systems to form a complete Recognised Air Picture.



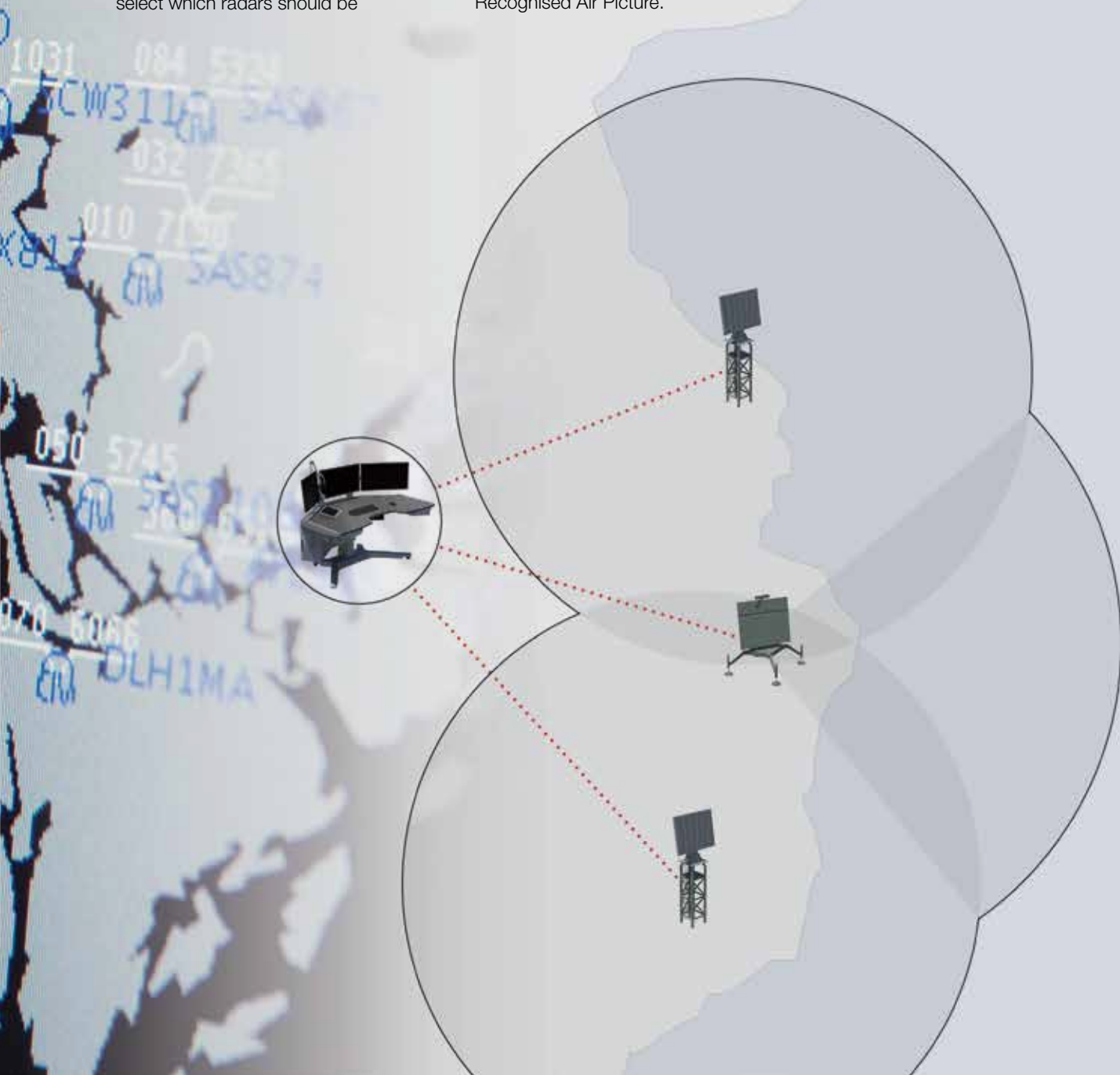
# REMOTE RADAR MANAGEMENT

In order to gain superior situational awareness in any C4I system, you need surveillance input from other radar stations. The data they provide is essential to any commander's decision. This makes them high value assets requiring protection to maintain sustainability.

9AIR CRS can be equipped with Remote Radar Management functionality, allowing you to tactically select which radars should be

transmitting across different directions and sectors. This includes the use of ESM data to support mission success.

9AIR CRS is also equipped with a high performance Track Data Fusion Engine (TDFE), a multi-sensor, network-enabled multi-target tracker and correlator. It fuses primary and secondary radars, IFF, strobes, tracks, ESM/ECM bearings, AIS, ADS-B and Ballistic Missile Tracking to create a coherent Recognised Air Picture.



# BALLISTIC MISSILE TRACKING

Due to limited radar coverage, the detection and tracking of tactical ballistic missiles using solitary track-while-scan radars can be challenging.

With a TDFE for Ballistic Missile Tracking, new possibilities are created. By combining data from several radars early in the processing chain, an accurate track may still be obtained where single radar tracking is insufficient. This can then be used to alert the target area and cue defence systems.

## EARLY TRACKING

Fast detection of ballistic missiles – three measurements are usually enough to initiate a track.

## LAUNCH TARGET DATA

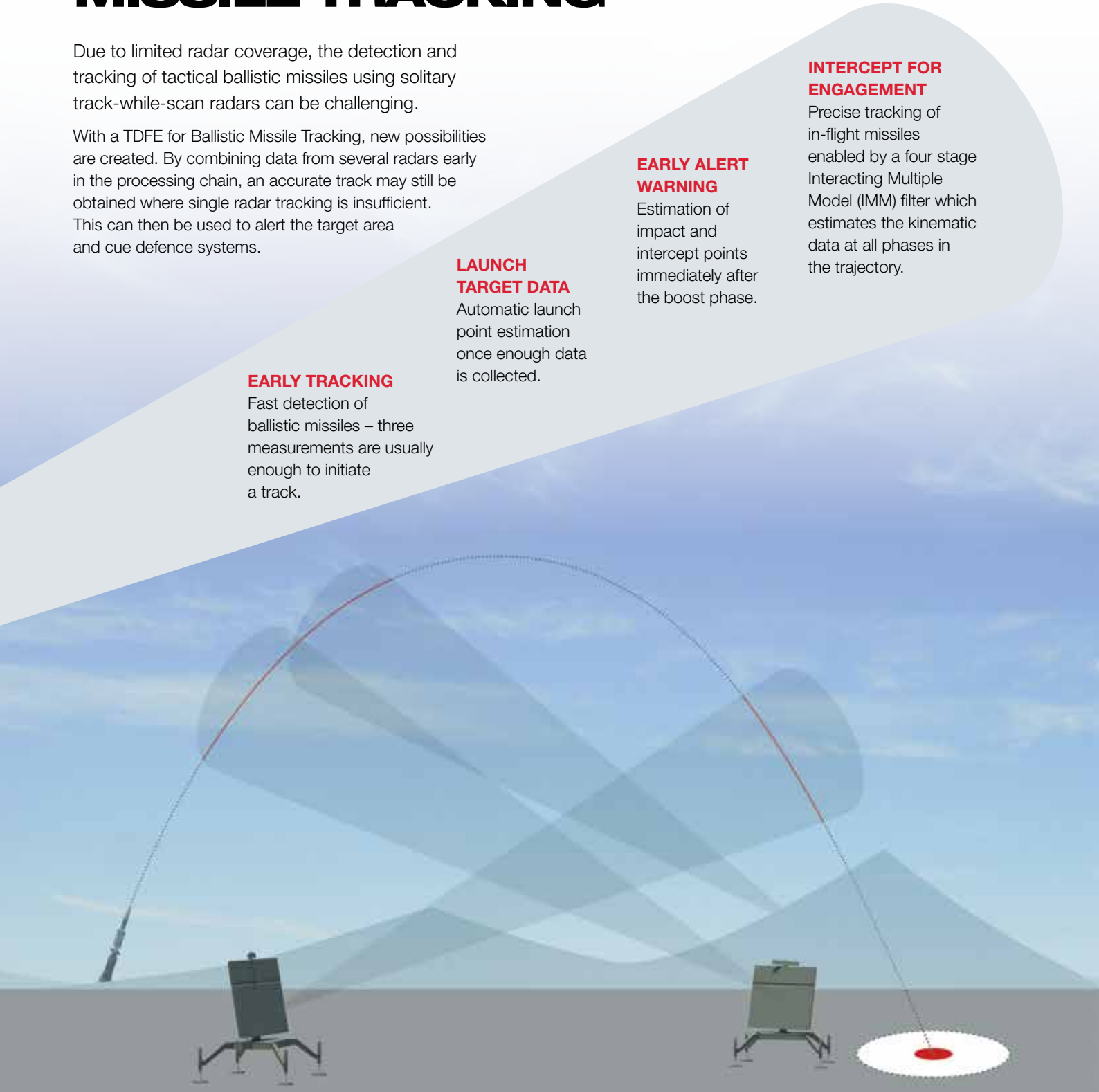
Automatic launch point estimation once enough data is collected.

## EARLY ALERT WARNING

Estimation of impact and intercept points immediately after the boost phase.

## INTERCEPT FOR ENGAGEMENT

Precise tracking of in-flight missiles enabled by a four stage Interacting Multiple Model (IMM) filter which estimates the kinematic data at all phases in the trajectory.



## BALLISTIC MISSILE TRACKING



# A FLEXIBLE APPROACH

## MODULAR

The 9AIR CRS approach involves building a solution based on a number of separate functions, either reused or newly developed, and merging them together into one operational system. This is built on a single basic platform which provides the guarantee of a well-functioning system with high availability.

We work in close co-operation with you, considering your individual needs both in technical and operational terms.

The elements of the 9AIR CRS approach, along with our experience and broad technical knowledge, provide a number of benefits:

- Short delivery cycles
- Cost-efficient projects
- Retention of well-known, well-tested and well-documented functions

## SCALABLE

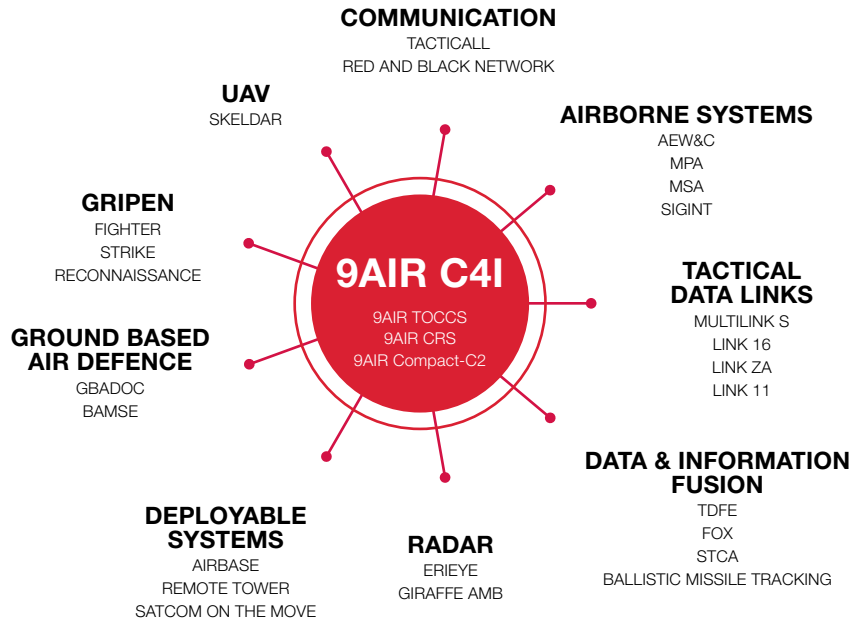
The 9AIR CRS offers the ability to easily change the number of operator workstations. The solution is entirely scalable, from a single workstation up to any quantity required. Remote operator workstations can also be connected.



THE 9AIR CRS IS A FLEXIBLE, MODULAR COMBINATION OF INDEPENDENT FUNCTIONS CONNECTED TO YOUR EXISTING SYSTEM.

# OUR **AIR** OFFER

9AIR C4I is an integral part of Saab's air offer. Our capabilities cover all dimensions of the domain, including military subsystems, weapons and next-generation aircraft. We work with military and civil security organisations around the globe to provide commanders with the right information at the right time.



# TRACK **RECORD**

Since its foundation, the 9AIR C4I family has entered operational service with customers and installations in more than 30 countries around the world. With a program of continuous improvements and upgrades, new 9AIR CRS

customers benefit from over 70 years of experience, development and innovation.

**9AIR C4I**  
> 30 COUNTRIES  
> 70 YEARS OF EXPERIENCE



# TECHNICAL DATA

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## 9AIR CRS

### CAPACITY

- > 60 operators per site
- > 10 collaborating sites
- > 60 live sensor feeds
- > 10,000 simultaneous tracks in real time

### SENSOR INTERFACES

- CD-2
- ASTERIX
- Thompson-TVT2
- TPS-43
- General 18-Bit
- TPS-75
- MPS1000
- ADS-B
- XML

### COMMUNICATION

- VoIP
- Link 11
- Link 16
- SADL
- JREAP

### MESSAGING

- AdatP-3
- USMTF
- ADEXP flight plans

## OPERATING SYSTEM/HARDWARE

- PC Intel architecture blade centres
- Linux OS
- NAS storage
- Virtualisation

## LAN TECHNOLOGY

- Redundant GB TP Ethernet
- IPv4 and v6
- CISCO switches/routers
- VLAN

## GIS FORMATS SUPPORTED

- ESRI ShapeFiles
- MapInfo TAB
- DGN
- ESRI ArcSDE
- TIFF
- GEOTIFF
- JPEG
- GIF
- PNG
- ERDAS Image
- ESRI GRID
- DTED

## COTS SOFTWARE

- MySQL database
- Jabber collaboration software
- MapServer
- FireFox web browser
- SIP gateway
- Java MMI



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