GRIPEN

When logic is part of the equation

Gideon Singer - Technical Director

Gripen Export, Saab Aeronautics

International Fighter Conference – November 2012

THE GRIPEN WORLD

OPERATORS

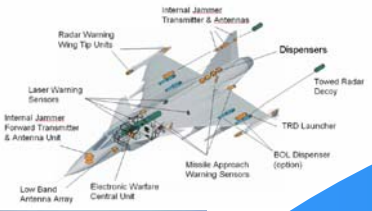
Gripen C/D

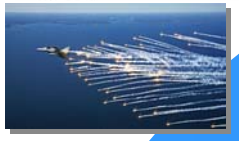
OPERATORS
Gripen C/D

- Swedish Air Force
- Czech Air Force
- Hungarian Air Force
- South African Air Force
- Royal Thai Air Force
- Empire Test Pilot School

Gripen C/D

Survivability: EWS 39
(3 Internal Jammers)





Fully Digital Cockpit
Three 6´x 8´MFCD
NVD
HMD

Retractable
AAR Probe

Air Dominance

NTISR

TACRECCE

Maritime Strike

All Weather Precision Attack

Close Air Support

OCA/DCA

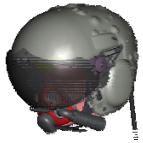
CMD

Fighter Escort

INTERCEPT

PS-05, Multi Mode

COBRA - HMD



Litening GIII

AIM-9

IRIS-T

A-Darter

AIM-120

METEOR

ROVER III

GBU 12
GBU 16
GBU 10
GBU 49
Mk 82
Mk 83
Mk 84
AGM-65 (G,H,K)
RBS-15
SDB

Convoy Escort

Link 16
TIDLS

Recce Pods

RecceLite

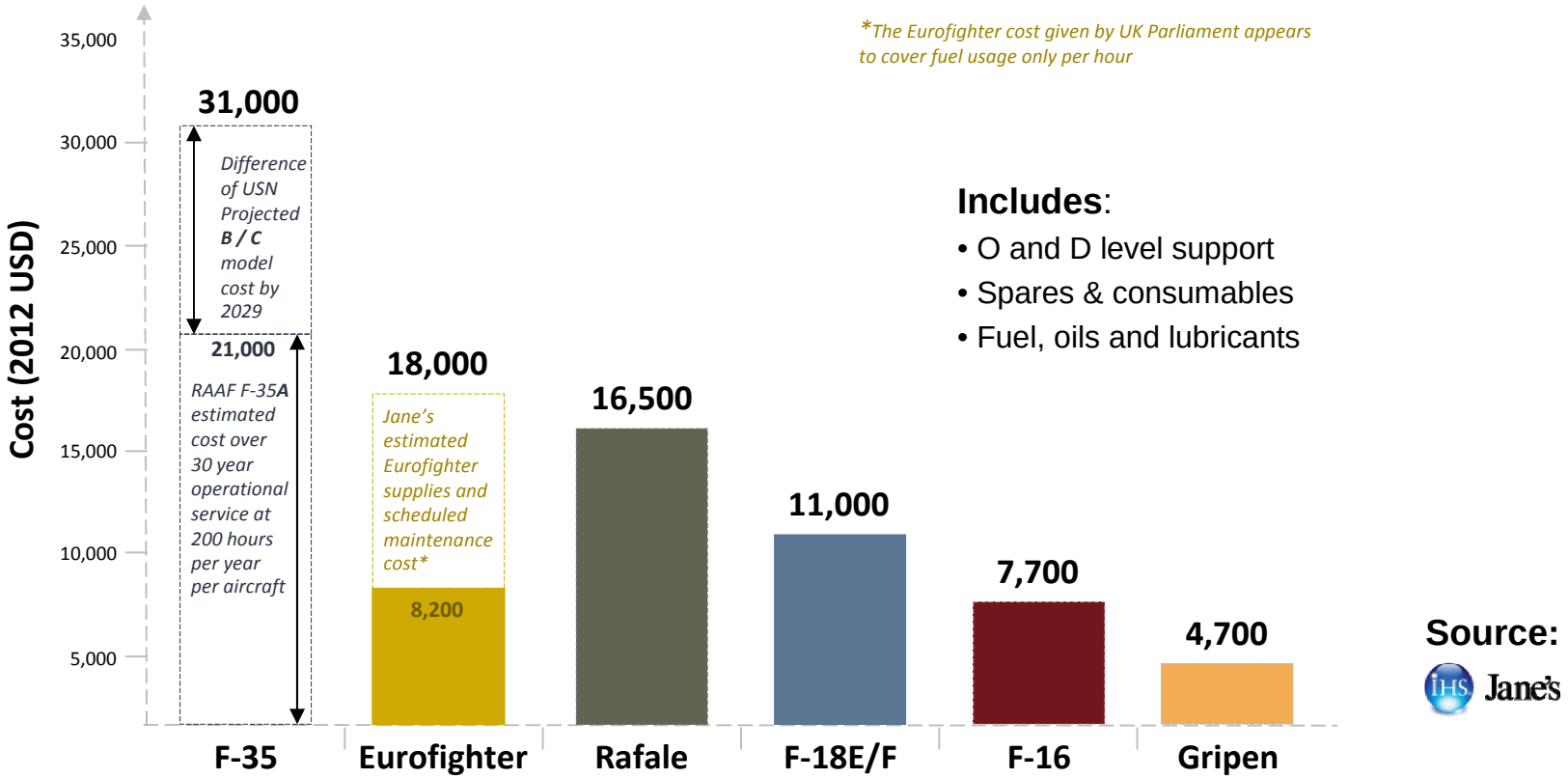
DJRP

MRPS (SPK 39)

SAAB 75 YEARS OF DEFENCE AND SECURITY

FLIGHT HOUR COST

According to Jane's



OUR VISION

Market share

To supply more than 300 Gripen fighter aircraft to the export market within ten years, representing around 10% of the accessible market

Gripen NG

To establish Gripen NG as the leading single engine multirole fighter on the world market

Sea Gripen

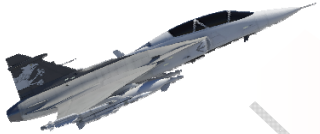
To launch Sea Gripen in a Joint Development Programme for selected market segments

GRIPEN

Development path

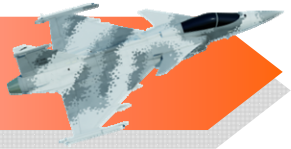
GRIPEN NG

GRIPEN NG TEST AIRCRAFT



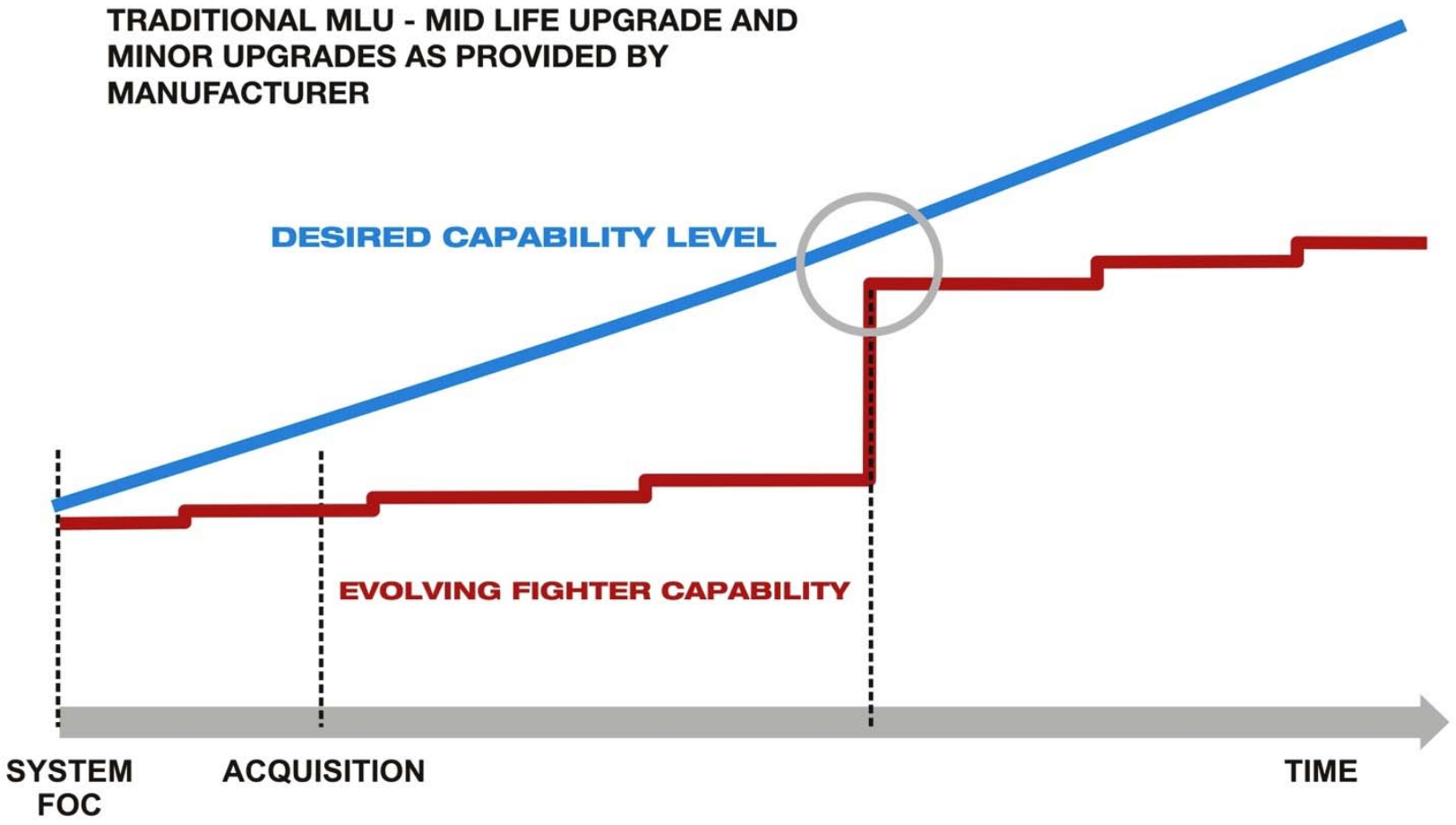
GRIPEN C/D

GRIPEN C/D+

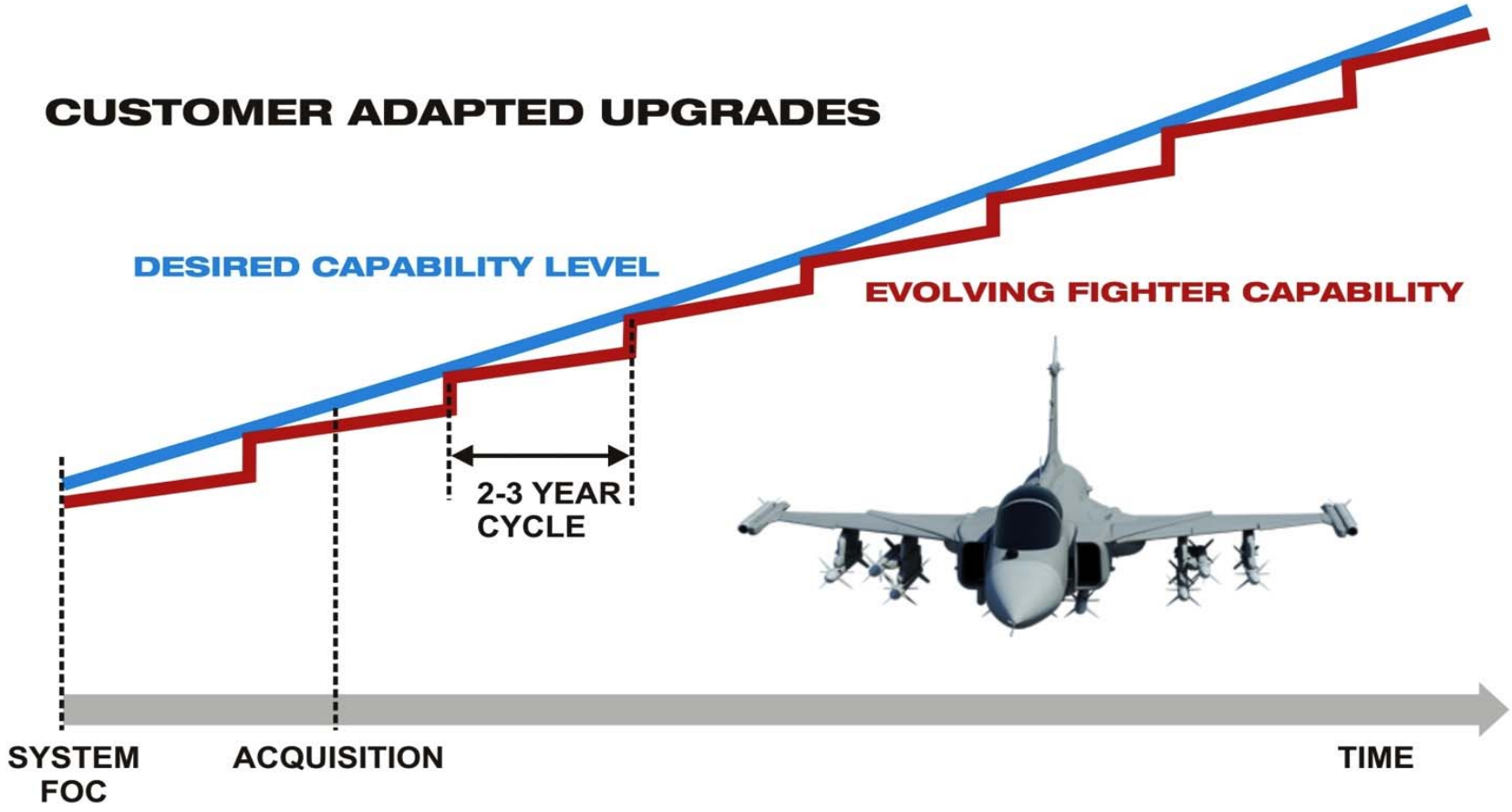


GRIPEN A/B

TRADITION vs INNOVATION



TRADITION vs INNOVATION



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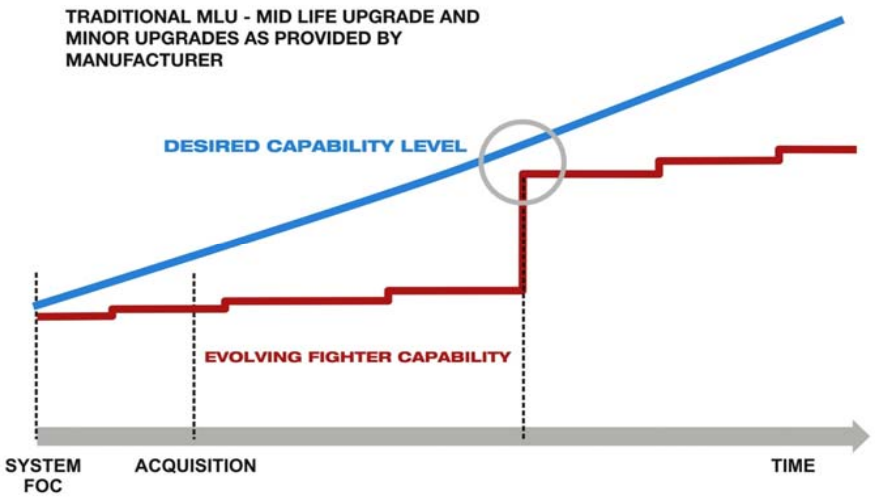
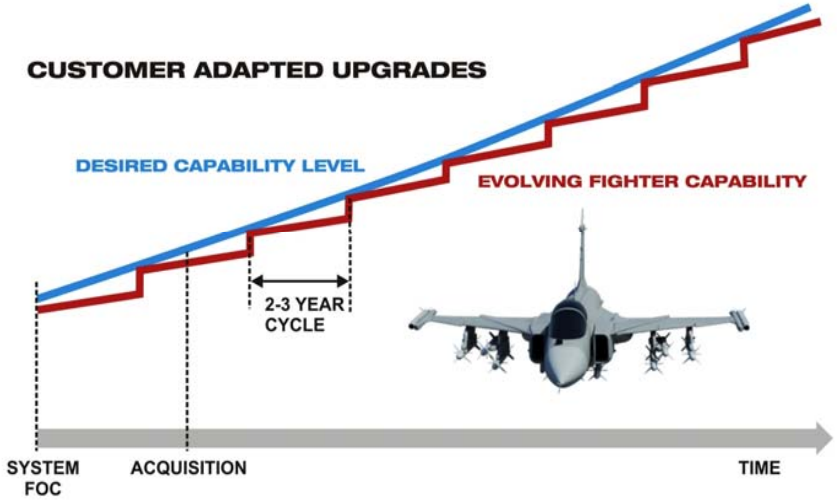
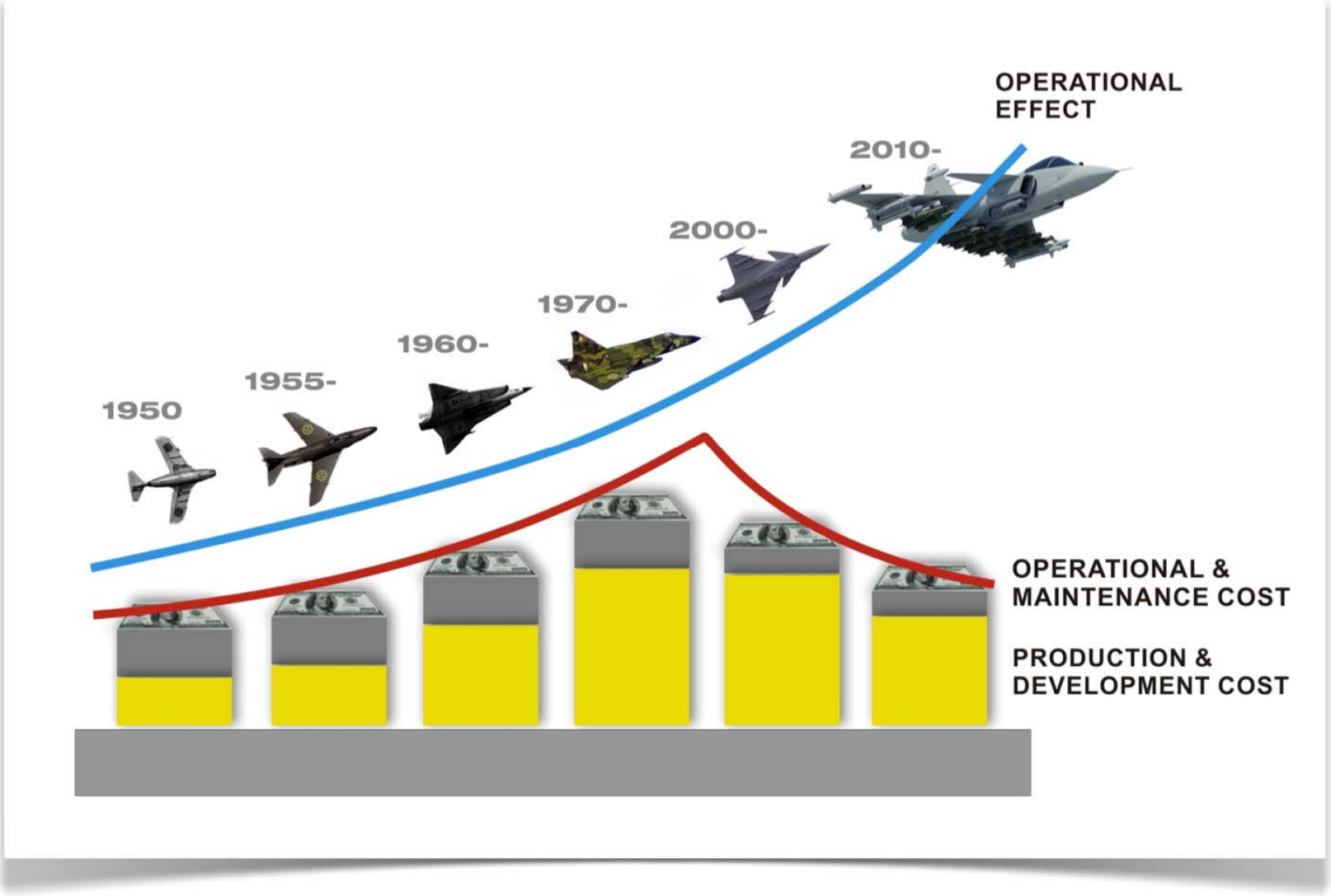




- CAPABILITY GAP
- HIGH UPGRADE COSTS

- CONTINUOUS DEVELOPMENT
- CUSTOMER SHARED COSTS

OPERATIONAL EFFECT VS. COST
BREAKING THE COST TREND



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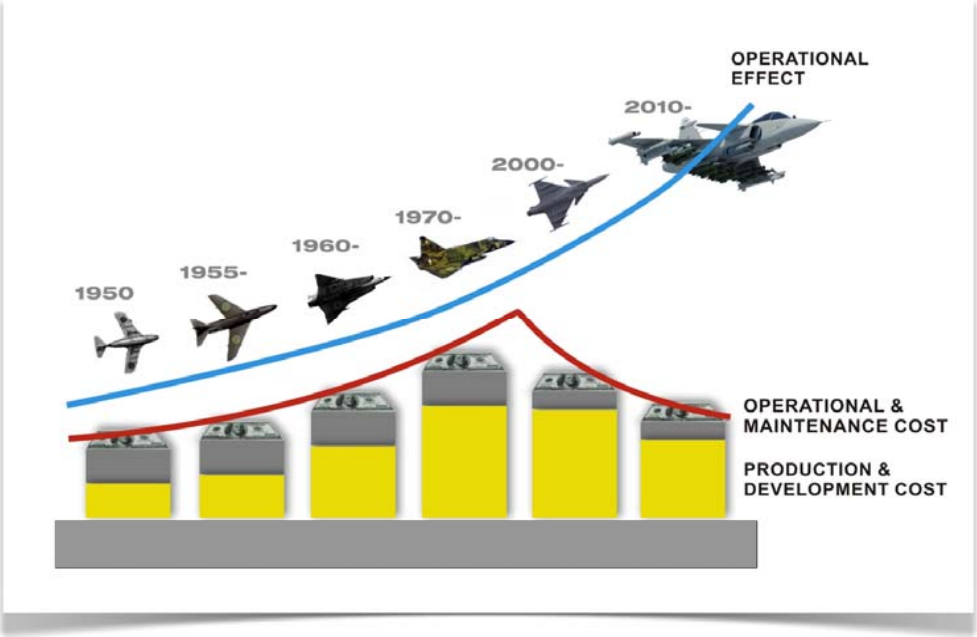


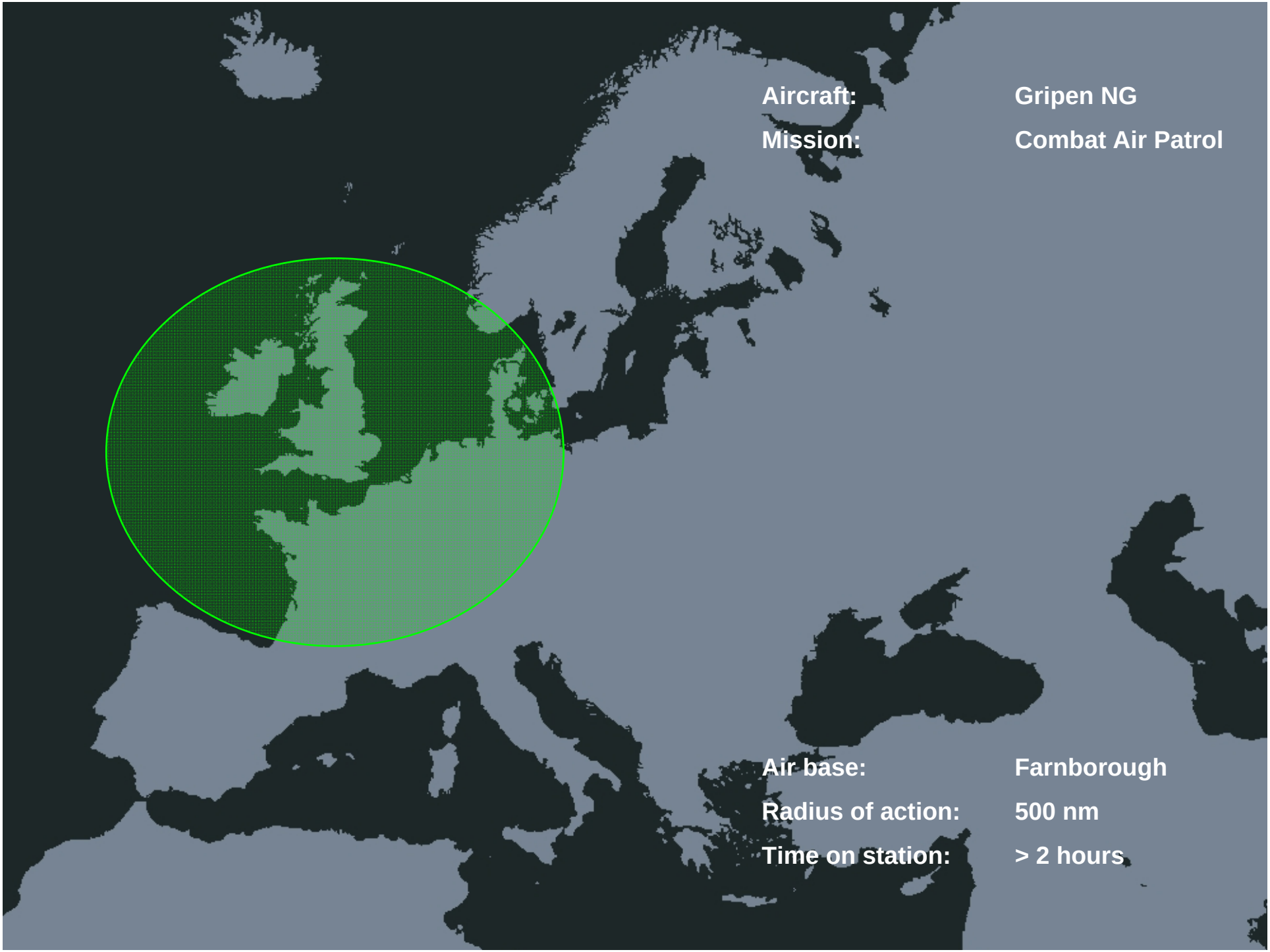
- EARLY DESIGN REQUIREMENT
  - Cost Of Equal Priority As Operational And Technical Design Goals
- EXTENSIVE USE OF COTS PRODUCTS
- “DESIGN ONCE” CONCEPT
- MODERN DIAGNOSTICS SYSTEM
  - Substantially Reduced Time, Personnel And Equipment Needed For Fault Localization
  - High Reliability, Availability & Maintainability
- OPTIMIZED SUPPORT CONCEPT

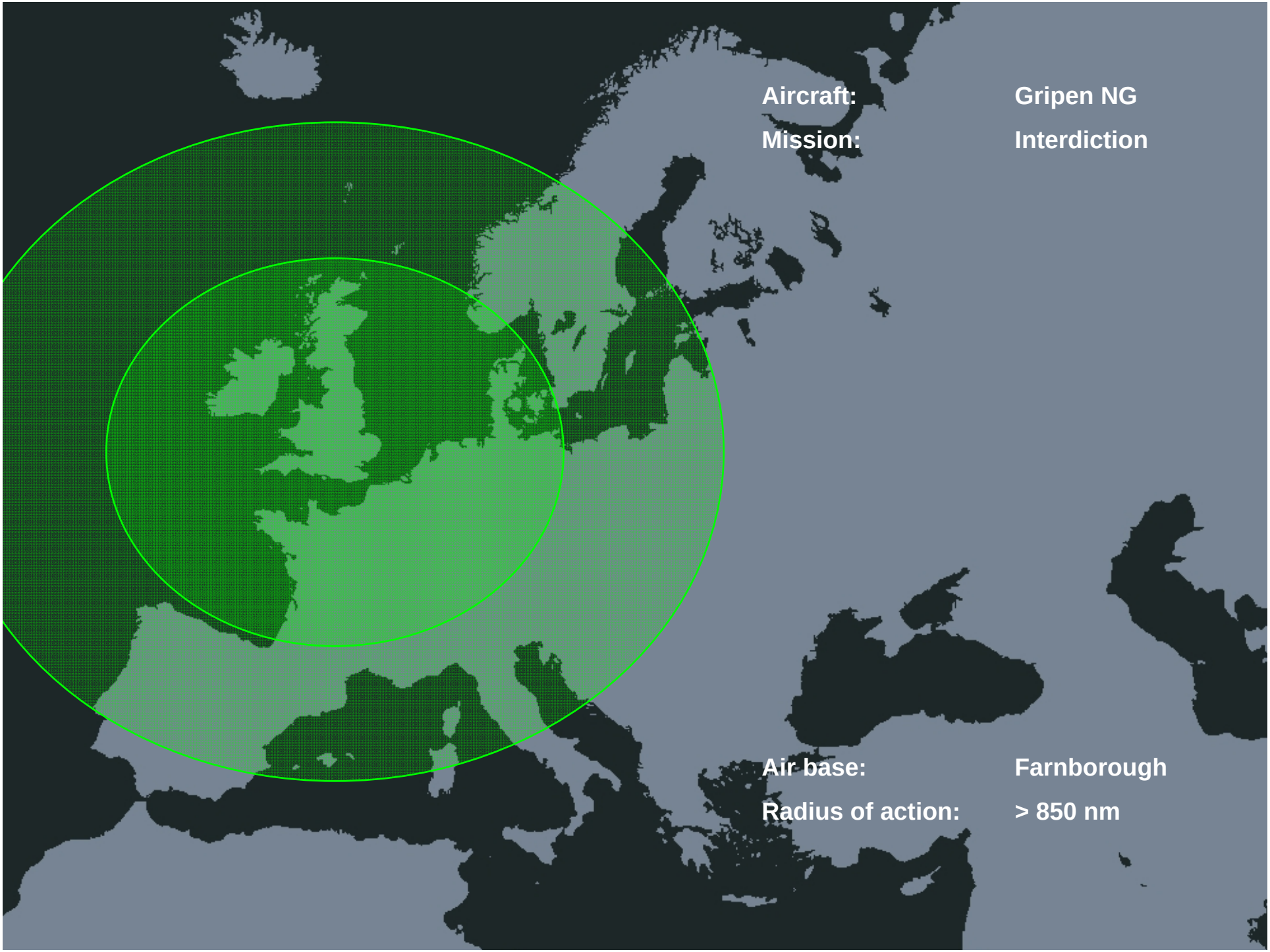
GRIPEN NG

Basic data

- **Length:** 14.9 m
- **Wingspan:** 8.6 m
- **Weapon stations:** 10
- **Dry thrust:** > 64 kN
- **Max thrust:** > 98 kN
- **Payload:** 7200 kg
- **Max takeoff weight:** 16500 kg
- **Super cruise:** > M 1.2
- **G-limit:** -3G / +9G

- **Ferry range:** > 2200 nm
- **Landing distance:** < 500 m
- **Combat turnaround:** < 10 min
- **Engine replacement:** < 1 hour
- **Flight hour cost:** < $ 5000


Aircraft: Gripen NG
Mission: Combat Air Patrol
Air base: Farnborough
Radius of action: 500 nm
Time on station: > 2 hours


Aircraft: Gripen NG
Mission: Interdiction
Air base: Farnborough
Radius of action: > 850 nm

TECHNICAL SCOPE

Phase 1
Phase2

Performance
- New engine F414G

Communication
- SATCOM

MAW
- MAW (Missile Approach Warner)

New radar
- AESA (Active Electronically Scanned Array)

Extended range
- New landing gear
- Increased internal fuel

Increased payload
- New pylon stations
- Larger drop tank (450 US Gal)

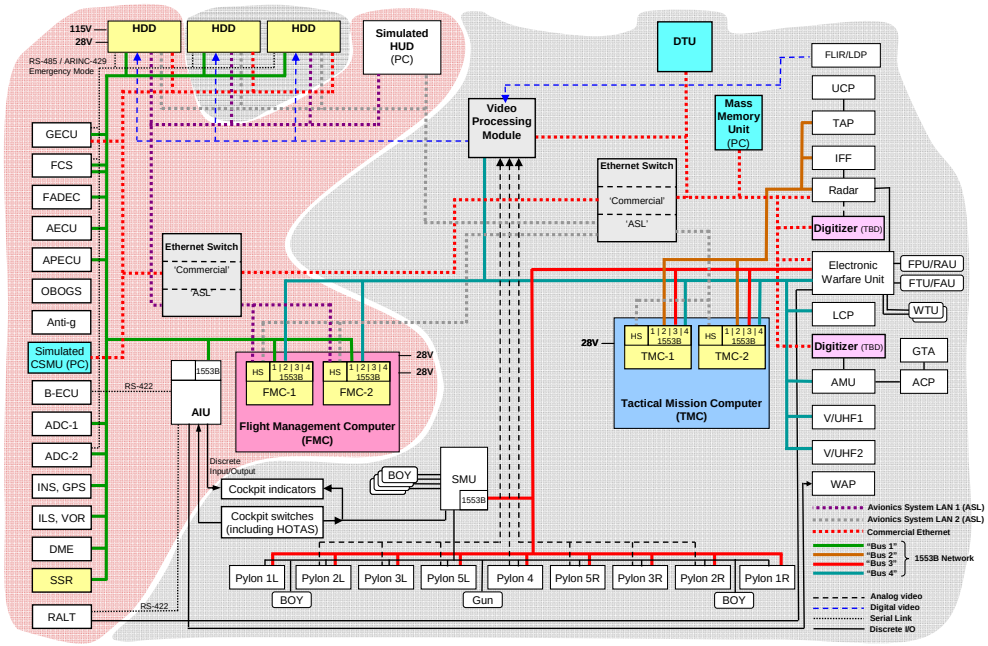
ES-05 RAVEN

200 degrees field of view

AVIONICS DEMO RIG

Proving new avionics core

- Criticality separation
  - Rapid upgrades for tactical functions
- New development methods and tools
  - Modeling all new functions,
  - Automatic S/W coding
- Modularization
  - Partnership friendly
  - Customer “plug-in´s”
- Computer Capacity
  - Extensive growth potential
- COTS
  - Low cost
  - Obsolescence mitigations
- The RIG Demonstration phased showed that all today available functionality in the Gripen core avionics could be ran on 10% of the new processor capacity

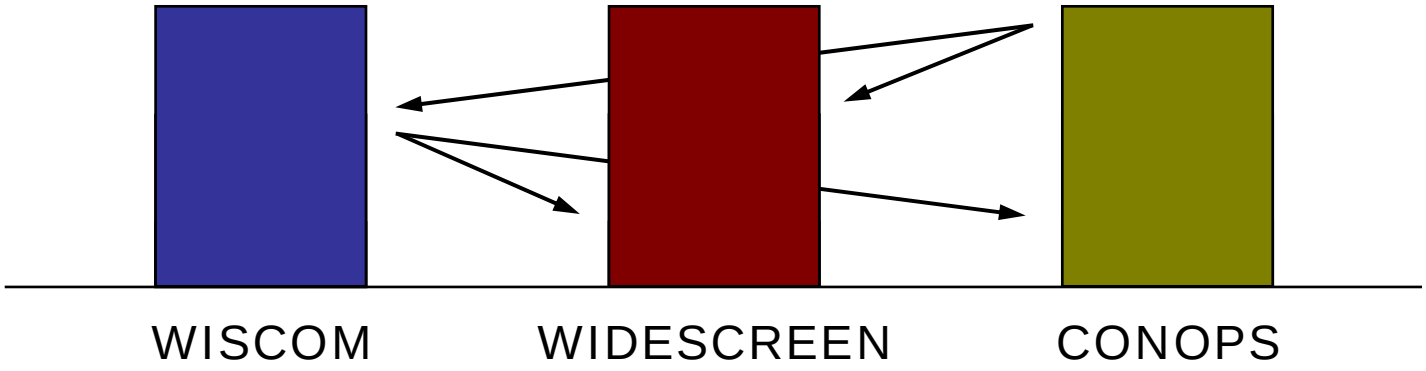


Flight Critical ”Flight safety”

Mission Critical

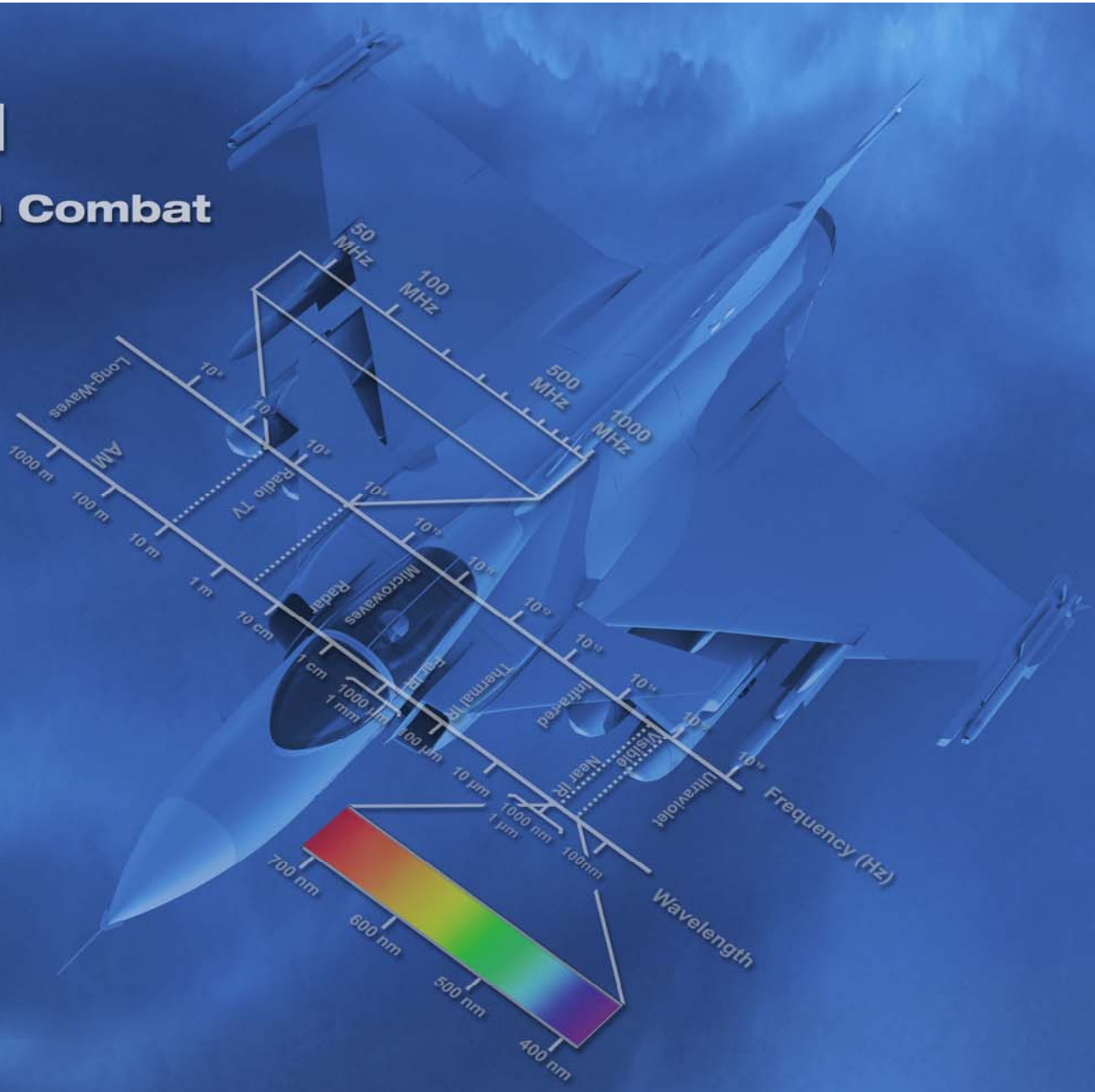
MULTIPLIED ABILITY

By parallel growth



WISCOM

Wide Spectrum Combat



WISCOM
War in all frequencies

- Complex analysis
- Holistic approach
- Total system solution
- Flexible antenna pool
- Silent combat entry
- Beamed data links

WIDESCREEN

Details and overview

WIDESCREEN
Details and overview

- 3D situation image
- Flexible camera angles
- Touch control
- Optimized for easy access
- WISCOM adapted
- Decision support tools

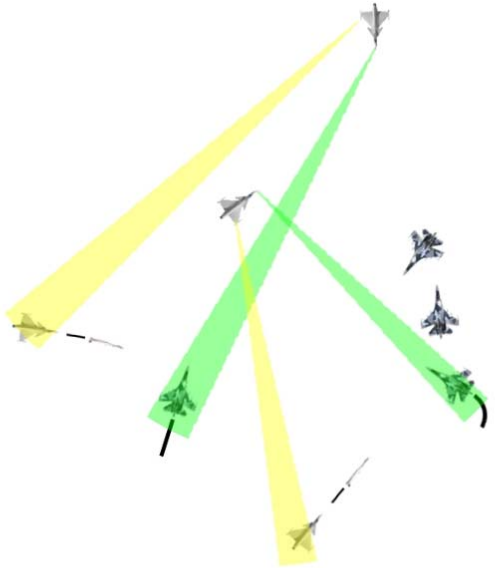
CONOPS

Concept of operations

AIR-TO-AIR

WISCOM adapted BVR combat

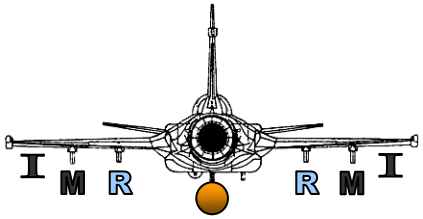
- Silent swarm ingress
- IRST and passive AESA
- Random AESA emissions
- Beamed data links
- Long range Meteor missiles



MARITIME STRIKE
With self protection

- Gripen NG can:
  - Strike hard at enemy landing force
  - Thereby protect from invasion by sea
  - Coordinate launches from multiple directions
  - Saturate missile defences of enemy fleet

- 4 x Gripen NG, each carrying:
  - 2 x RBS15F-ER
  - 2 x Meteor
  - 2 x IRIS-T



READY FOR AIR COMBAT IN ANY MISSION

BUT WAIT!

There is more…

METEOR TESTING

Leading shooter worldwide

Why?

Because Gripen is <u>designed</u> to be updated!

Now even better due to…

SPLIT AVIONICS

Opens vast possibilities

FLIGHT CRITICAL

TACTICAL

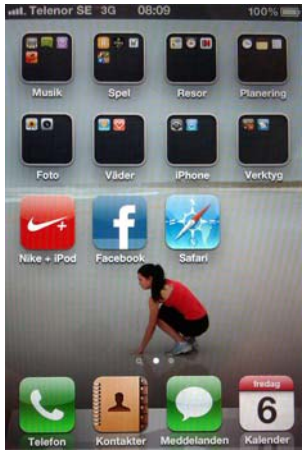
Changes in tactical avionics <u>do not affect flight critical systems</u>

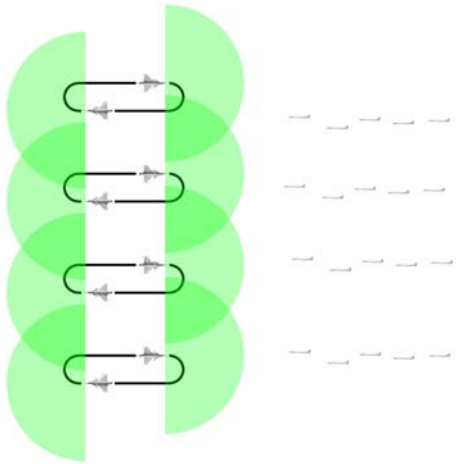
This leads us to…

USER APPLICATIONS

Similar to smartphones

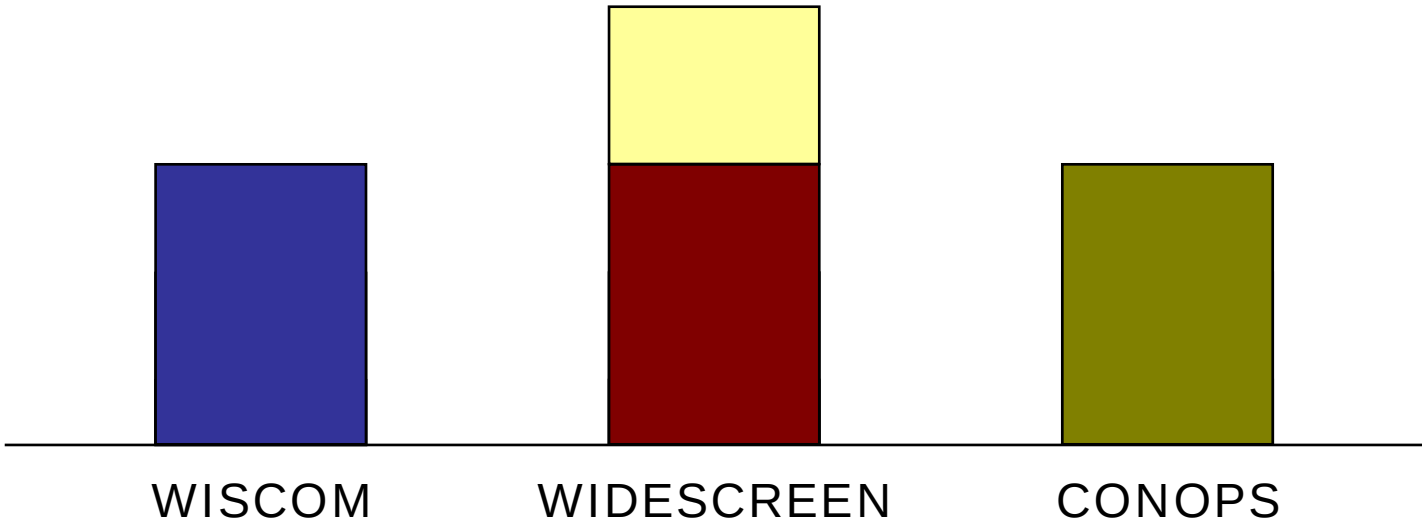
- Advanced decision support
- Each user can make them
- Users can share
- Continuous updates
- Real game changer





MULTIPLIED ABILITY

User applications added



CONCLUSION

All these things together

- WISCOM
- Widescreen
- CONOPS
- User applications

Make Gripen NG:

THE SMART FIGHTER

THE NEW REALITY

- Budget constraints
  - Focus on low life cycle cost
  - Need of low training and currency costs
  - Affordable upgrades mandatory to cope with future needs
- Interoperability
  - NATO and national armed branches
  - Maintaining agile fighter data-link

THE NEW REALITY

- Uncertain threats
  - Low scale conflicts for long periods – need for extended flight hours
  - ISR at a low cost – UAS becoming expensive
  - New detection systems require a more balanced low signature
- Independence
  - Flexibility with several weapon providers
  - Limitations posed by super-power providers
  - Real technology transfer
- Ageing fighter fleet
  - High operating costs
  - High accident rates
  - Low pilot and ground crew motivation

GRIPEN

When logic is part of the equation

- The smart fighter
- Full weapon flexibility
- Proven technology transfer
- Low life cycle cost
- Designed to be upgraded
- NATO interoperable

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