

Aeronautics: The Strategic Research Agenda-unveiled, fully endorsed and ready for action

The Advisory Council for Aeronautics Research in Europe (ACARE) presented the findings of its first year of work in a comprehensive Strategic Research Agenda (SRA) today in Brussels. The SRA is a milestone of sorts as – for the first time in EU history – a plan for research and technological development has been jointly produced and endorsed by all concerned institutions and stakeholders. The focus is now on the implementation of SRA’s recommendations. The SRA addresses the challenges that aviation faces and how research efforts can help make air travel safer, cleaner, quieter, more affordable and more secure, notwithstanding the expected continued growth of air traffic. The Agenda calls for an overall investment of up to €100 billion over 20 years in research.

“This is an excellent example of non interventionist, modern industrial policy at work - where policies define a general framework and industry fully exercises its responsibility. In ACARE, all participants - whether from the public or private sector - worked together to define the future and will implement it together.” said EU Research Commissioner Philippe Busquin. “Unified and co-ordinated action by all actors of the European aeronautics sector is necessary to cope with the challenges of tomorrow. ACARE and the SRA provide this necessary co-ordination and represent a first critical step toward building a European Research Area. Now the SRA must inspire aeronautics research programmes on all levels. In the 6th EU Research Framework Programme (FP6 2003-2006), where we will devote €1,075 billion to aerospace research, the SRA’s recommendations have been fully taken on board.”

Moving forward together

Developed over the past year, the SRA involved the work of over 200 experts from across Europe. The Agenda provides an overall road map for responding to the air transport needs of society and securing European leadership in the aeronautics industry. Although still in its infancy, the SRA has already been adopted by all 15 EU Member States, the European Commission, EUROCONTROL, air transport operators and suppliers, research establishments and academia.

Ideas for the challenges ahead

Given the expected air traffic increase over the next 30 years, the cost of inaction in terms of safety would be more than one fatal aircraft accident per week. The SRA calls for an 80% reduction of this rate by innovative breakthroughs in technology, regulation and human-related factors. Examples of ways that research can prevent this include: the development of permanent automatic approach and landing capability in all weathers, self aircraft separation capability, 100% recovery

from human error, and automatic protection against catastrophic misjudgements. For the environment, the SRA calls for a 50% reduction in CO2 emissions in the long term with research being focussed, for example, on novel aircraft concepts such as the flying wing and alternative aircraft fuel such as hydrogen. In the area of security, the SRA calls for a zero successful hijacking record. To accomplish this, the SRA recommends comprehensive research on all three air travel components: aircraft, airport and navigation. For example, the extent to which an aircraft can be entirely controlled from - and automatically safely returned to - the ground is a research area to be considered.

A flexible agenda

The SRA is not a rigid long-term plan. It will be assessed every 2 to 3 years when new editions are published, allowing it to be adapted to changing circumstances or requirements. In the future, specific studies on selected aspects of the Agenda will be performed to provide additional guidance and decision-making tools for stakeholders and decision-makers.

BACKGROUND

Aerospace: a strategic challenge for Europe.

A flourishing aerospace industry is a strategic necessity for Europe to realise its political and economic ambitions. Strong European aerospace capabilities have become indispensable to maintaining competition in world markets for a wide range of civil and defence products and safeguarding Europe's freedom of action in its external policies. The aerospace industry itself has restructured on a European level, so the issues that affect it should also be addressed from a European perspective.

A pivotal role for research

As Europe enters a new age of aviation, that of "sustainable growth", a paradigm change is needed to meet the 2020 challenges. Simultaneously in different areas (air traffic management, propulsion, aerodynamics) new thinking and new approaches are needed. Concretely, this means an acceleration of the research effort. All stakeholders are getting together to improve the organisation, clarify the goals and increase the efficiency of aeronautics research in Europe. This means stronger partnerships between all stakeholders, public and private, and clear strategic research agendas and timetables. It also means more and better-used resources – what ACARE's Chairman summarises by "*more research for money, more money for research*".

ACARE: membership and mission

Launched at the Paris Airshow in June 2001, ACARE was set up as a response to the invitation of EU aerospace stakeholders, including the European Commission and Member States, for a thorough review of how the EU aerospace sector might best meet the new challenges of the 21st Century. Underpinning this initiative was an acceptance that the relentless increase in global aviation traffic cannot be endured by present systems without unacceptable penalties. Fundamental changes in perspective are required to balance upward demand and the broader needs of society for economic and social benefits. Research has a pivotal role to play in delivering these goals.

ACARE comprises about 30 members, including representation from the EU aeronautics industry, Member States, the Commission, Eurocontrol, research centres, airlines, regulators; and European users. It meets several times a year, with the primary mission of defining and maintaining a Strategic Research Agenda (SRA) which will serve as a blueprint in the planning of research programmes, notably national and EU programmes.

ACARE missions include:

- To develop, approve, and regularly update the Strategic Research Agenda,
- To make strategic and operational recommendations for implementing the SRA;
- To broaden understanding of aerospace-related issues in Europe
- To promote awareness of the role of research to recommend measures for attracting scientists, and optimising the use of research infrastructures

Strategic Research Agenda: Key Findings

- *The **Top Level Objectives, even though ambitious, are achievable in Europe, if a challenging Strategic Research Agenda, such as that being prepared by ACARE, is adopted, implemented and its results deployed into practical products and services with a high level of commitment.***
- ***These objectives include, inter alia***
 - *50% cut in CO₂ and 80% in Nox emission*
 - *Fivefold reductions in accidents*
 - *Reduction of noise by 50%*
 - *Increased punctuality: 99% of all flights arriving and departing within 15 minutes of schedule*
- *The **SRA provides solutions and R&T programmes** to be undertaken to achieve the Top Level Objectives as outlined in Vision 2020. The objectives are **not achievable without important breakthroughs, in both technology and in concepts of operation** - evolutions of current concepts will not be sufficient.*
- *Delivering the Top Level Objectives **will require a number of additional and significant Pan-European supporting mechanisms within the European Research Area.** Mechanisms are needed to release the untapped potential of the whole European supply chain. These major efforts will need enhanced contributions from the educational community to provide the flow of trained people needed. More effective and efficient research infrastructure and all of these supporting changes must be built around a new level of ability to harness the collective capabilities and common interests throughout the technology supply chain in Europe. The increased requirements from certification authorities and the numerous technologies in today's aircraft, together with the inevitable rising complexity in future aircraft, make the certification process crucial for the industry in terms of quality, cost and time.*
- *Delivering these European ambitions will require **substantially more output from the European aeronautic research community** which must devise **new ways to make the system of research, in all its forms, more efficient.***
- ***It is clear that more investment from both public and private sources will be needed.** The preliminary estimate as mentioned in Vision 2020 "possibly in excess of E100 billion over 20 years" has been confirmed.*
- ***The aspirations for European leadership will only be achieved if the climate in Europe remains conducive to retaining core competence, capacities and industrial centres of research.** The ambition of SRA is for the European Stakeholders to succeed in the global market, both by competition and by collaboration, from a strong, effective European base. **This requires that major corporations, which increasingly have international links and options, continue to invest their resources in Europe.** But Europe must provide a receptive environment, ensuring equal competitive footing with other countries and regions.*

For further information please visit the following websites:

www.acare4europe.org

For other relevant information please visit the following websites:

EU aeronautics research policy

<http://europa.eu.int/comm/research/growth/gcc/ka04.html#top>

“European Aeronautics: Vision for 2020”

<http://europa.eu.int/comm/research/growth/aeronautics2020/en/index.html>

ACARE

<http://europa.eu.int/comm/research/growth/gcc/projects/in-action-acare.html#01>

STAR 21

http://europa.eu.int/comm/enterprise/aerospace/report_star21_screen.pdf