



ACARE

# Advisory Council for Aviation Research and Innovation in Europe

Dr. Uwe Möller, ACARE/DLR  
CANNAPE Workshop,  
London, 16/17 April 2013

# ACARE achievements so far



## A comprehensive response to Vision 2020 **Strategic Research Agenda**

- Responding to society's needs
- Securing global leadership for Europe



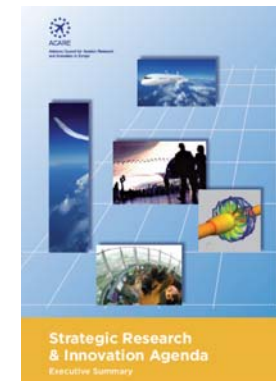
A decade of  
**Successful  
Innovation**



New thinking  
to go beyond  
2020



## Flightpath 2050



SRIA- 2012

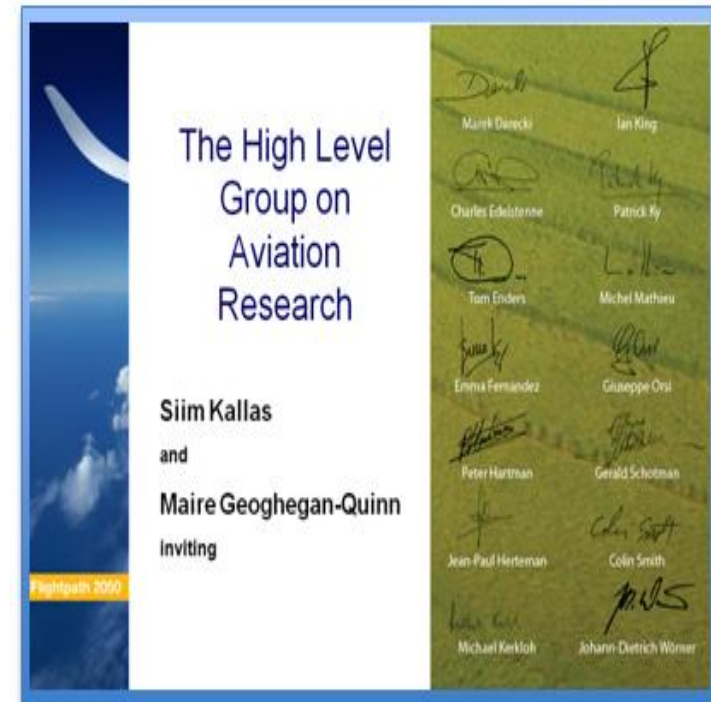
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# ACARE Mission



ACARE

- Establish a network for strategic research in aviation for all European stakeholders
- Develop and maintain the Strategic Research and Innovation Agenda (SRIA) and monitor implementation at European and national levels
- Make strategic and operational recommendations to achieving the goals of Flightpath 2050
- Maintain links with the relevant technology sectors and other transport modes
- Develop and implement a communication strategy to promote awareness of the SRIA
- Facilitate stakeholder co-operation in Europe and internationally as well as aviation representation at events and forums



## General Assembly

- 27 Member States
  - European Commission
  - Manufacturing Industry
  - Airlines
  - Airports
  - Air Navigation
  - EASA
  - Eurocontrol
  - Research Centres
  - Universities
  - Energy
  - Regulators
- Over 50 members

### Steering Group

Monitoring Group

Member States Group

Communication Group

Permanent  
Groups

- WG1) Meeting Societal and Market Needs
- WG2) Maintaining and Extending Industrial Leadership
- WG3) Protecting the Environment and the Energy Supply
- WG4) Ensuring Safety and Security
- WG5) Prioritising Research, Testing Capabilities & Education

Ad-Hoc Groups

# Flightpath 2050

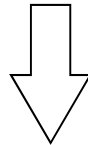


ACARE

**Vision 2050**

**Responding to society's needs**

**Securing global leadership for Europe**



**Five Objectives of the  
Strategic Research & Innovation Agenda**

**Meeting Societal and Market Needs**

**Maintaining and Extending Industrial Leadership**

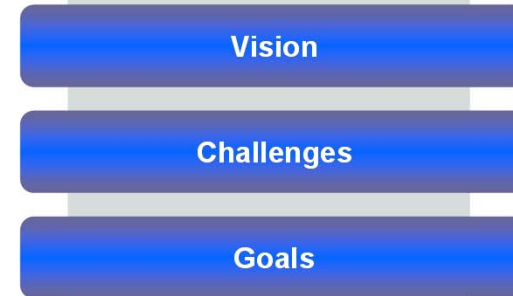
**Protecting the Environment and the Energy Supply**

**Ensuring Safety and Security**

**Prioritising Research, Testing Capabilities & Education**

Flightpath 2050

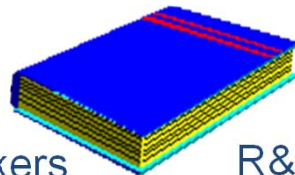
# From Flightpath to SRIA



**Why**



**Executive Summary**  
for Policy Makers

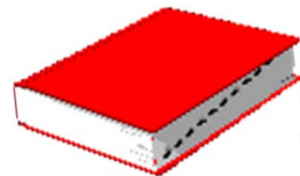


**Volume 1** for  
R&I Policy Makers



**What**

**How**



**Volume 2** for  
R&I Programme  
Managers



**When**

**With what**



## 1. Meeting Societal & Market Needs

**European citizens are able to make informed mobility choices**

**90% of travellers within Europe are able to complete their journey, door-to-door within 4 hrs.**

**A coherent ground infrastructure is developed**

**Flights land within 1 minute of the planned arrival time**

**An air traffic management system is capable of handling 25 million flights a year in Europe**

## 2. Maintaining & Extending Industrial Leadership

**The whole European Aviation industry is strongly competitive**

**Europe maintains leading edge design, manufacturing and system integration capabilities and jobs**

**Streamlined systems engineering, design, manufacturing, certification and upgrade processes have addressed complexity and decreased development costs.**



## 3. Protecting the Environment and the Energy Supply

**In 2050 technologies and procedures available allow**

- ❑ 75% reduction in CO<sub>2</sub> emissions per passenger kilometre,
- ❑ 90% reduction in NO<sub>x</sub> emissions, and
- ❑ 65% reduction in perceived noise emission of flying aircraft

**relative to the capabilities in 2000.**

**Aircraft movements are emission-free when taxiing.**

**Air vehicles are designed and manufactured to be recyclable.**

**Europe is established as a centre of excellence on sustainable alternative fuels**

**Europe is at the forefront of atmospheric research**





## 4. Ensuring Safety and Security

**The European air transport system has less than one accident per ten million commercial aircraft flights.**

**Weather and other hazards are precisely evaluated and mitigated.**

**Seamless operations through fully interoperable and networked systems (including manned and unmanned vehicles)**

**Efficient boarding and security checks allow seamless security**

**Air vehicles are resilient by design to security threats**

**The air transport system has a fully secured global high bandwidth data network.**

## 5. Prioritise Research, Testing Capabilities and Education

**European research and innovation strategies are jointly defined by all stakeholders**

**A network of multi-disciplinary technology clusters is created**

**Strategic European aerospace test, simulation and development facilities are identified, maintained and further developed**

**Students are attracted to careers in aviation. Courses offered by European Universities closely match the needs of the Aviation sector.**

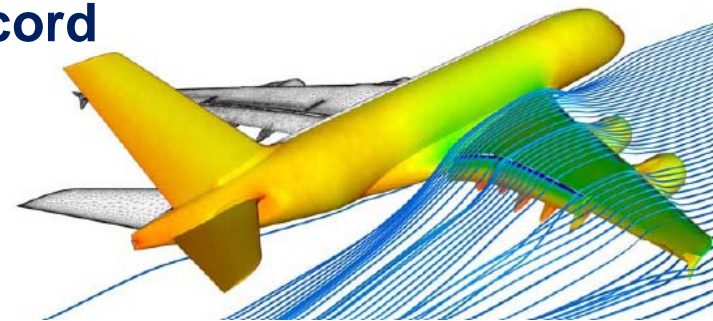


# SRIA - Recommendations

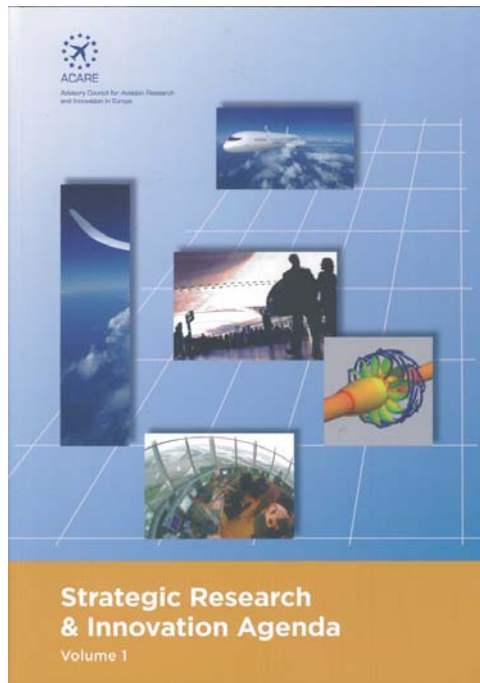


**To achieve the Flightpath 2050 goals, Europe must:**

- **Lead the development of an integrated resilient European air transport system**
- **Maintain global leadership**
- **Establish efficient and effective policy and regulatory frameworks**
- **Provide incentives accompanied by long-term programmes with continuity across R&T over many years**
- **Champion sustainable growth to further reduce emissions/noise**
- **Maintain the sector's safety track record**
- **Provide long term thinking**



# Handover SRIA at ILA



Launch Ceremony at ILA Air Show 2012 in Berlin

# SRIA - Implementation



## Implementation of SRIA needs

- a close cooperation of all Stakeholders and
- the support of the entire innovation chain including
  - Industrially oriented research and test infrastructures
  - Small and medium sized research projects and
  - Public Private Partnerships (PPP's) e.g. Clean Sky and SESAR
- Horizon 2020 and national programs will be key elements

### Timeline EC:

- Mid 2013 – draft first Horizon 2020 Work Programme
- January 2014 – Start Horizon 2020



### Timeline national (tbd):



- Meaning to members
  - Overall European strategy
  - National alignment
- Adaption to Vision 2020, FlightPath 2050 and H2020
- Challenges and Enablers
- H2020 Work Programmes
- Clean Sky and SESAR



## General recommendations by ACARE INCO Group, March 2006

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- Establish dedicated calls for INCO countries.
- It is proposed to set up a mechanism to examine work programme on possibilities for dedicated topics on R&T international cooperation.
- The INCO programme would look at each specific country to develop a set of rules and conditions :  
(Funding, Partners, Risk, Background IP & IP ownership, Rights of use).



## CANNAPE Analytic Approach

- Resulting from INCO recommendation on detailed analysis
- Complementary use of the SRIA with data from another country
  - Usefulness of Weighting data
    - Interest:funding
    - Networking:no. of projects
    - Capability: TRL
    - Summary weighting factor
  - Factors most important to ACARE



# Identified Topics (based on SRIA)

- Technology Demonstration and flight Test
- System Intelligence, Automatism, Human and Autonomy - Providing a range of automation solutions from support to the human role through to total automation (autonomous operation) in some areas
- Efficient Development & Manufacturing Processes
- Overall designs of air vehicles that minimize environmental impact and fuel consumption
- An extraordinary technological effort to define propulsion systems of the future that minimize environmental impact and energy consumption
- Operational mission management systems and procedures - Protection and responses which enable hazard risk management through appropriate tools including atmospheric models enabling the optimisation of trajectories to ensure hazard and collision avoidance
- Continuous performance evaluation along the whole solution development process - from research through development and into service
- An extraordinary technological effort to define the air vehicles of the future that minimize environmental impact and energy consumption
- Human-centred automation





## Future Collaboration with Canada

- Co-ordinated Call and topics
- Partnerships in general Calls
- Strategic alignment for the future

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# QUESTIONS ?

