

# Saab HX Update

Best and final offer of  
Gripen and GlobalEye for Finland



Webinar presentation for media  
April 30<sup>th</sup> 2021



**SAAB**



# Agenda

**Micael Johansson**

President and CEO of Saab

**Major General Carl-Johan Edström**

Commander of the Swedish Air Force

**Magnus Skogberg**

Saab's campaign director, HX programme

Q&A session with the speakers





# Saab overview with Finland in focus



Micael Johansson  
President and CEO of Saab



SAAB



Saab was founded in 1937  
with the aim to ensure  
security of supply



SAAB

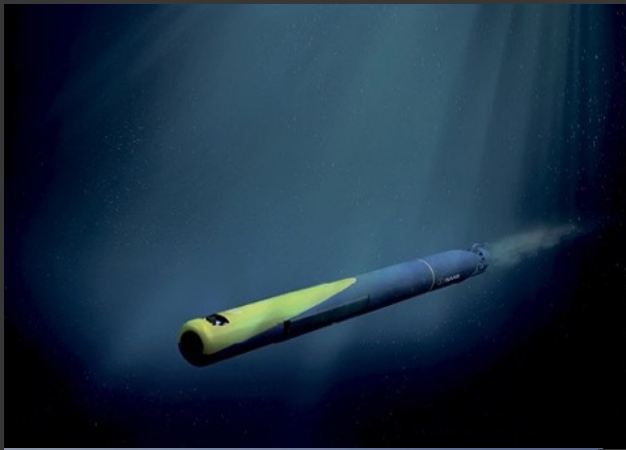




More than 80 years of experience  
and over 5500 aircraft built









# Meeting customers' airpower demand

- ✓ Three major aviation programmes in progress
- ✓ Future Combat Air System (FCAS) ensures Gripen to be operational 2060 and beyond



**December 20, 2016**

Lead time ~3 years



**June 15, 2017**

Lead time ~5 years



**March 14, 2018**

Lead time ~2,5 years



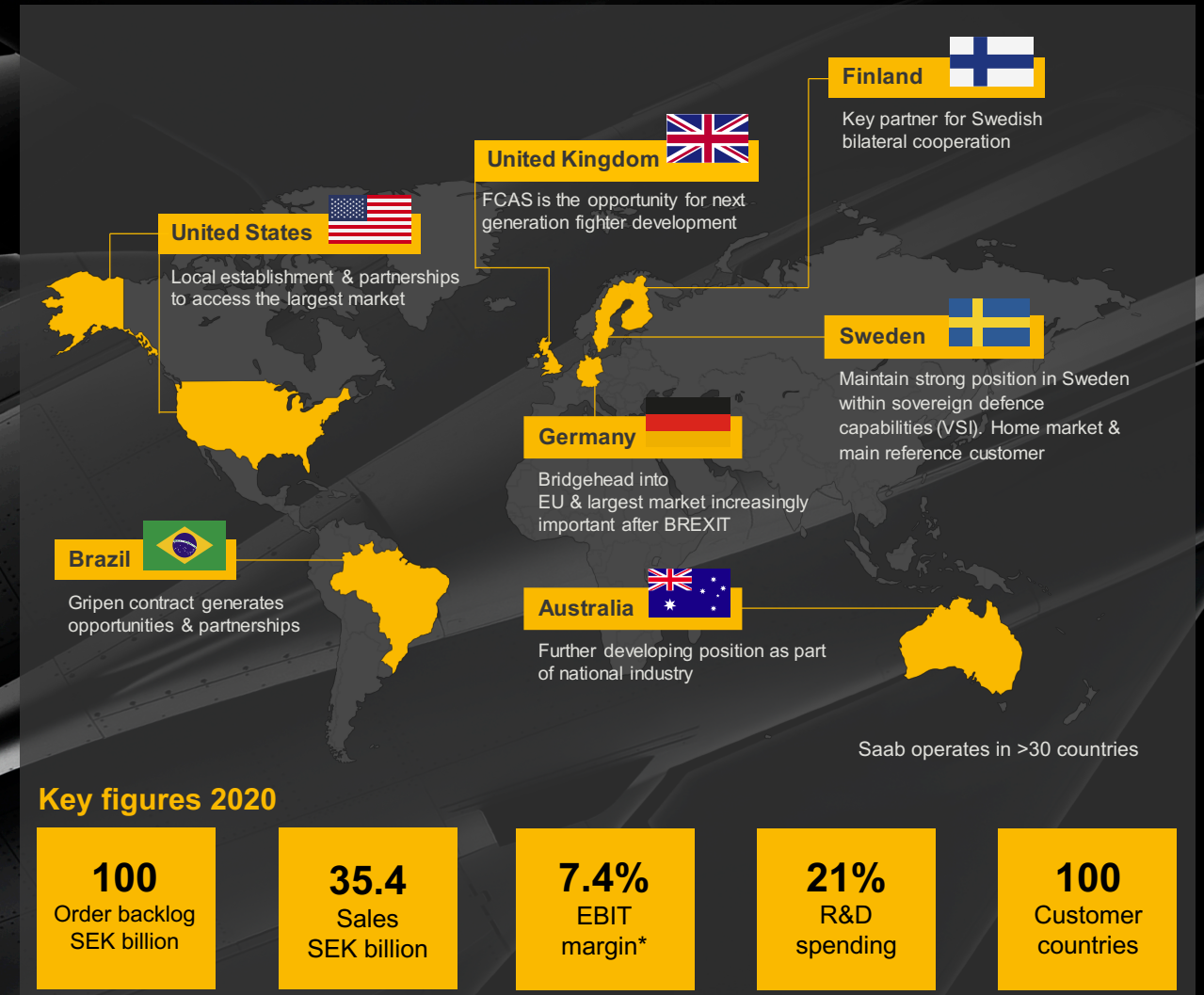
**SAAB**



# An innovative and growing international defence and security company with a strong Swedish base

## Saab value drivers

- A unique position in a growing market
- A strong Swedish base and heritage to grow from
- We invest in innovation and increased efficiency
- Accelerating our international expansion to fuel future growth, with a multi-domestic strategy (US, UK, Brazil, Australia, Finland, Germany)



\* Adjusted for items affecting comparability



# Saab's operations in Finland

Saab's operations in Finland started in 1946 and we are proud of a broad and fruitful cooperation with the Finnish Defence Forces.

✓ Growth from 70 to 160 employees since 2015 and constant recruitments ongoing

✓ Operations at six locations

- Helsinki HQ Saab Finland Oy
- Tampere Saab Technology Centre, Combitech
- Espoo Saab Research Centre, with extensive co-operation with Aalto University, Combitech
- Turku SQ2020 programme office
- Jyväskylä Combitech
- Säkylä Combitech

✓ Large installed base of Saab products

- Navy, Army and Air Force



**SAAB**



# Finland - Important partner to Saab

Saab's operations in Finland started in 1946 and we are proud of a broad and fruitful cooperation with the Finnish Defence Forces.

✓ Strategic research co-operation with Aalto university since 2017

- Long term research - advanced electronics, microwave technology, AI, hydro-acoustics

✓ Technology Centre Tampere – part of Saab's global R&D organization

- Centre for advanced Electronic Warfare (EW) capabilities
- C2 System Centre established for SQ2020 program



✓ Recent contracts

- SQ2020, new torpedoes, advanced simulators



**SAAB**



# Finland – a country for further growth

Saab's operations in Finland are successful, contributing to our global business, and we are planning additional growth within several areas.

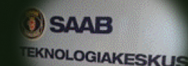
- ✓ Strategic research cooperation with Aalto University to grow further
  - Among others within areas such as autonomy



- ✓ Strategic cooperation with VTT underway to take steps forward
  - Research on e.g. transceiver design, surface treatment technology and augmented reality



- ✓ Saab Technology Center to expand into new fields of expertise
  - New line of activity is under consideration
  - Our Technology Center in Tampere will reach 100 employees in the next couple of years



- ✓ Saab is growing in Finland no matter the result of the HX programme
  - However, by selecting Gripen and GlobalEye, our successful journey would accelerate





# Gripen E/F

## The game changer

In an age where software beats hardware and where adaptability beats predictability, Gripen has the capabilities to determine the rules of engagement – from one mission to the next.

- True multi-role
- **Designed for the operational context**
- Most recent technology
- Future-proof

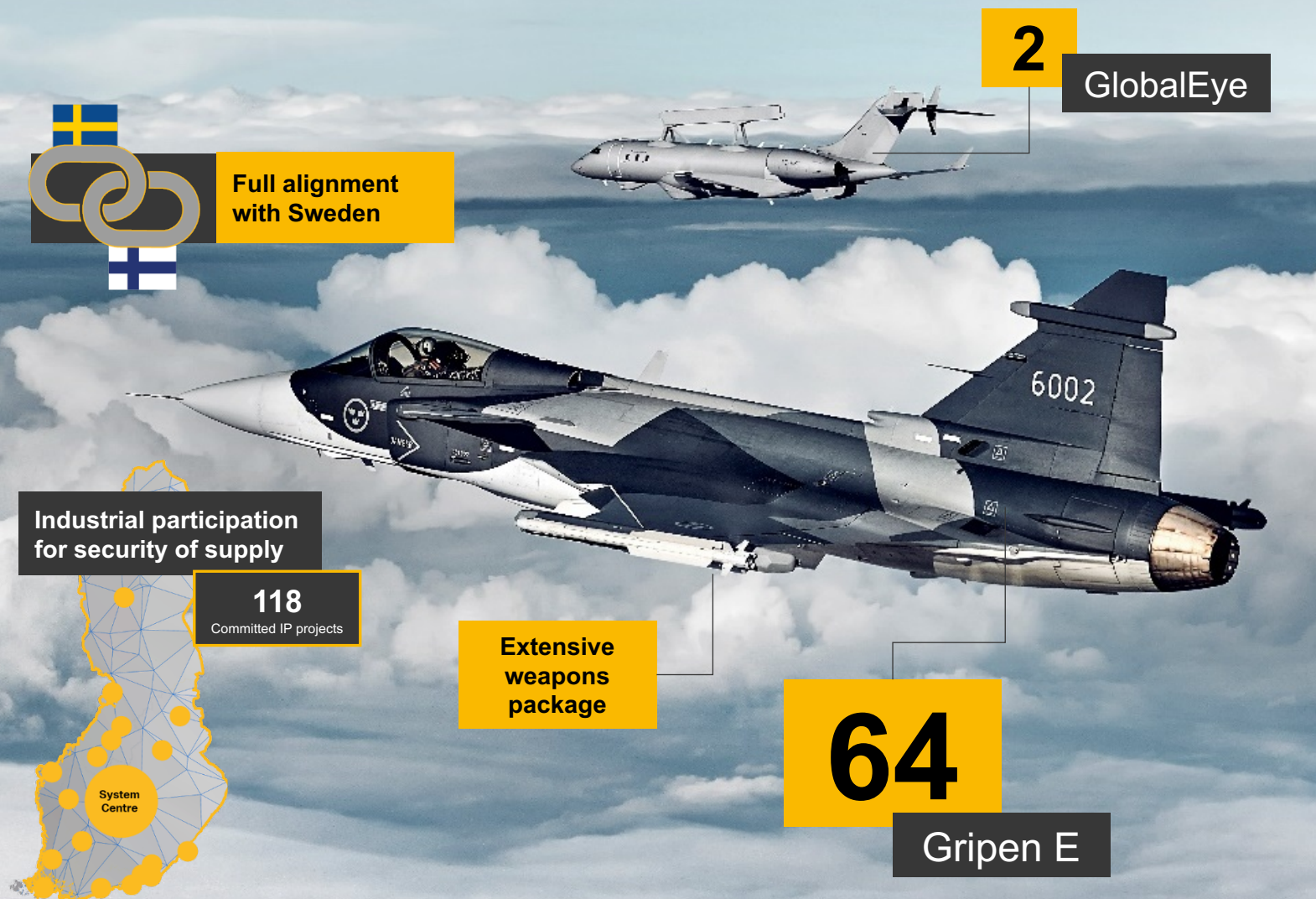


**SAAB**



# Gripen & GlobalEye for Finland

## - a strong offering



- ✓ Large number of aircraft
- ✓ Fighters and AEW&C
- ✓ Substantial weapons package
- ✓ Security of supply with an extensive Industrial Participation (IP)
- ✓ Firm proposal on content, price and delivery schedule



The background of the slide features a low-angle shot of two large, illuminated signs against a clear sky. On the left is the circular Saab logo, which includes a crown and a red griffin. To its right is a large, three-dimensional 'SAAB' sign with a metallic, ribbed texture. The signs are supported by white metal poles.

# Thank you!

[saab.com](http://saab.com)

---



# Finnish-Swedish defence cooperation and opportunities with HX programme



---

Carl-Johan Edström

Major General, Commander of the Swedish Air Force



SWEDISH ARMED FORCES



# OUR OPERATIONAL CONTEXT



We are strategically defensive –  
The adversary has the advantage of  
choosing time and place.  
Numerically inferior

## Global trends

Proliferation of long-range stand-off  
weapons  
Improvement of sensor-to-shooter  
capabilities





# GRIPEN E – DESIGNED FOR THE HIGHLY DEMANDING REQUIREMENTS OF SWEDEN AND OUR REGION







# OPPORTUNITIES FOR EXCELLENT SITUATIONAL AWARENESS

- DETERRENCE AND PRE-WARNING TIME FOR OUR REGION
- 24/7 COVERAGE WITH FINNISH AND SWEDISH ASSETS





# SWEDEN IS ALIGNING WITH THE HX OFFERING

- ENHANCED ELECTRONIC ATTACK CAPABILITY
- LONG-RANGE STRIKE WEAPONS
- GLOBALEYE



The image shows two Finnish Air Force fighter jets, likely F/A-18 Hornets, flying in formation over a vast, snow-covered landscape. The terrain is a mix of white snow and dark evergreen forests, creating a high-contrast, textured background. The jets are seen from a high-angle, rear-quarter perspective, showing their distinctive canards and wing-mounted sensors. The lighting is bright, suggesting a clear day.

# **FINNISH AIR FORCE - A STRATEGIC PARTNER**



FÖRSVARSMAKTEN





FÖRSVARSMAKTEN



# Saab and the HX Programme



**Magnus Skogberg**  
Campaign director, HX programme



# Supporting the HX programme

- Saab is committed since years back
- Extensive HX evaluations in 2020
- Best and final offer submitted April 2021



**SAAB**



# A strong HX offer

Highly capable Gripen fighters in combination with the GlobalEye Airborne Early Warning & Control system.

Together they provide a substantial contribution to the joint operational capability of the Finnish Defence Forces.



**64 Gripen E**



**2 GlobalEye**

- ✓ **A large number of highly capable fighters** with excellent availability and high sortie-generation rate
- ✓ **GlobalEye as a strategic force multiplier for 24/7 surveillance** for situational awareness and territorial integrity
- ✓ All mission equipment and a substantial weapons package
- ✓ Industrial participation and System Centre establishment for security of supply and national independence
- ✓ Offering content substantially increased from previous proposal



# Designed to **defend against high-end opponents**



## ✓ **Information advantage**

- Better sensors and systems than adversary
- Human Machine Collaboration (HMC)
- Advanced networking

## ✓ **Ability to operate within denied airspace**

– to counter advanced Ground Based Air Defence (GBAD) systems

## ✓ **The best weapons**

– with high probability to kill

## ✓ **Force projection**

– superior availability and more aircraft in the air



**SAAB**



# Gripen E/F

## The latest available



- ✓ **Based on a proven and mature Gripen legacy**
  - With latest cutting-edge technology inside
- ✓ Sweden and Brazil contracts for E/F 2013-2014
- ✓ First flight in 2017
  - We fly 9G and max supersonic speed
  - Testing focus on sensors, weapons, tactical functions
  - Eight aircraft in use for test operations at three sites
- ✓ **First deliveries to Brazil and Sweden in 2019**
- ✓ Deliveries are speeding up and a production plant in Brazil is now also in operation



**SAAB**



# Choose your weapon

Gripen has the most flexible weapon system on the market. It embraces weapons for all types of missions, from the best suppliers world-wide.

- ✓ **Weapons from the best suppliers world-wide** - for all types of missions
- ✓ From guided bombs for precision strike, to long-range air-to-air and heavy anti-ship missiles
- ✓ **High flexibility** for efficient integration of new weapon systems to affordable cost
- ✓ **For Finland** an extensive weapons package. >20% of the proposal price relating to Gripen is allocated to weapons. Examples of weapon types included:
  - Meteor
  - IRIS-T
  - KEPD350 / TAURUS
  - SPEAR



**SAAB**



# Survivability and offensive electronic warfare capabilities

An Electronic Warfare (EW) system designed to ensure Gripen avoids detection, acquisition, tracking and guidance. Gripen was created to get close, engage, attack and evade.



## ✓ **World-Class 360° self-protection**

- Radar warning receivers, Missile Approach Warning System (MAW) and internal jammer
- Active electronic countermeasures
- Chaff, hot chaff, flares and active decoys

## ✓ **Powerful electronic attack**

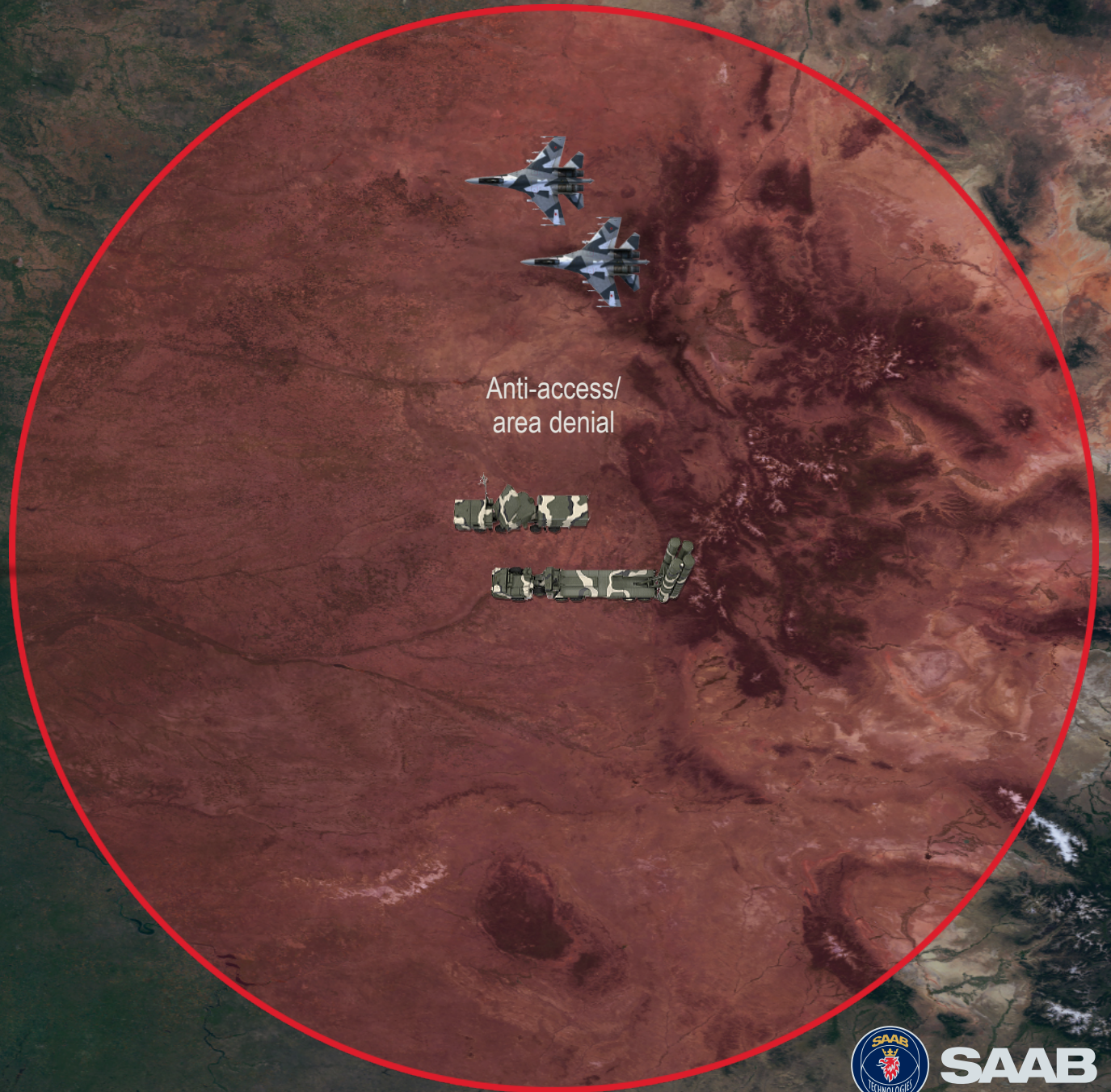
- Suppression of Enemy Air Defence (SEAD) systems, without specialised platforms
- Built in with on-board EW system and may be complemented by jammer pods and decoys.



**SAAB**



# Offensive EW capabilities



Anti-access/  
area denial



**SAAB**



# Offensive EW capabilities

- ✓ Combining Gripen sensors, systems and weapons ensures that Gripen can enter highly contested airspace to deliver its ordnance



- ✓ **Electronic Attack Jammer Pod (EAJP)**  
**A highly capable escort jammer**
  - Additional jamming capability to the on-board EW system - increased frequency range at very low band and higher output power



- ✓ **Air-Launched Decoy Missile system (LADM)**  
**A highly capable stand-in jammer**
  - Additional jamming capability to the on-board EW system - tactical jamming flexibility for e.g. increased saturation, false targets



**SAAB**



# Offensive EW capabilities

EAJP with extended  
electronic attack

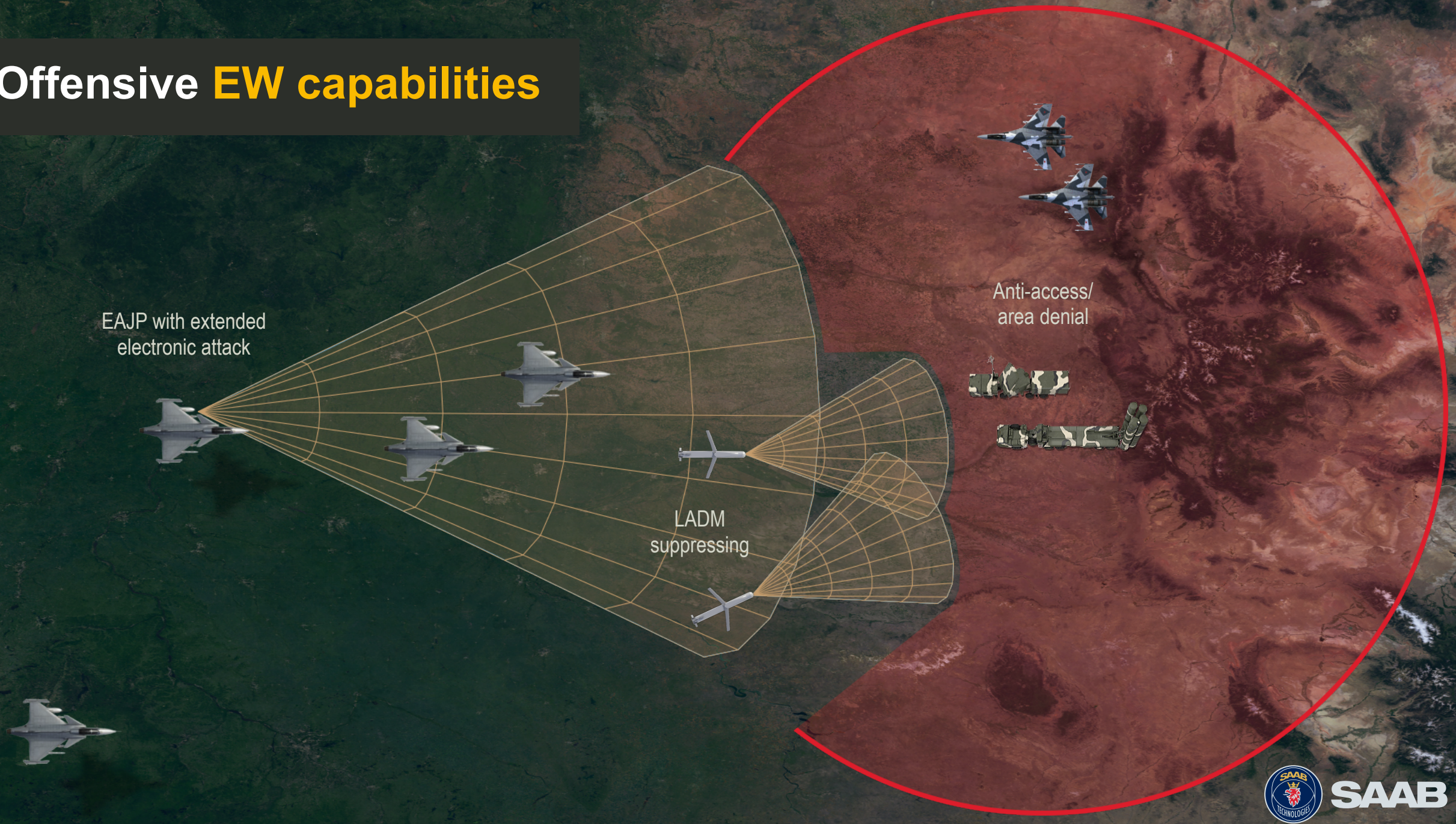
Anti-access/  
area denial



**SAAB**

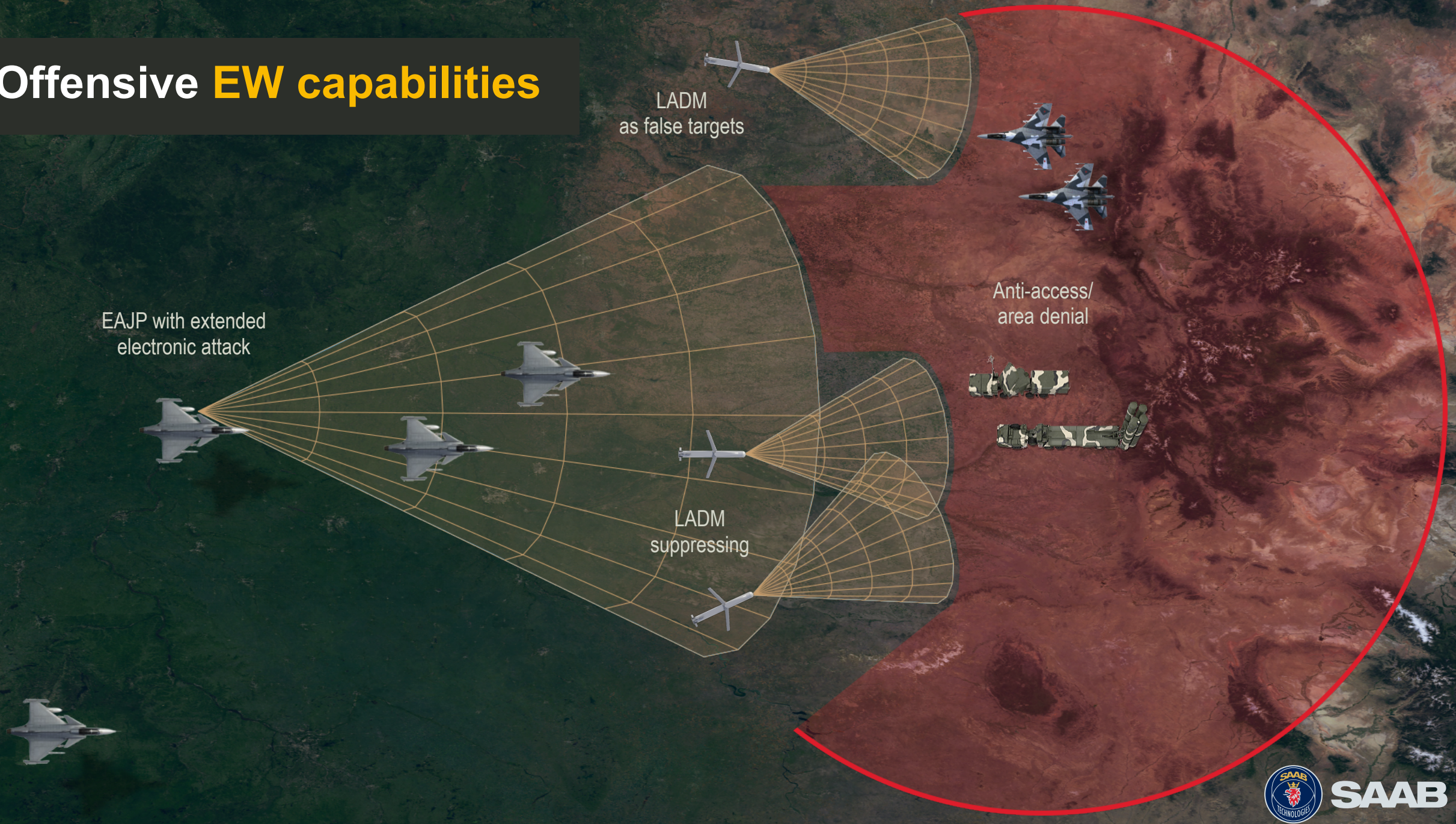


# Offensive EW capabilities



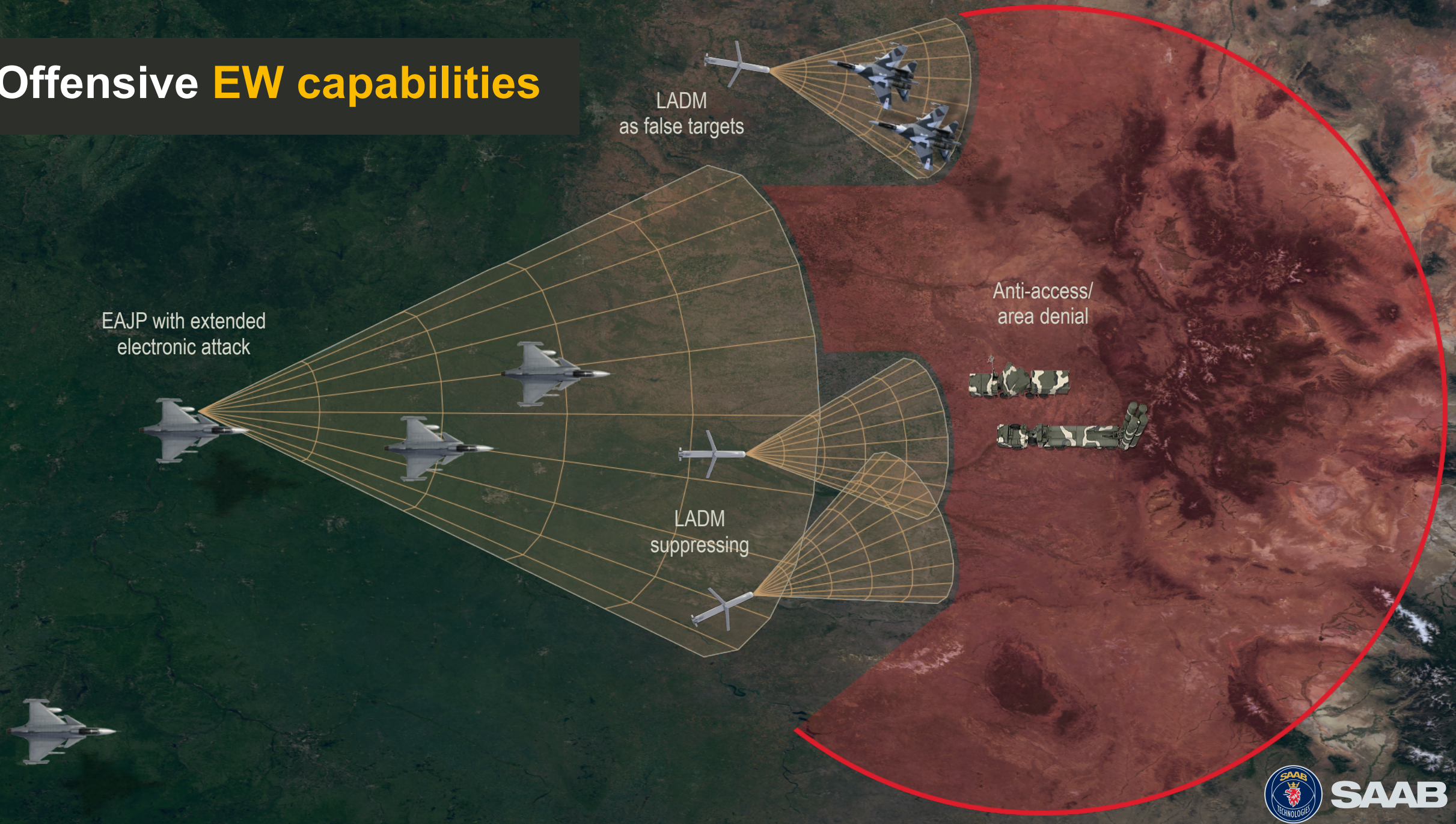


# Offensive EW capabilities



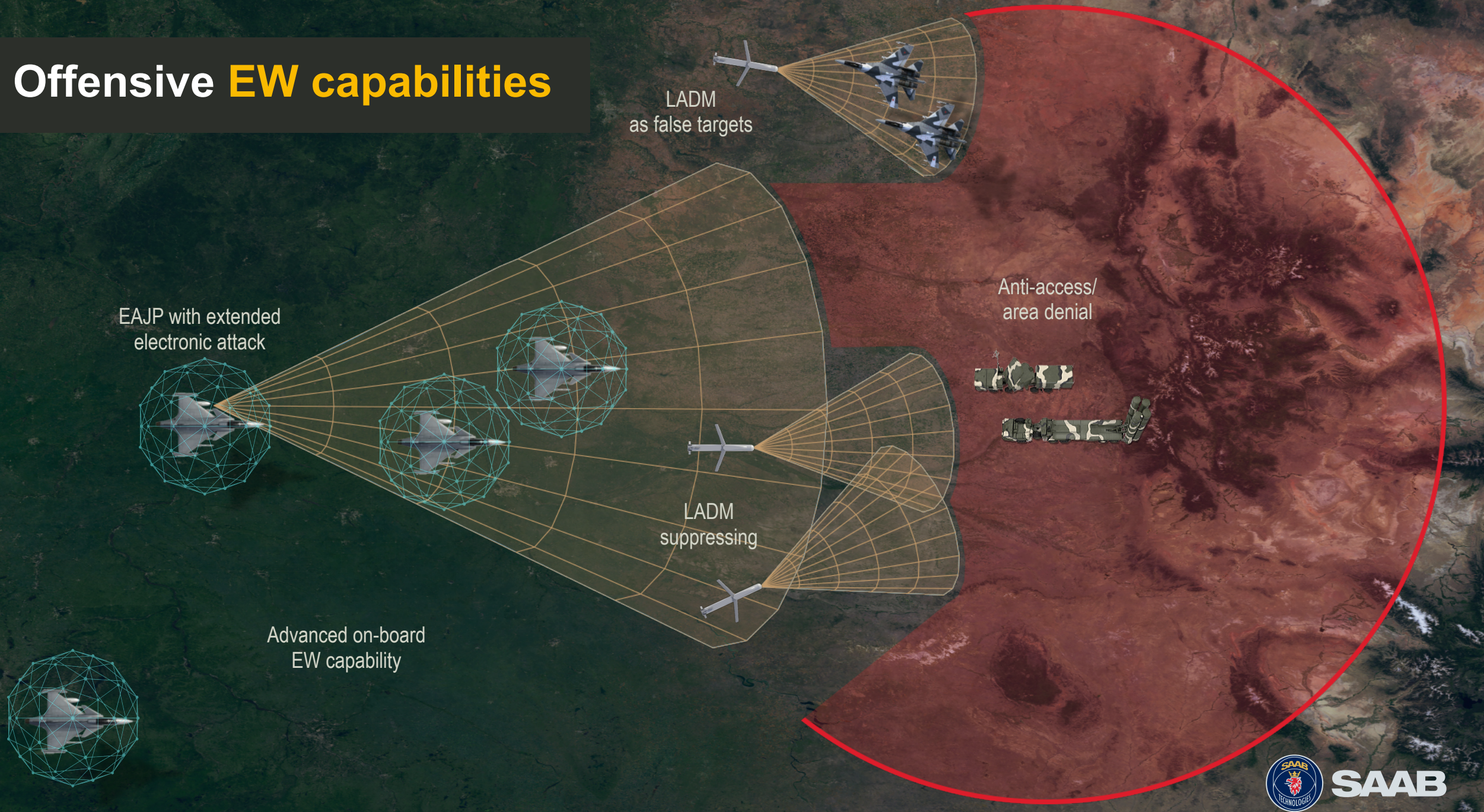


# Offensive EW capabilities





# Offensive EW capabilities





# GPS-denied navigation

To further strengthen the GPS independence and the jamming resistance, Saab has included an extended navigation capability for GPS-jammed environment.

## Provides operational flexibility

Navigation and target data accuracy remains also when the GPS is jammed, spoofed or un-available

## A "disruptive" capability

Three independent technologies work automatically in the background. No additional pilot workload.

### ✓ Terrain navigation

Comparing measured height profile from radar altimeter with a terrain database in the aircraft

### ✓ Odometry navigation

Estimating velocity and relative displacement by feature and pixel tracking in images collected from on-board optical sensors

### ✓ Image map navigation

Comparing images from on-board optical sensors with an on-board image map database



**SAAB**



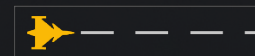
# Born to be airborne

Air bases are obvious, primary targets in any conflict and often among the first to be neutralised. This does not take Gripen out of the fight.

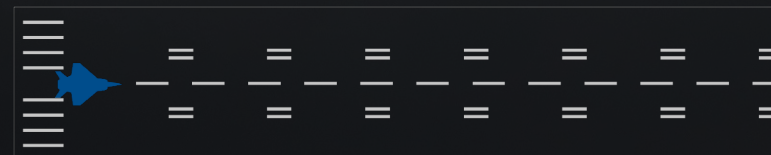


- ✓ Optimized for high tempo in harsh conditions
- ✓ Easy maintenance with conscript mechanics
- ✓ Unbeatable combat turn-around in 10-15 min
- ✓ **Designed for dispersed combat operations**
  - Short take off and landing
  - No fixed installations required
  - Can operate from unprepared roads

Requirement for  
Gripen 16x800m



Normal runway  
45x2400m



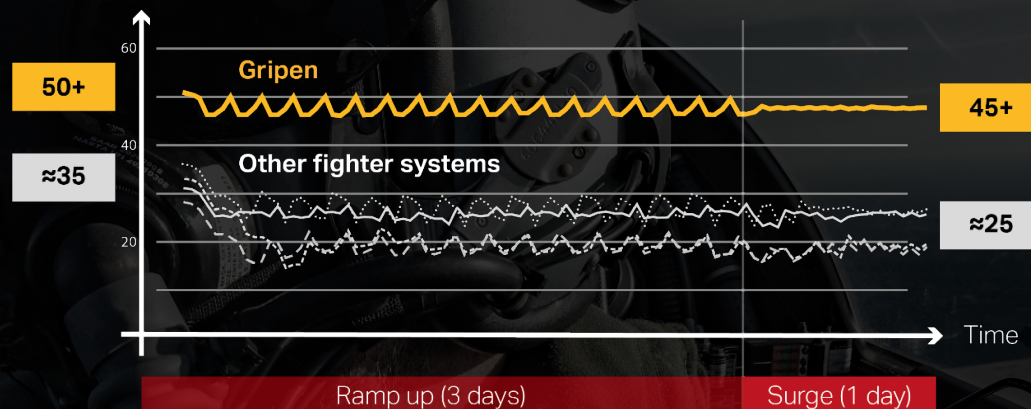


# Always combat ready

Gripen availability and maintainability translates into more aircraft in the air, enabling air superiority.

- ✓ Designed for high availability and maintainability
- ✓ **Availability**
  - 9 hours Mean Time Between Failure (MTBF)
- ✓ **Maintainability**
  - 3 hours Mean Time To Repair (MTTR)
- ✓ Gripen projects force with many fighters in the air, i.e. **front-line availability**

Number of  
available aircraft



**SAAB**



# Adapt fast and stay relevant

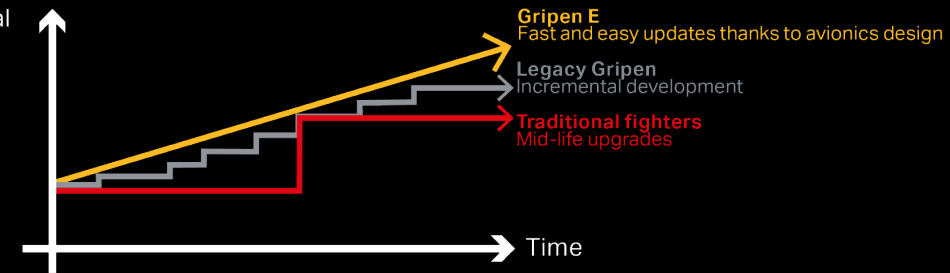
The key to modern warfare is rapid adaptability - maintaining technological superiority over the adversary.

Days

Weeks

- ✓ **Game changing avionics system**  
- Flight-critical s/w separated from mission functions
- ✓ **Adapt to new needs with software applications**  
- Add or change tactical functionality
- ✓ **What took months or years, now takes weeks or days**
- ✓ **Continuous capability growth**  
- not traditional mid-life upgrades

Operational  
capability





# GlobalEye

The latest Airborne Early Warning & Control (AEW&C) solution from Saab.

More than 30 years of AEW&C evolution and 60 years of advanced radar design



- ✓ Provides vital intelligence for FDF all domains
- ✓ Provides extensive pre-warning time for first-strike survivability
- ✓ Off-loads the HX fighters for max availability
- ✓ Mission time well above 11 hours



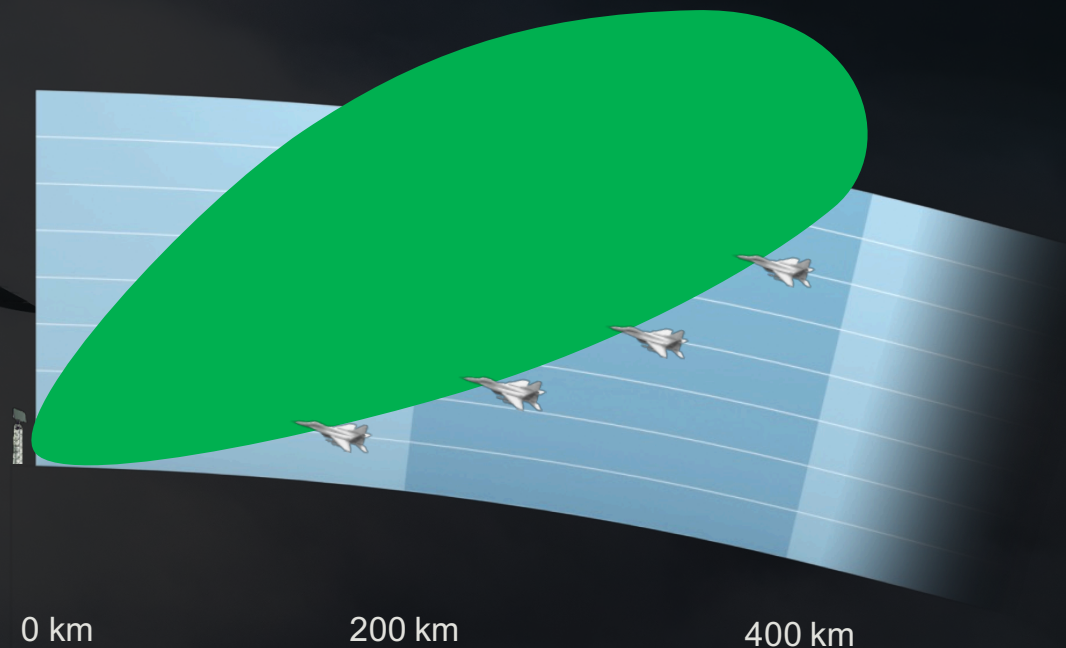
# GlobalEye

The latest Airborne Early Warning & Control (AEW&C) solution from Saab.

More than 30 years of AEW&C evolution and 60 years of advanced radar design



- ✓ Ground based radars cannot detect low-level targets at long distances



**SAAB**



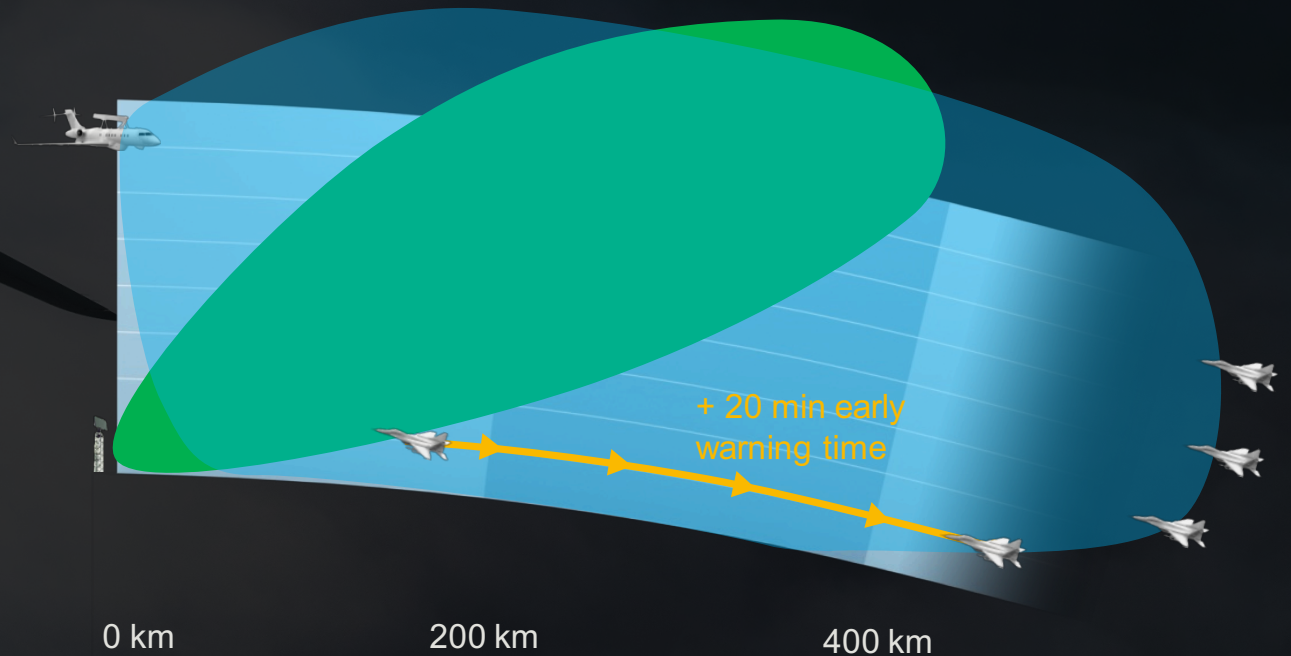
# GlobalEye

The latest Airborne Early Warning & Control (AEW&C) solution from Saab.

More than 30 years of AEW&C evolution and 60 years of advanced radar design



- ✓ Ground based radars cannot detect low-level targets at long distances
- ✓ GlobalEye extends the low level coverage 10 times, providing +20 minutes pre-warning





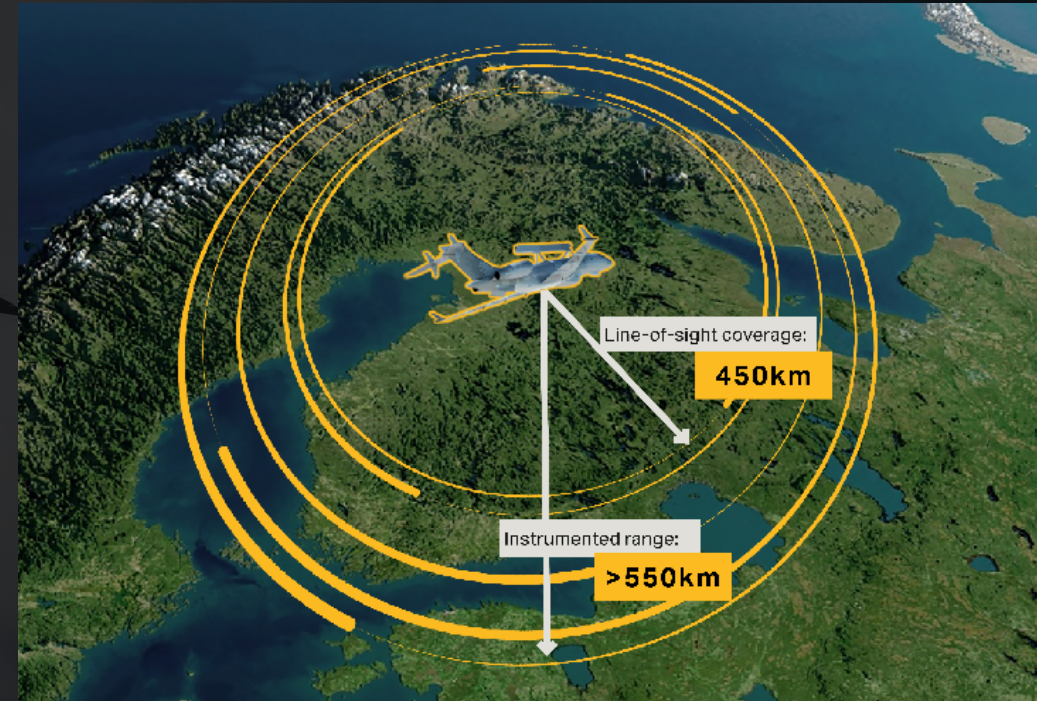
# GlobalEye

The latest Airborne Early Warning & Control (AEW&C) solution from Saab.

More than 30 years of AEW&C evolution and 60 years of advanced radar design



- ✓ GlobalEye coverage is beyond comparison
- ✓ Sensor range of >550 km
- ✓ Low altitude coverage out to ~ 450 km

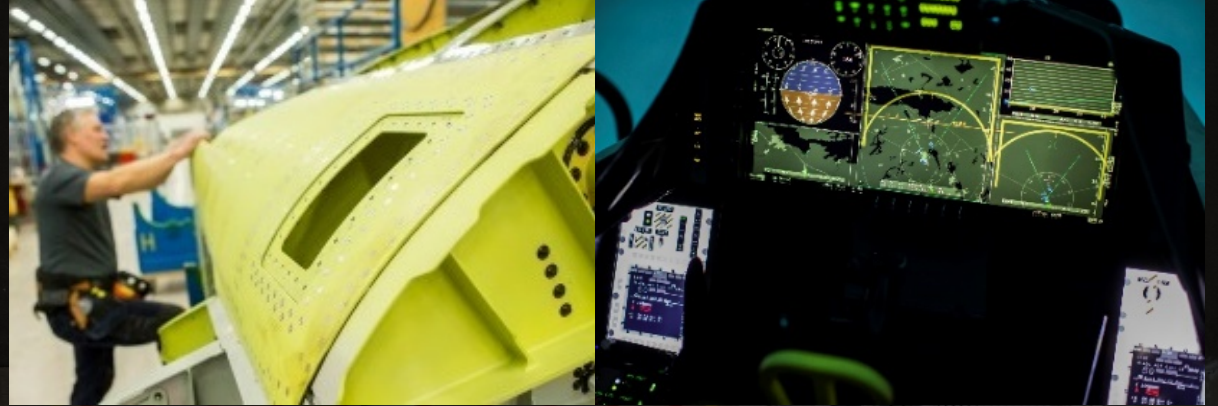


*Sensor coverage when operating at >35 000 feet*



# Security of supply

We establish extensive national capabilities to support in-country operation, sustainment and capability growth over the lifecycle.



- ✓ For availability
  - Extensive support capabilities in co-operation with local industry
- ✓ For operational relevance over time
  - A Gripen and GlobalEye System Centre for in-country sustainment and development



**SAAB**



# System Centre

We establish extensive national capabilities to support in-country operation, sustainment and capability growth over the lifecycle.

## System Centre supports

- Operational and tactics development
- Agile capability and functional development
- Fleet usage and management

## System Centre hosting

- Software development tools
- Mission system rig
- Product data
- Training simulator lab
- Mission support system lab

G2SC



**SAAB**





# Industrial participation

An extensive industrial participation programme is offered to ensure establishment of national capabilities to operate and keep the systems relevant over time.



- ✓ **Direct IP** – Connected to the HX programme and security of supply
  - Maintenance, Repair and Overhaul (MRO) capabilities
  - Engineering support and sustainment
  - Integration to Finnish infrastructure/systems
- ✓ **Indirect IP** – Strengthen Finnish defence industries in areas critical for total defence
  - E.g: C4ISTAR, cyber, advanced materials, manufacturing capabilities (e.g AM), Artificial Intelligence (AI), autonomy

- ✓ Actively worked with HX IP since 7+ years and dialogue with 60+ companies
- ✓ **Focus on direct IP** and FDF strategic partners

**Patria** **INSTA**

- ✓ **37 companies and organization directly engaged** in our IP programme



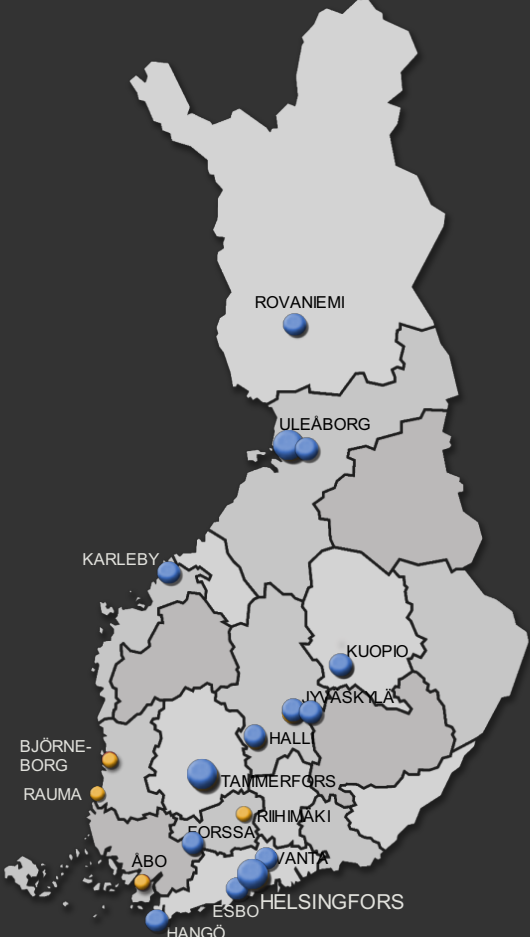


# Industrial participation

An extensive industrial participation programme is offered to ensure establishment of national capabilities to operate and keep the systems relevant over time.

An extensive industrial participation programme is offered to ensure establishment of national capabilities to operate and keep the systems relevant over time.

✓ **Broad coverage** across the whole of Finland







# Industrial participation

An extensive industrial participation programme is offered to ensure establishment of national capabilities to operate and keep the systems relevant over time.



## Direct IP 46 projects

- Systems capabilities / System Centre
- Production and final assembly
- Aircraft and engine MRO capability on more than 150 individual subsystems



## Indirect IP 72 projects

- C4ISTAR and cyber
- AI, machine learning, autonomy
- Advanced materials and manufacturing



## 10 projects started and approved

- Advanced material and structural tests
- Additive manufacturing
- Active noise reduction for Gripen pilots
- Electro-optic sights to Saab weapon system
- Design and production of advanced high mast solutions for Saab ground based radar
- Imaging radar



**SAAB**

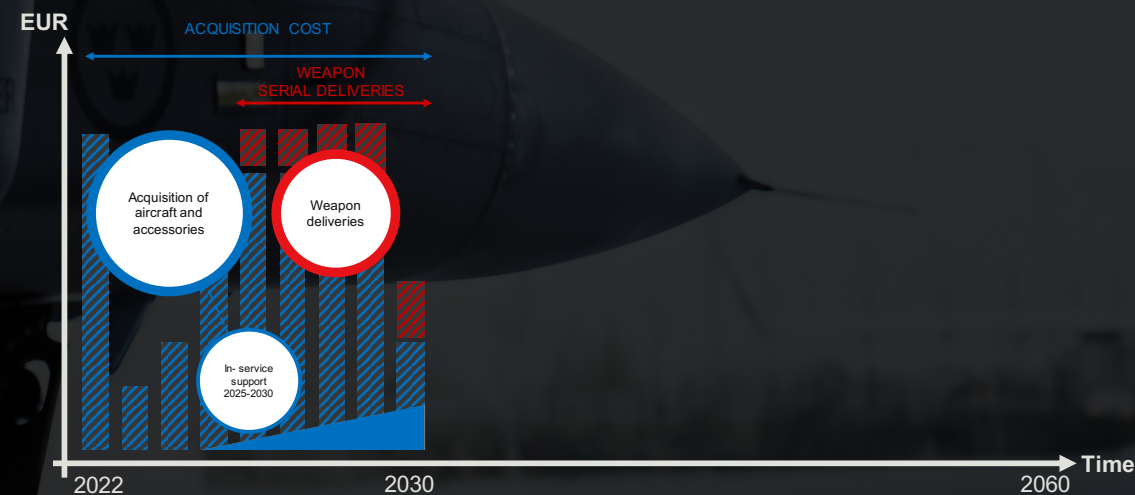


# Affordability

## Budget stability

We don't like surprises. Neither do our customers. Budget stability and budget predictability is a key factor for us, for our customers, and for the citizens of nations protected by Gripen.

✓ ≈ 9 BEUR for Gripen, GlobalEye and weapons acquisition



SAAB

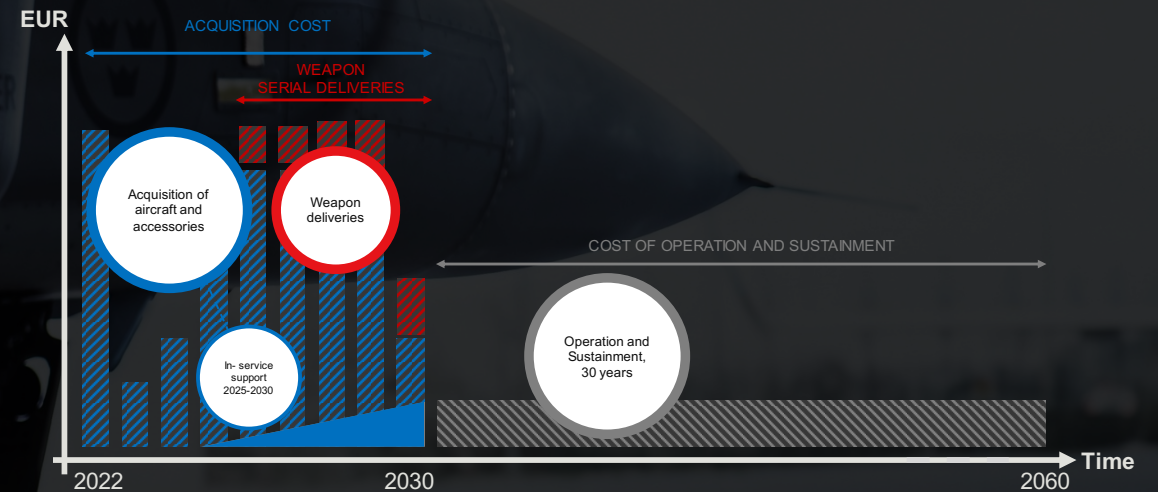


# Affordability

## Budget stability

We don't like surprises. Neither do our customers. Budget stability and budget predictability is a key factor for us, for our customers, and for the citizens of nations protected by Gripen.

- ✓  $\approx 9$  BEUR for Gripen, GlobalEye and weapons acquisition
- ✓ Meets target for yearly operational cost of max. **10% of the defence budget (250 MEUR) with a clear margin**



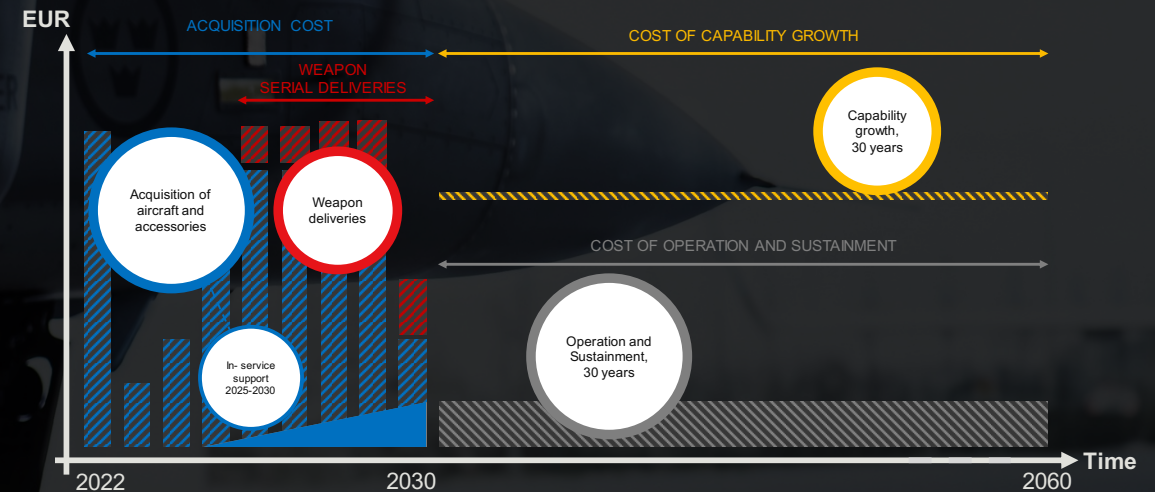


# Affordability

## Budget stability

We don't like surprises. Neither do our customers. Budget stability and budget predictability is a key factor for us, for our customers, and for the citizens of nations protected by Gripen.

- ✓  $\approx 9$  BEUR for Gripen, GlobalEye and weapons acquisition
- ✓ Meets target for yearly operational cost of max. **10% of the defence budget (250 MEUR) with a clear margin**
- ✓ **Estimated 2 BEUR enables substantial capability growth** throughout the lifecycle, thanks to our unique design





# Gripen & GlobalEye

## The perfect match for Finland

- ✓ **Gripen is made for the operational context and threats of our region**
  - GlobalEye is a strong force multiplier
- ✓ **Unbeaten cost efficiency**
  - max. operational effect for the budget
- ✓ **Extensive security of supply**
  - in close co-operation with local industry
- ✓ **Timing is perfect**
  - Latest available technology on-board proven platforms
- ✓ **Long-term commitment for Finland**







@SaabFI



**SAAB**



Saab Finland





@SaabFI



SAAB



Saab Finland





@SaabFI



**SAAB**



Saab Finland