The Perspective of Swedish Industry

- Saab and GKN Engine Systems

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Director Strategy
Saab Aeronautics
141113

GRIPEN

NEURON

SAAB AERONAUTICS

T-X TRAINER

A380

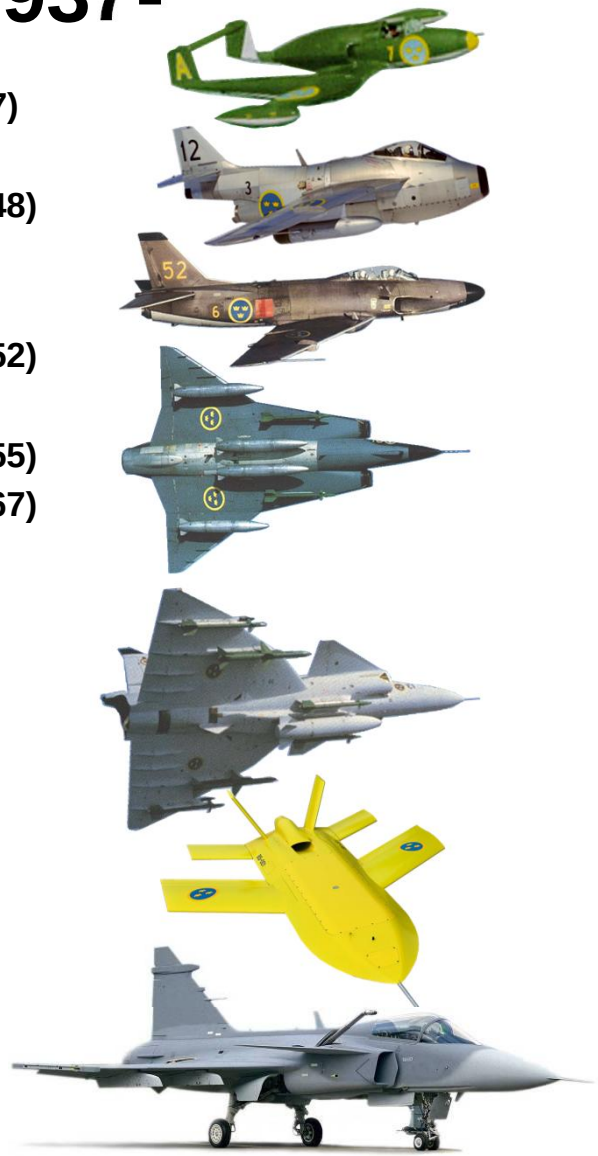
Illustration:
Dassault Aviation

Illustration:
Airbus

SAAB

INNOVATION TRACK RECORD 1937-

• 1st Ejection Seat	J21	(prod.1944-47)
• 1st A/C modified from propeller to jet engine	J21	
• 1st Swept Wing Jet in Europe	Tunnan	(1st flight 1948)
• 1st production A/C with afterburner	Tunnan	
• 2 world speed records	Tunnan	
• 1st Saab Supersonic A/C	Lansen	(1st flight 1952)
• 1st Saab System A/C ex Radar	Lansen	
• 1st Double Delta Wing	Draken	(1st flight 1955)
• 1st Canard configuration in production	Viggen	(1st flight 1967)
• 1st A/C w Central Computer	Viggen	
• 1st Tactical Data Link bw A/C	Viggen	
• 1st Digital FCS	Viggen	
• 1st Auto Gun Aiming	Viggen	
• 1st HUD in production	Viggen	
• 1st virtual target training aid	Viggen	
• 1st metal bonded wing panels in Mach 2 A/C	Viggen	
• Unprecedented capability- size ratio	Gripen	
• First Nato fighter of 4th generation	Gripen	
• First fully autonomous flight in Europe	Sharc	
• First fighter to fire Meteor	Gripen	
• ….	Gripen	
• ….	Gripen	



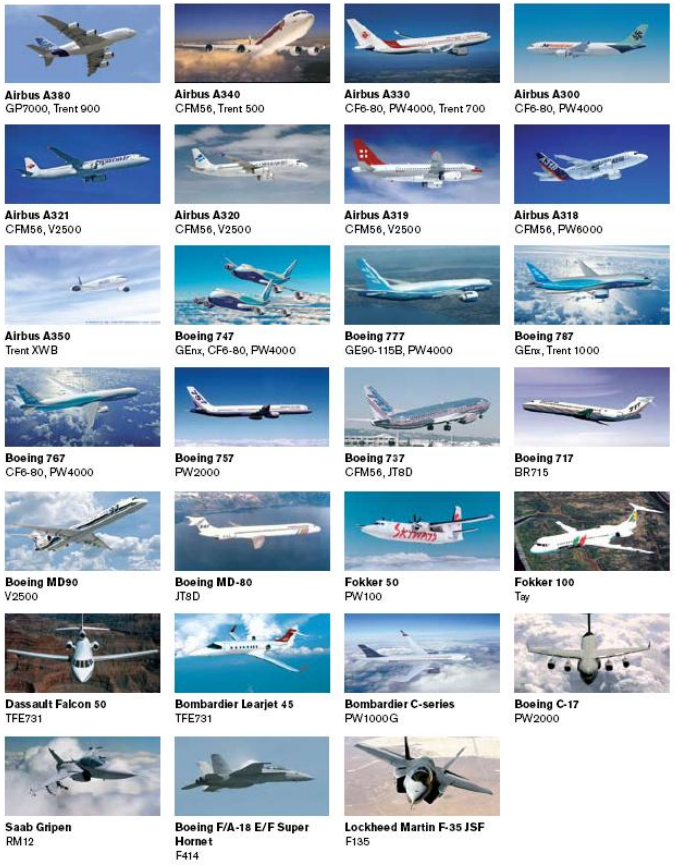
SAAB

GKN Engine Systems has a strong presence in today's aircraft

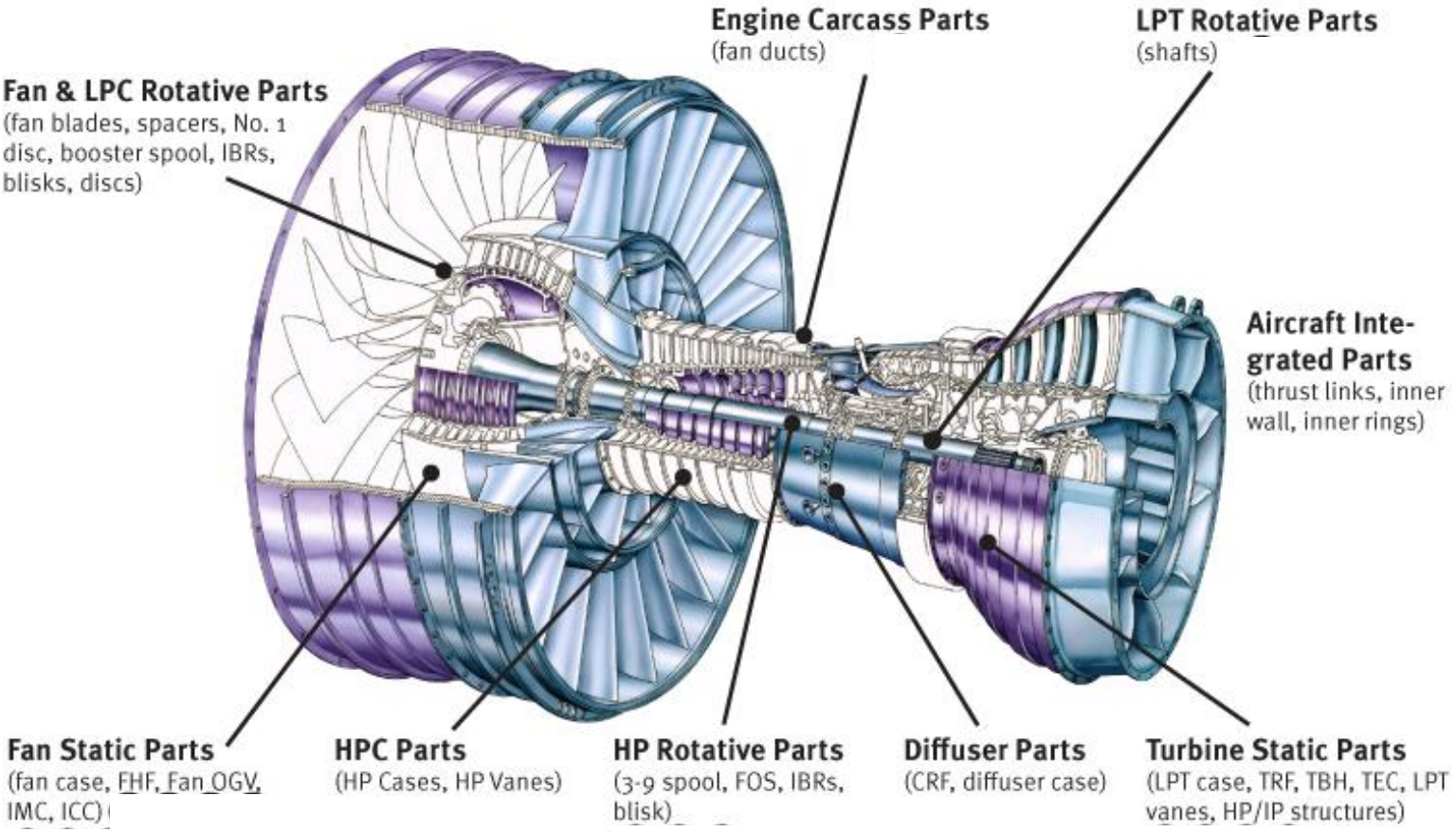
More than 90 percent of all new large commercial aircraft engines use our engine components

For these aircraft we provide:

- Engine components
- Engine technology
- Engine technical support
- Engine MRO services
- Parts Repair



GKN Engine Product Portfolio



FUTURE SYSTEM OF SYSTEMS

Unmanned systems

ISR

Manned and Unmanned Future Combat Air Systems

E F E+ …

Gripen

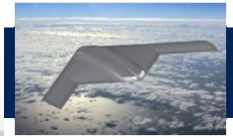
2015 2040 2060

SAAB

SAAB AERONAUTICS ROADMAP

ADVANCED TRAINER

TACTICAL UAS



SURVEILLANCE UAS

GRIPEN

C/D

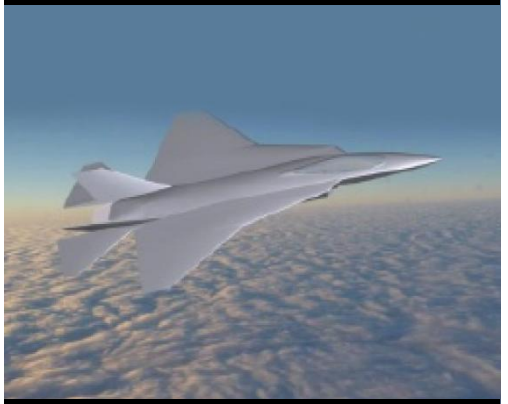
SYSTEM OF SYSTEMS

E

F

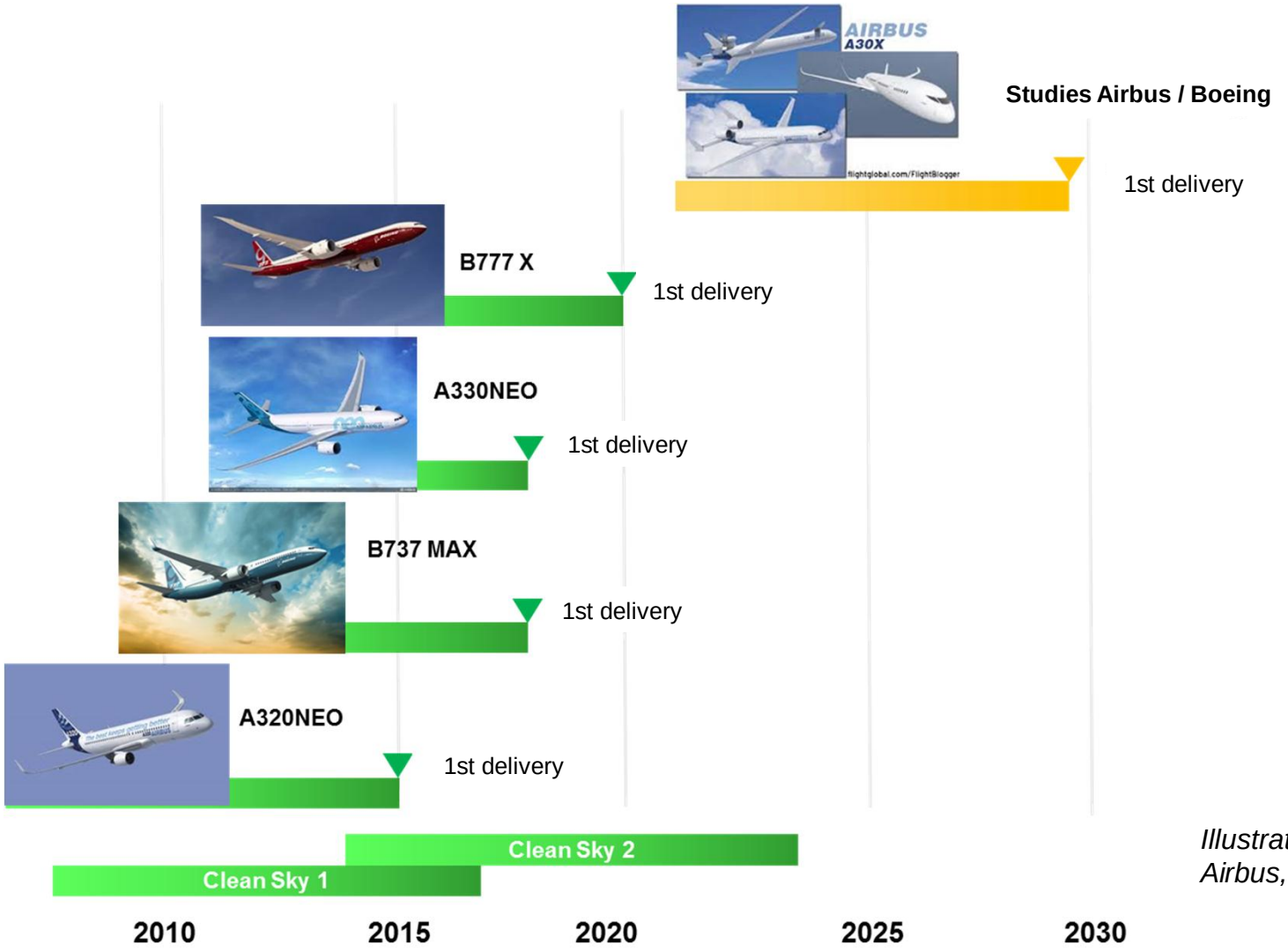
E/F+

NEW COOPERATIONS



MANNED AND UNMANNED FCAS

AIRBUS AND BOEING PROGRAMS

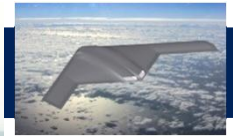


Illustrations:
Airbus, Boeing

SAAB AERONAUTICS ROADMAP

ADVANCED TRAINER

TACTICAL UAS



SURVEILLANCE UAS

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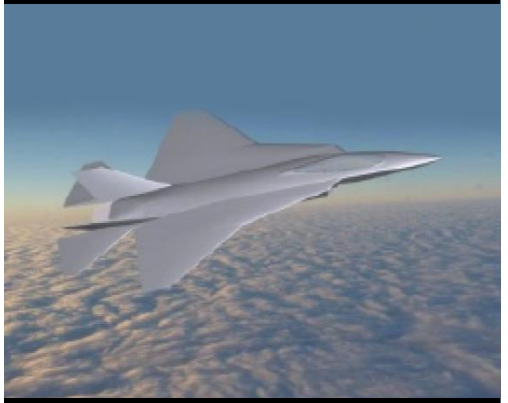


MANNED AND UNMANNED FCAS

AEROSTRUCTURES

FUTURE AIRLINERS

CAPABILITIES AND R&T

SYSTEMS

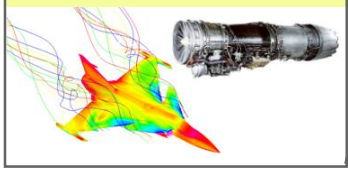
STRUCTURE & PRODUCTION

DEMONSTRATORS

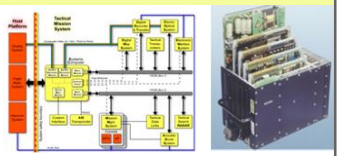
NEW CONCEPTS

SAAB TECHNOLOGY AREAS

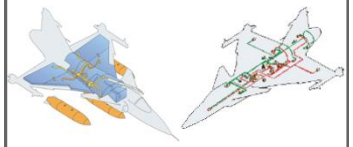
Aeronautical Engineering



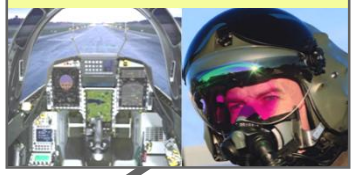
Airborne Computer Systems



Vehicle Systems



Human-Machine Interaction



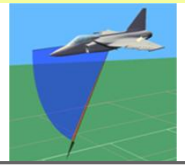
Tactical System

Maintenance Systems

Systems Integration

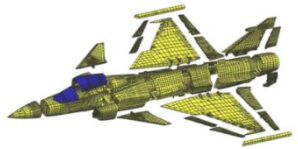
- Systems of Systems Integration
- Operational Analysis
- Concept Design
- Overall Design and Architecture
- Survivability
- Safety & Reliability
- ILS, Availability and Maintainability

Flight Test and Verification

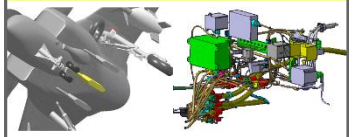


Weapons Integration

Structural Technology



Airframe Design

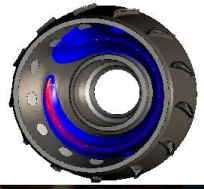


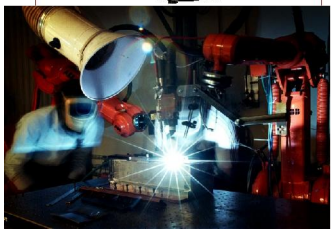
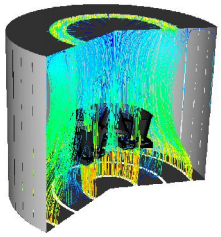
Production Systems

Support Systems and Simulators

Engineering Methods & Tools

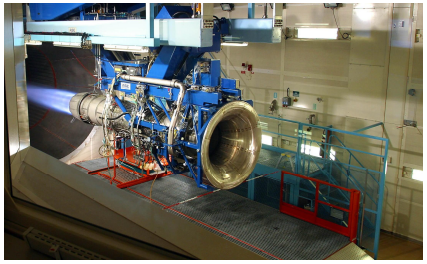
GKN Technology Areas



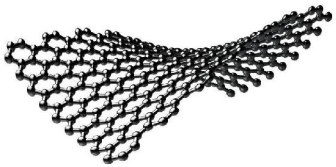



Advanced Manufacturing

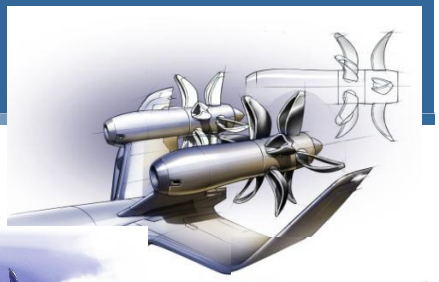
Light Weight Designs

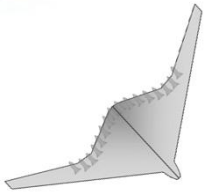


Testing and Repair



Source: Chalmers University

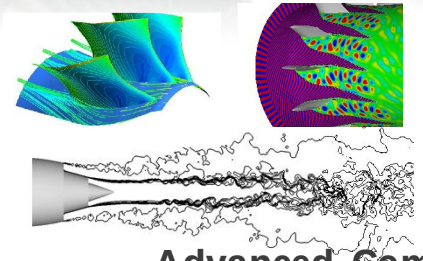
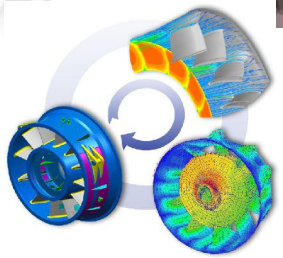





Innovative Propulsion Concepts





Advanced Computer Simulations

THE TOP 3 IN MULTINATIONAL AERONAUTICS R&T

JTI Clean Sky (1600M€)
Environmentally friendly aircraft
European Union's largest research project

Saab one of 12 Founding Companies
GKN participating

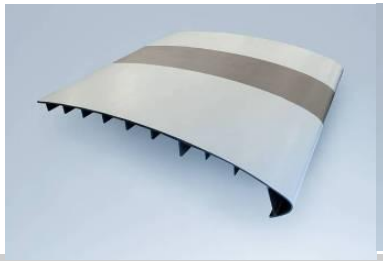
Neuron (450M€)
Europe's largest multinational military demonstrator

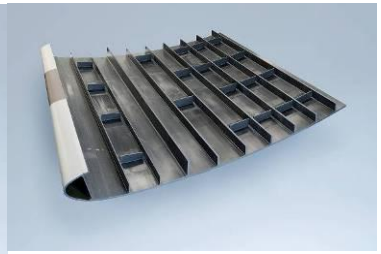
Sweden/Saab Co-project Leader
GKN participating

MidCAS (50M€)
European Defence Agency's largest research project

Sweden/Saab Project Leader

Clean Sky
Laminar Flow Wing with Integrated Structure





CLEANSKY
Joint Technology Initiative
for Aeronautics & Air Transport
www.cleansky.eu

SAAB

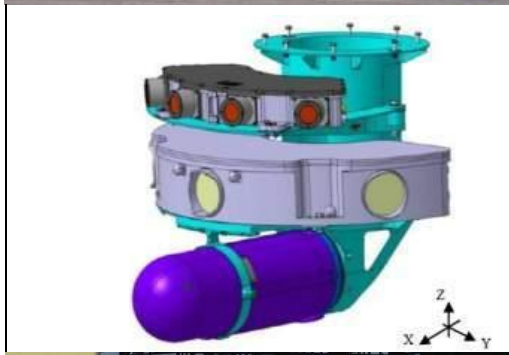
The NEURON Program

© Dassault Aviation - V. Almansa- The NEURON European UCAV technology demonstrator taking off at the Dassault Aviation Istres Flight Test center (France).

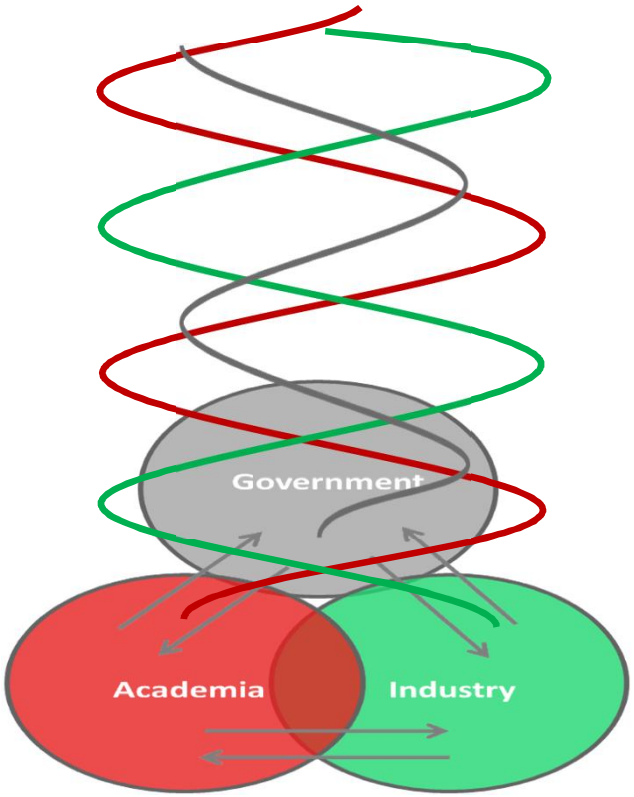
SAAB

MidCAS
(Mid-Air Collision Avoidance)

- Sense & Avoid system designed and evaluated
- Manned flights have been performed
  - ADS-B fully integrated into the system
  - Data recorded for EO, IR and IFF sensors
  - More than 60 scenarios flown
- All sensors will be fully integrated in the system to calculate and execute maneuvers in unmanned flights
- UAS flight testing is planned for 2015



The Swedish Innovation System

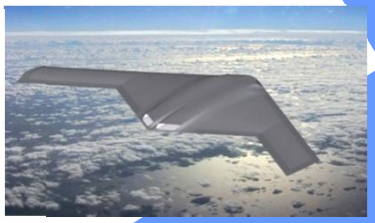


The Triple Helix concept of Government - Industry - University relationship

LONG TERM VISION OF BRAZIL-SWEDEN COOPERATION

Future
Fighter Capability

Demonstrators



Future Civil Products

Gripen 2-seater
Development

Gripen NG

Joint Research & Technology Efforts
Brazil - Sweden

GET STARTED!

- Identify a first batch of R&T projects that can be started in 2014-2015
- Gain experiences
- Understand Brazilian and Swedish capabilities
- Use the experiences to gradually build a strong cooperation

Artist's impression © Saab AB 2014