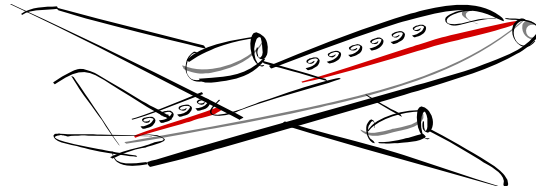


Sweden - Aeronautics R&T  
Programs and Research Agenda  
by  
Gunnar Hult, FMV and  
Vilgot Claesson, VINNOVA

FMV - Swedish Defence Materiel Administration  
VINNOVA - Swedish Governmental Agency for Innovation Systems



# Sweden – Aeronautics R&T Programs and Research Agenda

## Outline

- Aeronautics in Sweden
- Aeronautics R&T Programs
- National Research Agenda



# Aeronautics in Sweden

A long national tradition in aeronautics





## Aeronautics in Sweden

- More than 10 000 people, excluding subcontractors
- Turnover more than € 2 b per year
- Export share is growing
- High share of R&D - approx. 15 %



# Aeronautics in Sweden

- A long national tradition in aeronautics
- Strong networks between end users, contracting agencies and R&D suppliers
- Close R&D cooperation between industry, REs and academia
- Strong involvement in European R&D fora
- Experience of dual-use



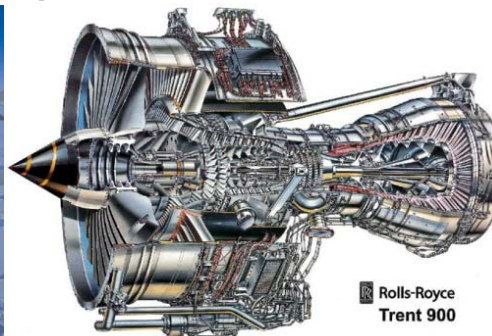
# Aeronautics R&T Programs

- National Aeronautical Program (NFFP)
- Aeronautical development and demonstration program (FLUD)
- Military Aeronautical R&D programs

# National Aeronautical Program (NFFP)

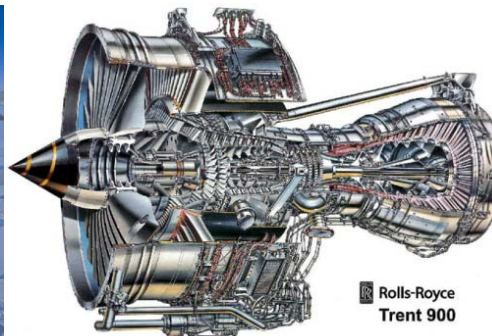
## NFFPs objectives are:

- Strengthen Swedish competitiveness in aeronautics
- Strengthen our capability to participate and learn from international research and technology cooperation
- Support Swedish Armed Forces by building and maintaining knowledge for systems operation and development



# National Aeronautical Program NFFP

- NFFP started 1994... now NFFP5: 2009-2012
- Volume NFFP5: € 12 m per year
- Funding: 50% government - 50% industry
- Lower TRLs
- Public funding to Universities, Institutes & SME

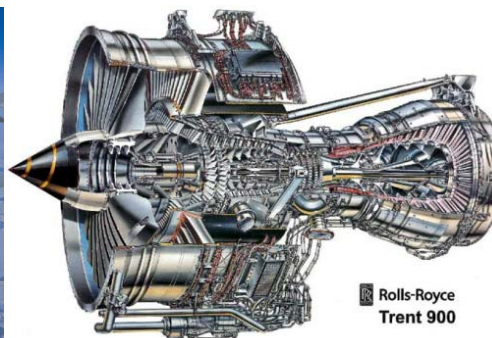




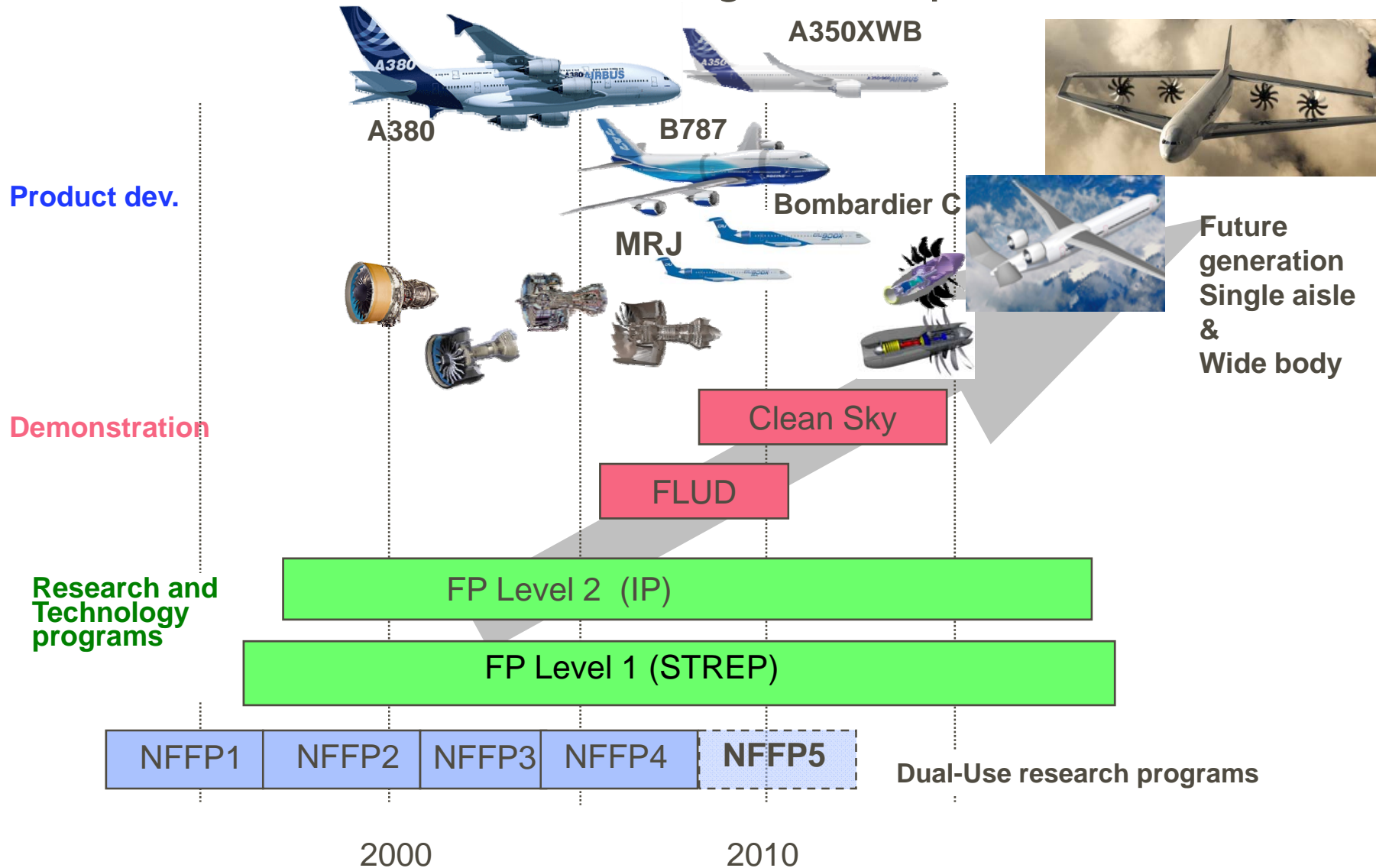
# National Aeronautical Program NFFP

## Present phase:

- Agreement between:  
Saab AB, Volvo Aero Corporation  
and  
VINNOVA, Swedish Armed Forces, and Swedish  
Defence Materiel Administration (FMV)

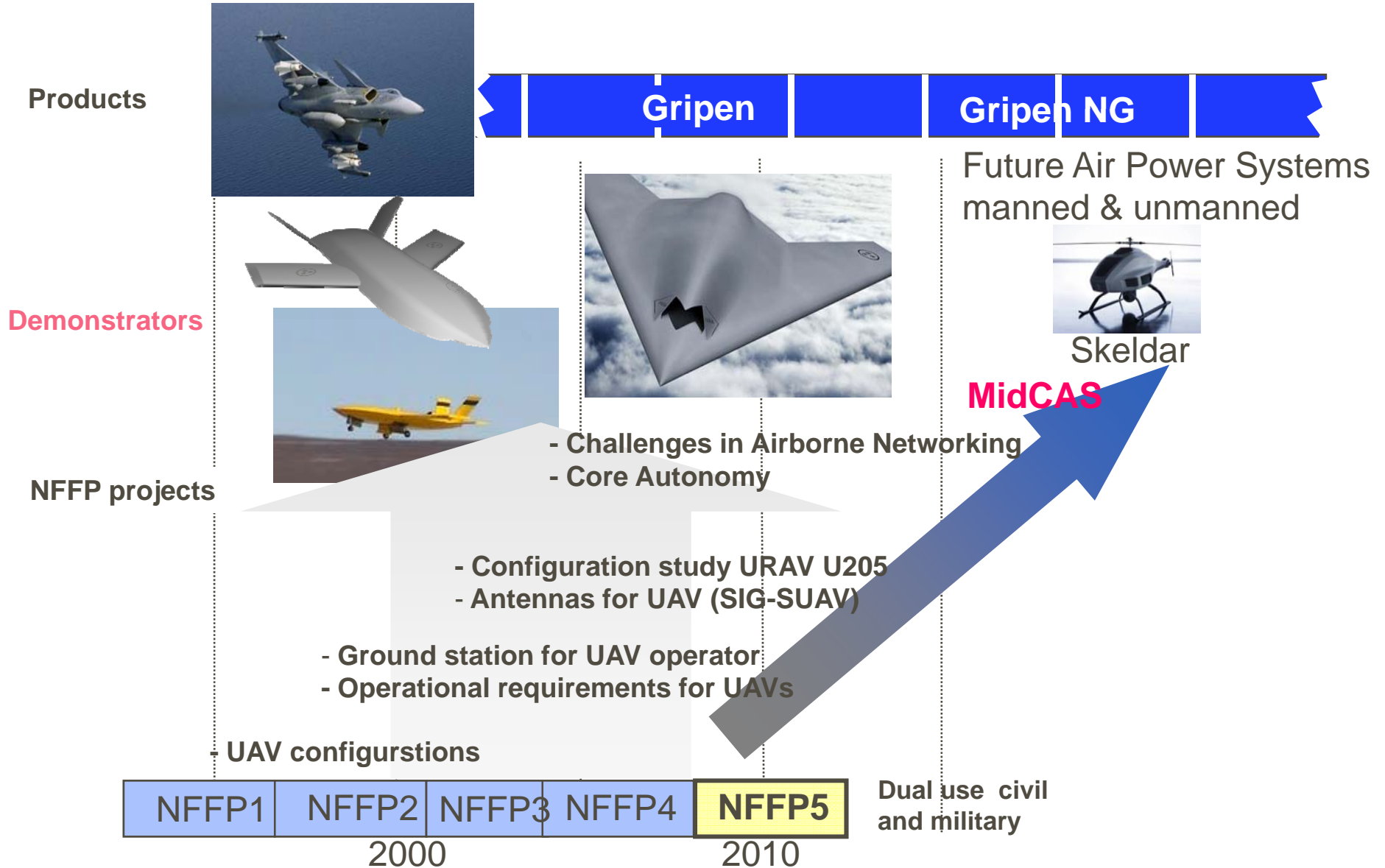


# Swedish Industry Perspective





# Examples of Saabs military programs - Autonomous systems





# Examples Saab civil programs - Composite structures



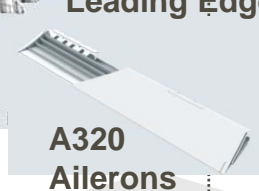
Customer products



Saab products



Demonstrators



NFFP projects

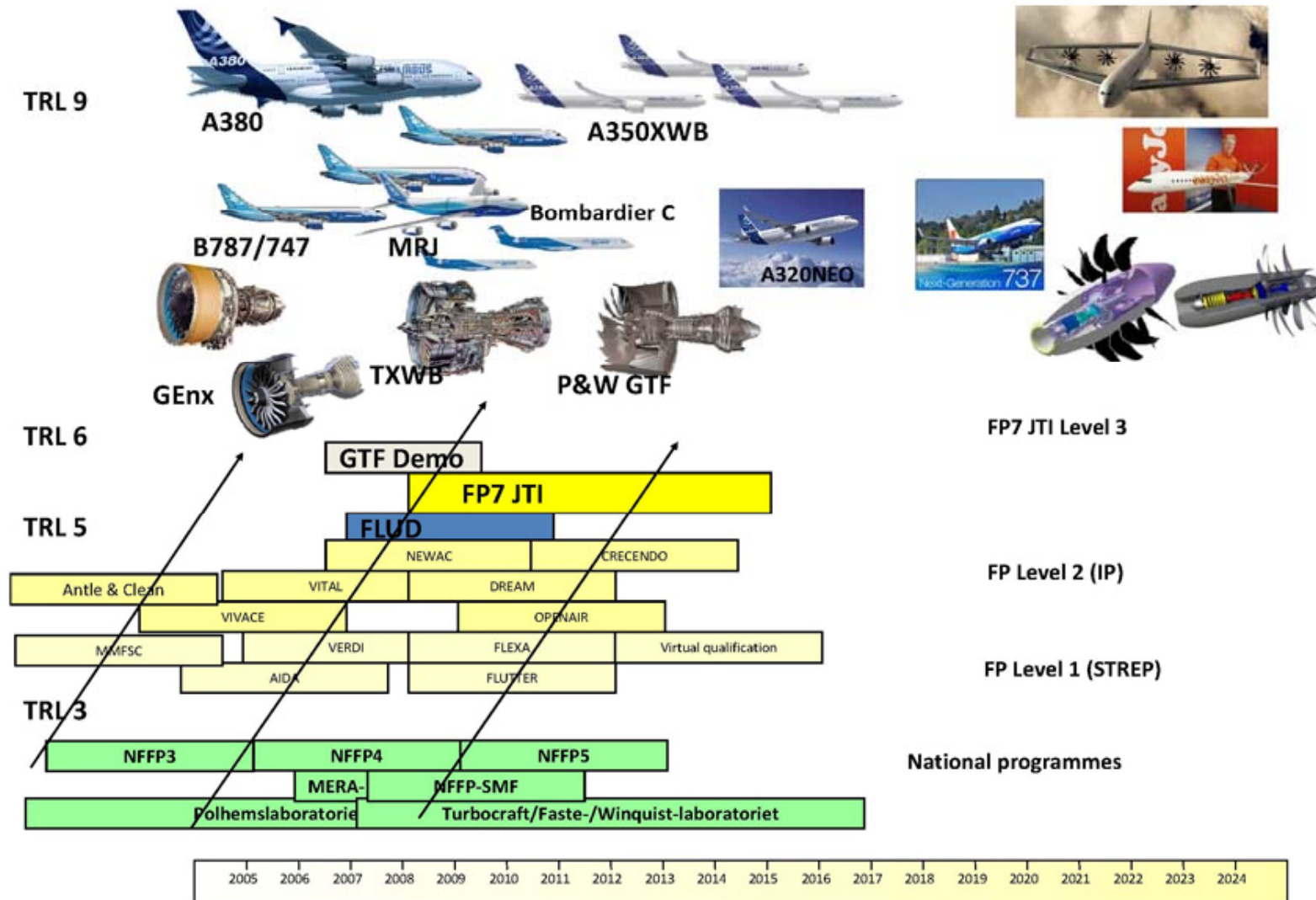
- Cost effective composite structures
- Processes for advanced composite structures
- Composite Aircraft Structures - Improved Methods for Analysis, Qualification and Manufacturing Simulation.
- Life prediction & certification for composite structures
- Impact and Dynamic Damage Evolution in Composite Laminates



Dual use civil and military

# Example Volvo Aero programs

## Components for most engines worldwide



# Aeronautical development and demonstration program (FLUD)

## Objectives:

- Facilitate participation in international research programs (civil), like Clean Sky (technology demonstrator)
- Increase share in civil aircraft and engines, like Airbus 350
- Involve institutes and subcontractors





## Aeronautical development and demonstration program (FLUD)

- 2006 - 2010
- Total budget € 23 m
- Funding: 50% government - 50% industry
- Projects:
  - Swedish Green Engine Demonstrator
  - Saab Demonstration Green Aircraft Systems



# National Research Agenda NRA Flyg 2010

## **Joint effort by all stakeholders, with the aims to:**

- achieve a broad consensus on aeronautics research
- strengthen aeronautical research funding
- constitute a basis for decisions about research directions
- align Swedish aeronautics research with ACARE goals
- support international positioning





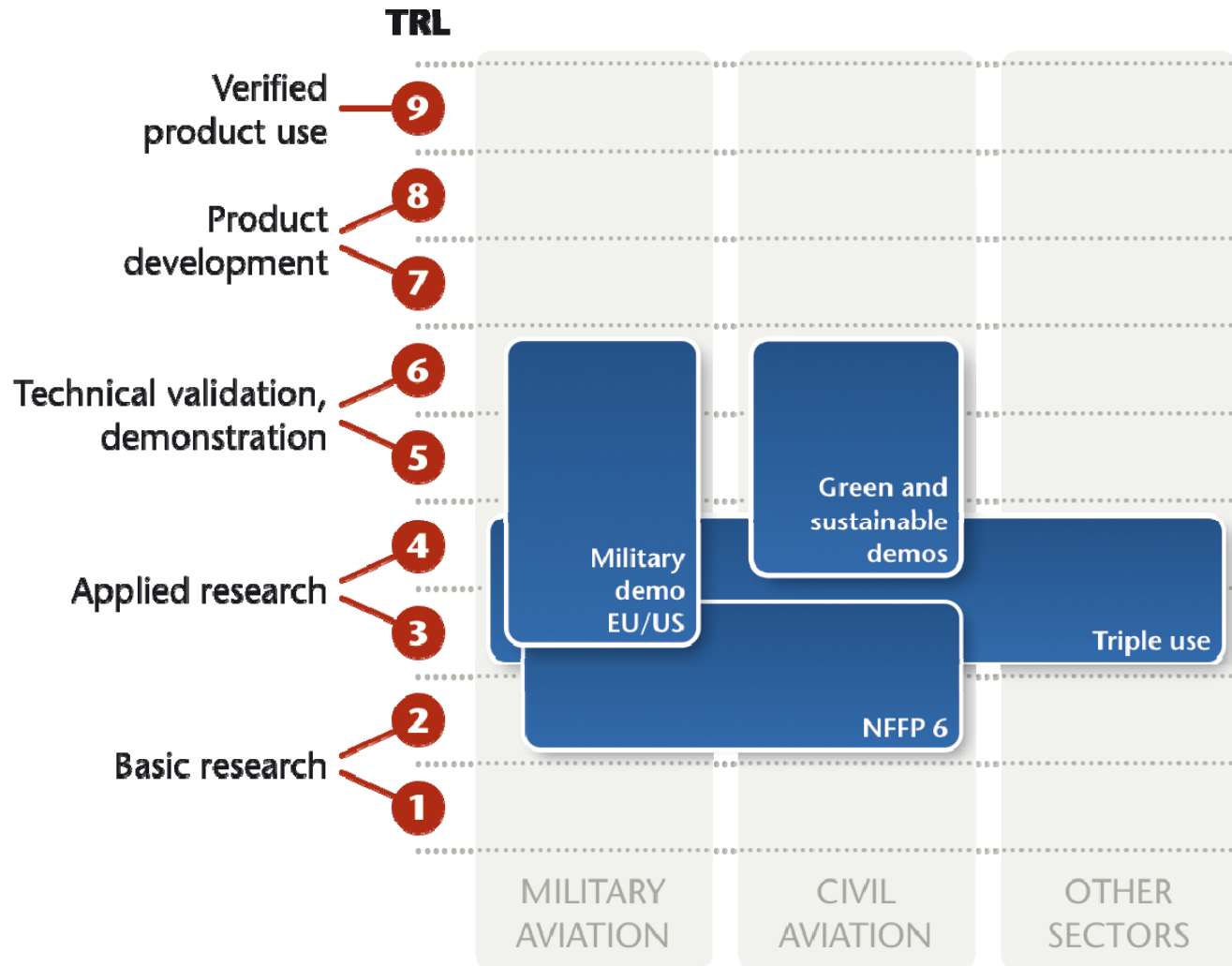
# National Research Agenda NRA Flyg 2010

## **Some focal points proposed:**

- Roadmap 2040
- New programs
- Development of funding models

# National Research Agenda

## Proposed research programs





# National Research Agenda NRA Flyg 2010

## Goals 2040

- Commercial deliveries
- Military deliveries (Gripen NG)
- Monitoring systems
- ATM – gate to gate
- Partner in combat aircraft collaboration