Air Transport Net

AirTN
Air Transport Net

Regional Funds as enablers for European cooperation for states with a developing aeronautics industry

Roland Guraly

30 June 2015

Presentation Structure

1. Short overview of the European Aeronautics Industry
2. Geographic Analysis of the European Aeronautics Industry
3. European Instruments for Research, Development and Innovation in Aeronautics
4. Smart Specialisation and the Regional Funds related possibilities
5. A way towards cooperation

1. **Overview of the European Aeronautics Industry**

Air Transport Net

The role of aeronautics in Europe

The aeronautics industry:

- Among the most important ones in Europe.
- Aviation is one of the top five technology sectors in Europe. (ACARE)
- Contributions to the overall European goals:
  - Increases competitiveness
  - Increases the mobility possibilities,
  - Contributes to the European sustainability targets.

Study focus on aeronautics, air transport is less applicable
(more available in each Member State)

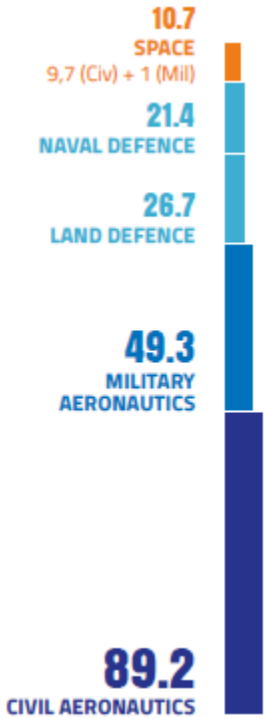
The role of aeronautics in Europe (2)

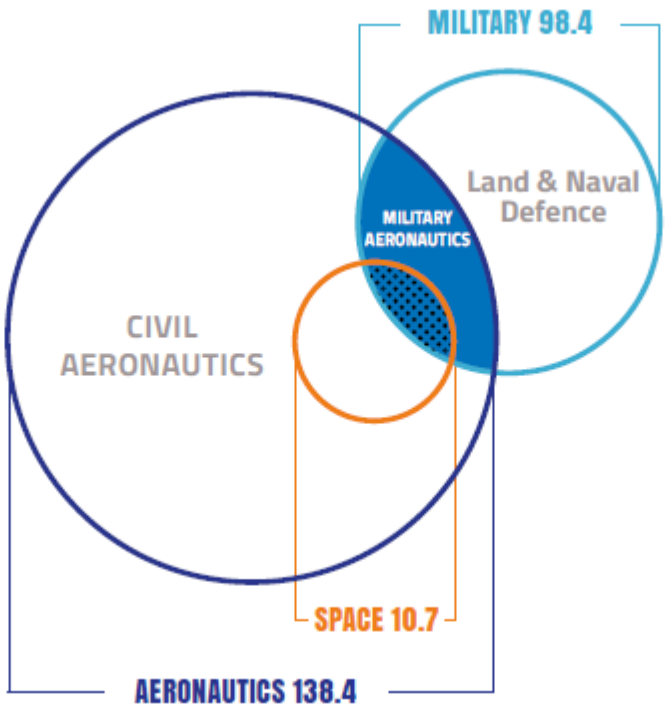
The ASD statistics shows that

- European aerospace and defence industries achieved a turnover of 197.3 billion euro, an increase of 5.6% in comparison with 2012 (mainly due to growth in the aeronautics sector)

- **Civil aeronautics** shows an important increase with a turnover amounting to 89.2 billion euro in 2013, compared to 81.3 billion euro in 2012

The role of aeronautics in Europe (3)

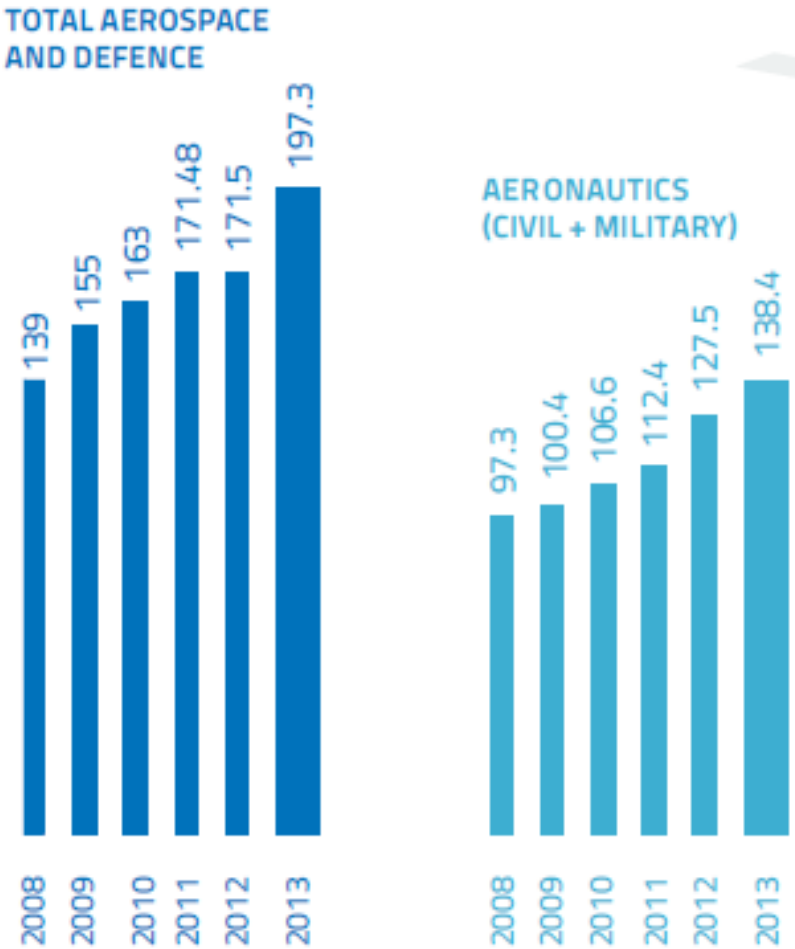




98.9 BILLION €
CIVIL ACTIVITIES

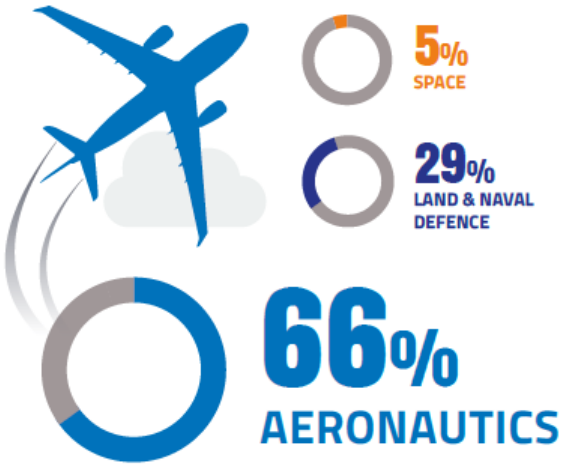
98.4 BILLION €
MILITARY ACTIVITIES

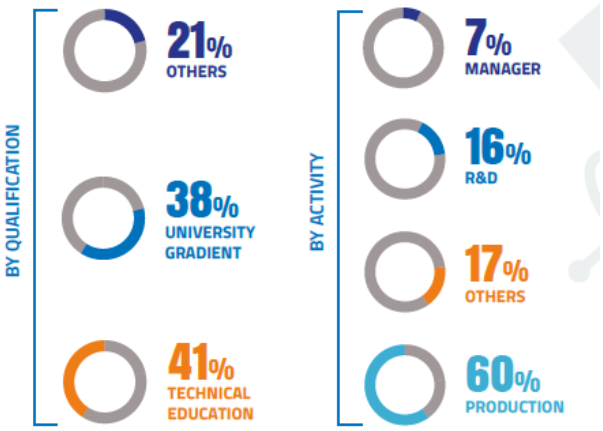
The role of aeronautics in Europe (4)

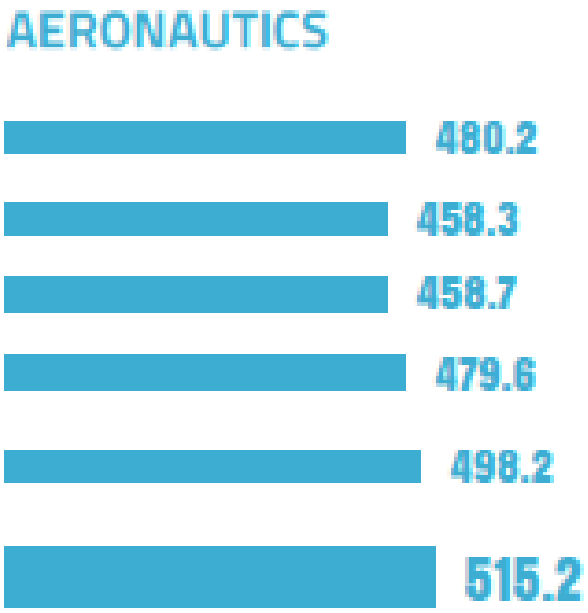


The role of aeronautics in Europe (5)

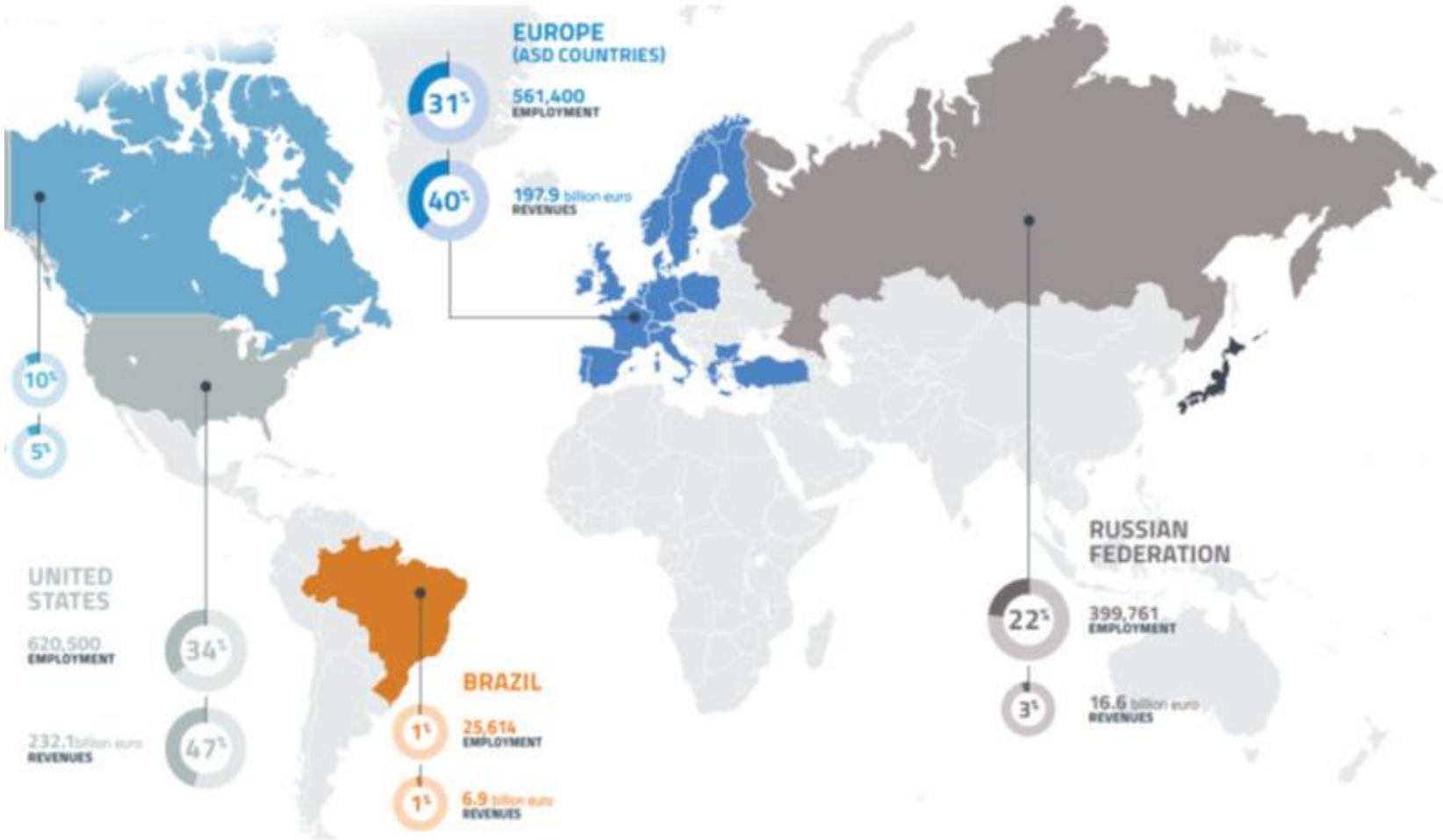
The total ASD employment is close to 800 000 (2013)





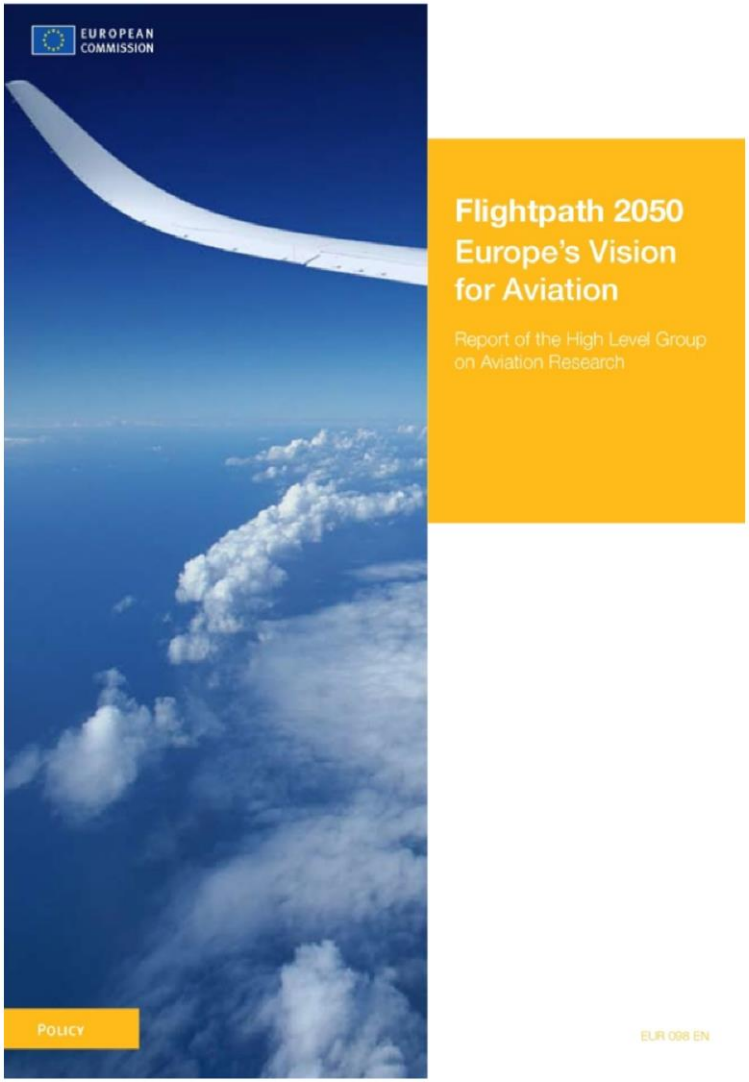


Europe vs. the rest of the World



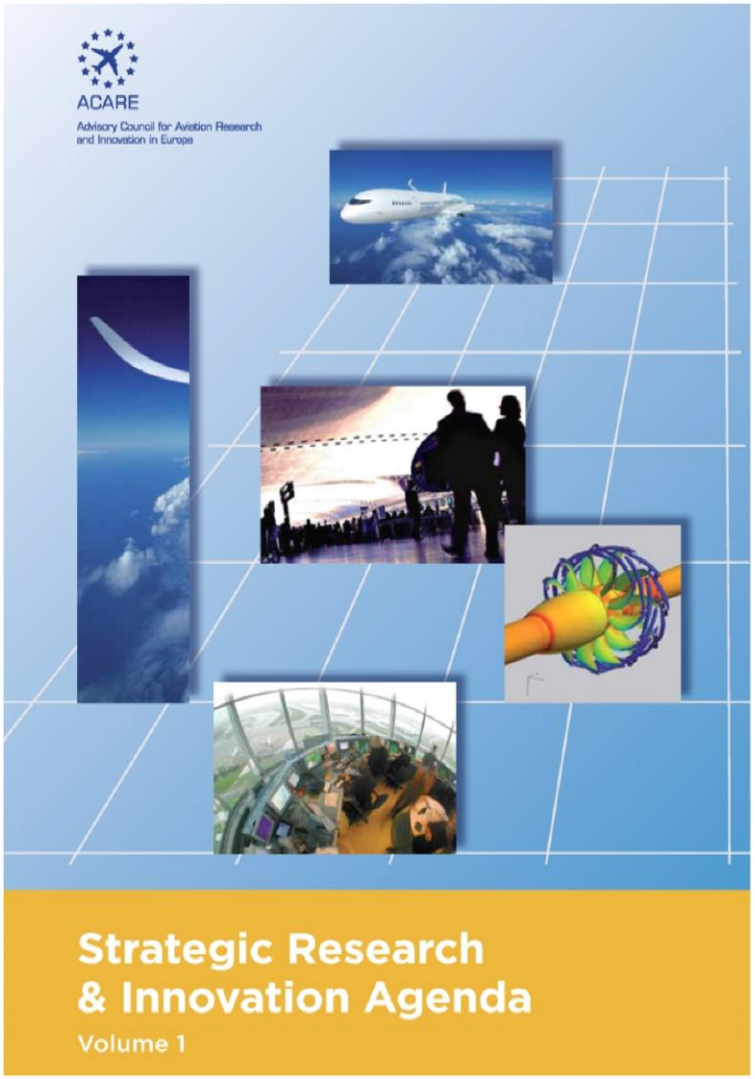
Relevant goals from the Flightpath 2050

- On average, 12% of aeronautic revenues, representing almost €7 billion per year for civil aeronautics alone, are reinvested in Research and Development (R&D) and support around 20% of aerospace jobs.
- Every Euro invested in aeronautics R&D creates an equivalent additional value in the economy every year thereafter.
- Aeronautical technologies are **catalysts for innovation** and **spill-over** into other economic and technological sectors, thus contributing to the growth of the European economy as a whole.



Relevant goals from SRIA

- **Optimised public-private investment programmes** cover the entire supply chain and improve the harmonisation of national programmes in Europe.
- The potential for conflict and duplication is avoided.
- These programmes create a positive environment in which stakeholders are encouraged to participate even when confidentiality and protection of intellectual property rights (IPR) are significant concerns.



2. **Geographic Analysis of the European Aeronautics Industry**

The landscape of the European aeronautics industry

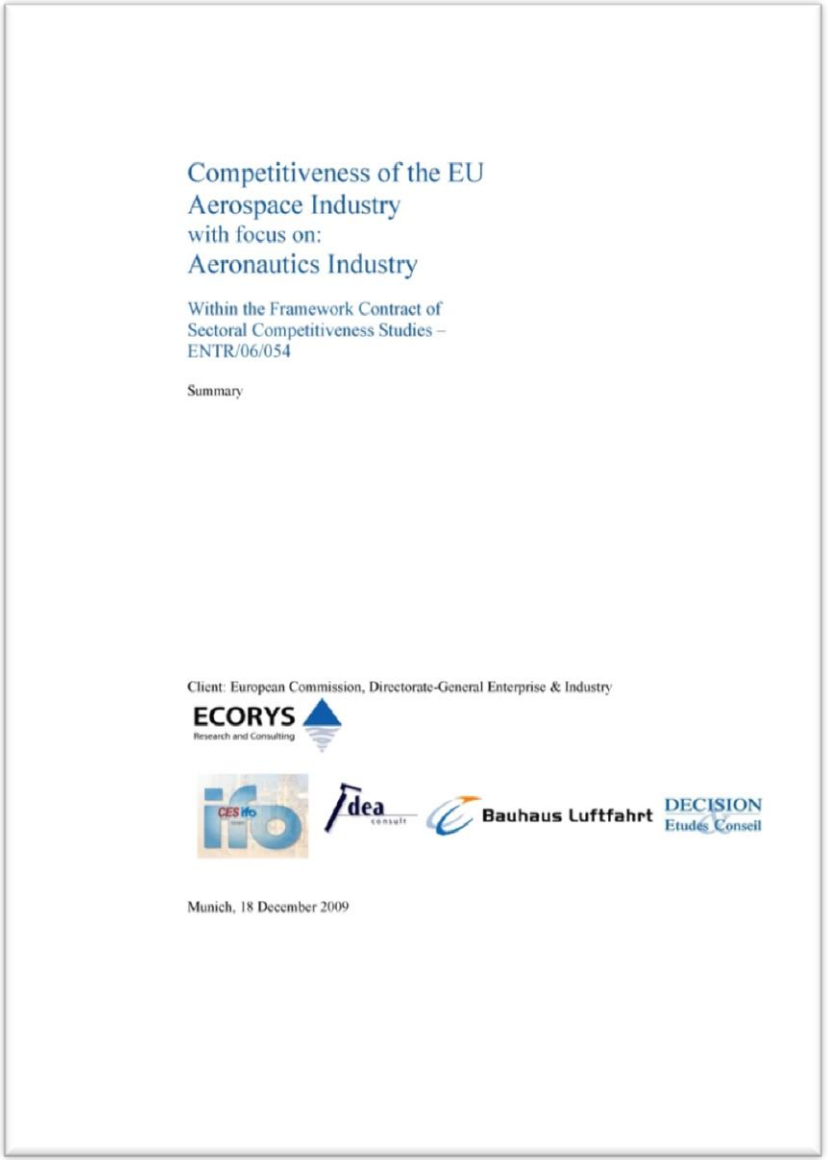
Aeronautics mapping of the European aeronautics industry:

- Leading aeronautics countries in Europe (GARTEUR states)
- Older EU states with smaller aeronautics industry
- Newer EU states with significant capabilities (Czech Republic, Poland, Rumania)
- Newer EU states with smaller aeronautics industry

Sectoral Competitiveness

Competitiveness study for the EC (2009):

- Fewer companies of sufficient size and capability for large risk sharing projects than in the US
- Insufficient coordinated national R&D schemes, even within the Member States
- National interest in local employment and technology lead to non-complementary policies in the aeronautics industry (duplication of activities)



Competitiveness of the EU
Aerospace Industry
with focus on:
Aeronautics Industry

Within the Framework Contract of
Sectoral Competitiveness Studies –
ENTR/06/054

Summary

Client: European Commission, Directorate-General Enterprise & Industry

ECORYS
Research and Consulting

CESifo
idea consult
Bauhaus Luftfahrt
DECISION Etudes & Conseil

Munich, 18 December 2009

ACARE Member States Group survey (2)

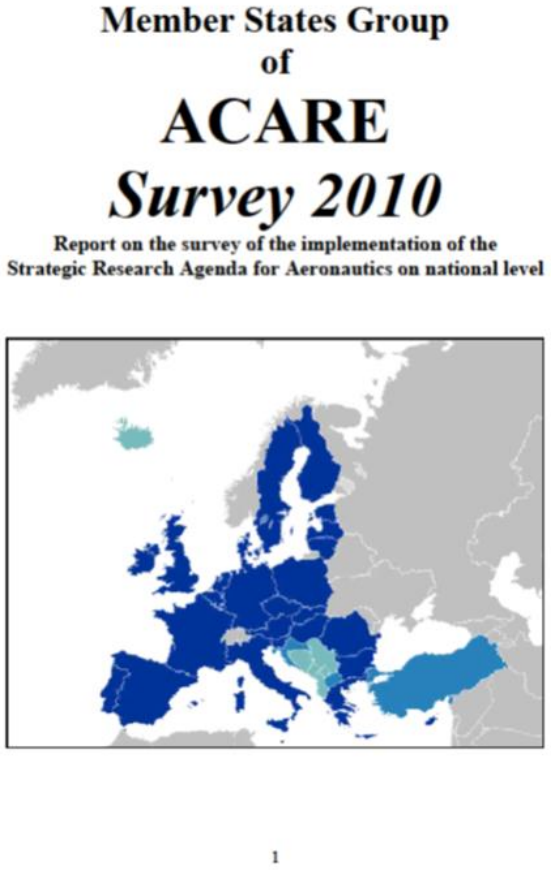
Advisory Council for Aeronautics Research in Europe (ACARE)
ACARE Member States Group (MSG)

Survey in 2010

There are some activities and interests in all Member States

Structural position:

	National level	*European level*
Strategy	**ACARE MSG Survey**	**ACARE SRA**
Programme	**AirTN**	**FP7**



ACARE Member States Group survey (2)

	MEMBER STATES	Austria	Belgium	Bulgaria	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	United Kingdom	Candidate and potential candidate countries	Croatia	Republic of Serbia	EFTA Countries	Switzerland	*Summary*
A1 Flight Physics									X	X	X	X			X					X	X	X	X		X	X						X	*12*
A1.1 Aerodynamics				X		X			X	X	X	X	X		X		X			X		X	X		X	X	X	X		X	X	X	*19*
A2 Aero-structures		X							X	X	X	X	X	X	X					X	X	X	X			X						X	*14*
A2.1 Basic Materials		X	X			X		X		X	X	X			X	X	X			X			X	X	X	X	X			X	X	X	*19*
A2.2 Material Processing		X	X			X				X	X	X			X	X				X				X	X	X	X	X			X		*16*
A2.3 Structure		X	X	X		X			X	X	X	X			X	X	X			X				X	X	X	X	X		X	X	X	*20*
A3 Propulsion		X	X			X		X		X	X	X			X					X	X	X	X	X		X		X		X		X	*17*
A3.1 Environment Aspects		X		X	X	X		X		X	X	X			X	X				X		X	X			X	X	X					*16*
A4 Avionics		X						X		X	X	X	X		X					X	X	X				X	X						*12*
A5 On-board Systems & Equipment		X	X			X				X	X			X	X		X			X	X					X		X			X		*13*
A5.1 Mechanical Systems		X			X					X	X				X					X					X	X	X	X			X		*11*
A5.2 Electrical Systems		X	X	X						X	X		X	X	X	X	X			X					X	X	X	X			X	X	*17*
A5.3 Cabin Layout		X				X			X	X	X		X	X	X					X						X						X	*11*
A6 Flight Mechanics				X					X	X	X	X			X					X	X	X	X		X	X				X	X	X	*15*
A7 Integrated Design & Validation		X								X	X	X		X	X					X	X		X		X	X					X	X	*13*
A7.1 Collaborative Working		X		X						X	X	X			X	X	X			X			X		X	X	X	X					*14*
A7.2 Computing		X	X		X					X	X	X		X	X					X		X	X	X	X	X		X		X		X	*17*
A7.3 Simulation		X	X	X		X			X	X	X	X	X	X	X	X				X		X	X	X	X	X		X		X	X	X	*22*
A8 Air Traffic Management		X						X		X	X	X	X	X	X					X	X		X	X		X	X			X	X		*16*
A8.1 Communications		X	X			X		X		X	X	X	X	X	X	X	X			X			X	X	X	X		X				X	*19*
A9 Airports		X								X	X	X	X		X					X	X			X		X					X		*11*
A9.1 Airport Equipment		X			X				X	X	X		X		X					X				X		X						X	*11*
A10 Human Factors		X		X				X	X	X	X		X	X	X					X	X		X	X		X	X						*15*
A11 Innovative Concepts & Scenarios		X						X		X	X	X	X		X					X	X		X	X		X	X			X			*14*
A12 Others		X								X	X	X			X	X				X	X					X							*9*
A12.1 Maintenance		X		X	X	X		X	X	X	X	X	X	X	X	X	X			X		X			X	X		X		X	X	X	*22*
A12.2 Safety		X	X	X	X	X		X		X	X	X	X		X		X			X				X	X	X		X			X	X	*19*
A12.3 Image Treatment		X	X							X	X	X			X	X				X			X		X	X							*11*
A12.4 Other Technologies												X			X							X		X									*4*
Summary		*25*	*11*	*10*	*6*	*12*	*0*	*10*	*10*	*28*	*28*	*23*	*14*	*11*	*29*	*11*	*9*	*0*	*0*	*28*	*12*	*11*	*16*	*14*	*16*	*28*	*12*	*14*		*9*	*15*		*17*	429

Geographical distribution of aeronautics

	Production value		Value-added		Employment	
Country	Share of total EU27, 2006	Average annual growth	Share of total EU27, 2006	Average annual growth	Share of total EU27, 2006	Average annual growth
EU27	100%	0.7%	100%	-1.2%	100%	0.7%
FR	42.8%	2.4%	29.3%	4.0%	25.6%	2.1%
UK	23.1%	-2.2%	31.3%	-4.3%	25.7%	-2.4%
DE	17.4%	0.4%	20.4%	-1.3%	19.9%	0.7%
IT	6.8%	2.6%	7.8%	1.4%	8.7%	0.9%
ES	4.2%	17.8%	3.5%	11.1%	4.1%	8.2%
SE	1.8%	4.3%	2.0%	-1.4%	2.7%	1.3%
BE	1.1%	-5.0%	1.5%	-7.3%	1.6%	-3.9%
NL	0.9%	4.1%	1.1%	2.0%	1.3%	1.3%
PL	0.4%	8.9%	0.7%	1.0%	3.8%	-0.5%
IE[20]	0.4%	n.a	0.5%	n.a	0.9%	n.a
GR	0.3%	n.a	0.6%	n.a	1.0%	n.a
CZ	0.3%	4.9%	0.3%	-5.0%	2.0%	-1.2%
RO	0.2%	0.8%	0.3%	-5.6%	1.6%	-8.0%
DK	0.2%	8.6%	0.3%	12.8%	0.3%	12.9%
AT	0.1%	31.6%	0.2%	27.7%	0.2%	12.7%
HU	0.1%	15.8%	0.1%	18.9%	0.3%	-2.3%
FI	0.1%	4.8%	0.1%	2.6%	0.2%	-0.9%
LT	0.0%	12.2%	0.0%	2.5%	0.1%	7.2%
SI	0.0%	10.2%	0.0%	24.4%	0.0%	n.a

Source: Eurostat, values in constant 2006 prices with PPI deflator. ENTR/06/054

Relatively week European cohesion and high level of disparity

Location of UK companies:	Turnover	Orders	Employment
	£ billion		Persons
UK	20.57	35.04	100.740
In rest of Europe	0.97	3.71	4.560
USA	6.44	6.72	40.091
In rest of the world	0.71	0.71	7.285

The Global British Aerospace Industry 2008

3. European Instruments for Research, Development and Innovation in Aeronautics

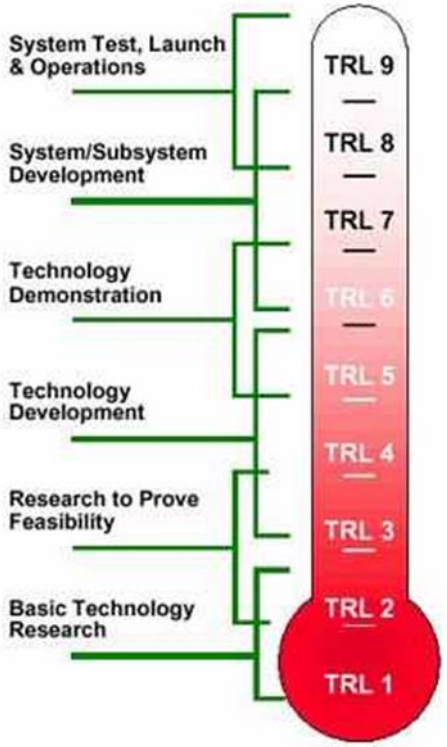
Aeronautics in H2020

In general:

- Directly Commission managed tool
- Projects are usually more research than development oriented and they are focusing a lower TRL level
- Within the “Smart, Green and Integrated Transport” challenge
- More than 6 billion EUR funding in the recent period

Objectives:

- Resource efficient transport that respects the environment
- Better mobility, less congestion, more safety and security
- Global leadership for the European transport industry
- A socio-economic and behavioural research and forward looking activities for policy making



Joint Technology Initiatives (JTI) in the field of aviation

Two “mega-projects”:

- Clean Sky 2 with vehicle focus

Clean Sky
Innovation takes off

- SESAR 2 with transport focus

SESAR
JOINT UNDERTAKING

In general:

- Public-private partnerships
- Large projects with a budget of approx. 1 – 2 billion EUR
- To reach a certain strategic goal in the domain
- Both JTIs focus mainly the TRL in the middle range

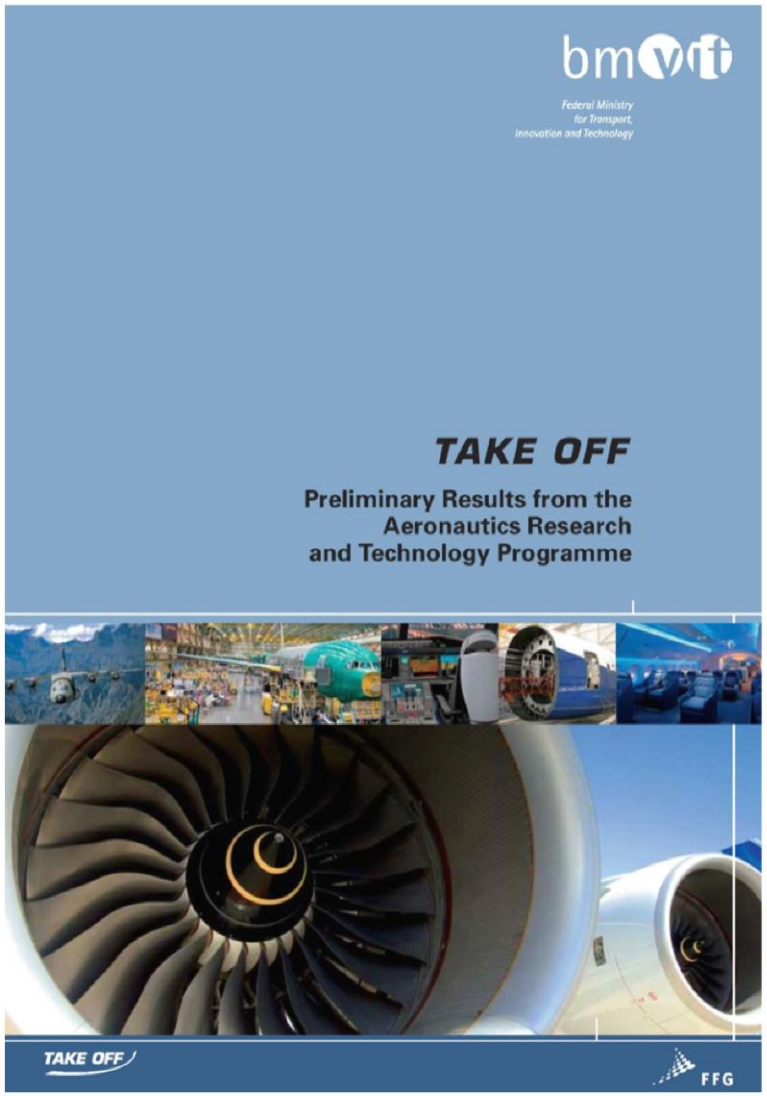
Competition in the H2020 arena in aeronautics

- Competition has heavily increased in the last years
- It is even higher in Collaborative research than in JTIs (more specific projects)
- For newcomers it is easier to be involved in Collaborative Research

National programs in Europe

Some Member States have thematic development programmes from the state budget. They are:

- Either national or regional programs
- Budget and range of activities is greater in larger states
- Some has own aeronautics programme, e.g. Austrian Take Off and the German LUFO



Bilateral calls in aeronautics

Inter-member states programmes:

- Support to create research and development project by including participants from two or more member states
- The ERA-NET program helps the creation of these projects

AirTN projects:

- The AirTN projects support the joint calls in the field of aeronautics.
- Bilateral projects were built with the participation of organisations from: Austria, Germany, Ireland, Spain and Sweden.

ERA-NET type of cooperation in aeronautics

In general:

- Creation of joint projects is much harder with generic programmes than with thematic ones (e.g. The LUFO – TAKE-OFF cooperation is easier)
- More development projects (higher TRL level) with strong industrial involvement: added value to H2020 instruments.
- In aeronautics transnational cooperation is quite often a must.

ESIF and H2020 synergy related tools and issues

More job on Member States when executing the synergies

To what extent the recommendations are easy to implement in aeronautics?

Problems:

- The possible combination of ESIF and H2020 projects:

  - already too much competition in H2020, so combination makes it even more difficult.

- The funding of those H2020 projects by ESIF which are evaluated and ranked positively in H2020 but cannot start due to the lack of funding:

  - ESIF and H2020 projects are different. H2020 programme Collaborative Research projects are research projects which target a lower TRL level.

  - How to substitute a European consortium with a national one?

Member States Commitment in aeronautics

To what extent Member States are ready to follow the Commission's suggestions?

Easier to implement:

- Information sharing,
- Networking which are easier to implement and to some extent these channels are working recently as well.

More problematic:

- The alignment of the rules with H2020: each Member State has its own rule from previous Operational Programmes

Aeronautics and synergy tools

- The overlap is low between the main users of ESIF and H2020.
- The H2020 projects and especially the two JTIs (Clean Sky and SESAR) are dominated by the major industrial players from the GARTEUR nations
- The main likely users of ESIF funds are located in the newer Member States: only smaller players in the H2020 arena.
- Newer Member States speciality: more successful involvement in H2020 by universities and research organisation than industry.

The low level of overlap is serious boundary to establish synergy effects among the two programmes in the field of aeronautics.

4. **Smart Specialisation and the Regional Funds related possibilities**

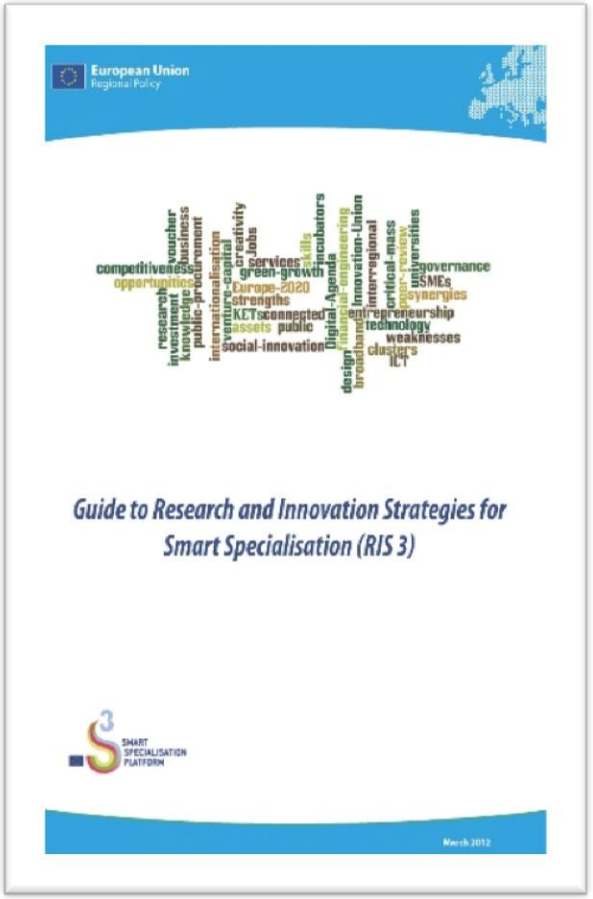
RIS3 and Aeronautics

Many states with aeronautics as a RIS3 priority: less possibility for ESIF funds

Many states with significant ESIF budget: not choosing aeronautics as a RIS3 priority

For the development of the most technology intensive industries (such as aeronautics, defence, space): a need for a long term coherent and complex state led program with the active involvement of the state in terms of planning, financing, execution and control.

Examples from Europe (earlier) and from Brazil, China, Mexico and Russia (recent)



The RIS3 mechanism can support aeronautics development in Europe but alone it is not enough strong instrument to achieve a real breakthrough.

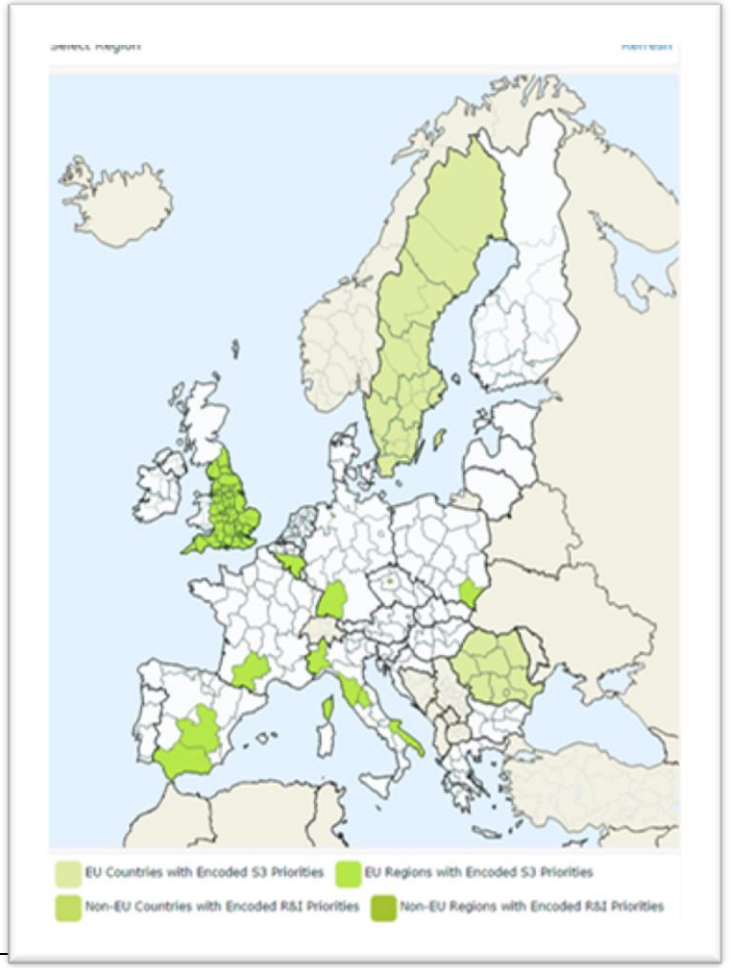
Specialisation on aeronautics

The European Smart Specialisation Platform: the information portal of the Commission on RIS3 related documents, process

The process is yet undergoing
Aeronautics was chosen by:

- The GARTEUR states
- Three newer Member States with significant industry (Czech Republic, Poland and Rumania)
- Belgium and Malta.

Not only priority concerns as an integral supply industry for the manufacturing industry and also the ICT sector can supply aeronautics as well.



List of States choosing aeronautics in RIS3

Important note:

- Classification items, such as: „Research and Innovation Capabilities" and Business Areas and Target Market" can also be relevant

- Austrian example:
  - Manufacturing industry
  - ICT
  - Smart green and integrated transport systems

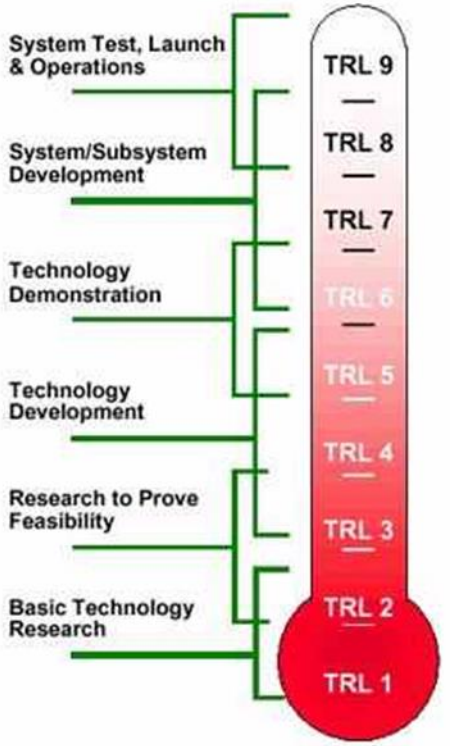
Country	Region
Belgium	Région Wallonne
Czech Republic	Praha
France	Corse
France	Midi-Pyrénées
Germany	Baden-Württemberg
Germany	Bremen
Italy	Lombardia
Italy	Piemonte
Italy	Puglia
Italy	Umbria
Malta	Malta
Poland	Podkarpackie
Romania	Romania
Spain	Andalucía
Spain	Castilla-La Mancha
Sweden	Sweden
United Kingdom	England

Regions in Europe

Most of the budget of the new period (2014 – 2020) goes to the newer Member States (joined the EU since 2004.)

Operational programmes

- Different operational programmes applicable to one or several regions
- Carried out usually by calls for proposals
- Some of the proposals are for the public sector only and some for the private companies and sometimes for both
- There are continuous calls and calls with a fixed deadline
- The total budget available, the budget limits for one project and the conditions for application are set
- In most cases there are some general industrial related call
- Seldom dedicated to aeronautics
- Projects are generally more market oriented: higher target readiness range (TRL)



5. **A way towards cooperation**

Why more European countries with a more developed aeronautics industry is needed?

- Aeronautics industry is focused in a few Member States (largest industrial states).
- Aeronautics (along with the space and defence industry) has a very strong spill-over effect.

To have a more aeronautics states is beneficial:

- To contribute to the overall regional development goals to have a more equally developed Europe
- The stronger Europe is in aeronautical capabilities the better its position in the global competition

Advices for developing European aeronautics regions

- Should compete first of all with aeronautics states from other parts of the world.
- Should try to focus on fields which are additional to the existing European know-how and capacities.

How to reach a more cooperative level playing field in aeronautics in Europe? (1)

Strategy level

What to develop and where?

Find those niche areas which serves:

- The interest of the certain state
- The overall European aeronautics industry

Frameworks should be flexible:

- To enable States to make a strategic decision later and to adopt easily to changes from the external factors.

Thematic focus is important as within a general programme it is much harder to divert industries towards a required goal.

How to reach a more cooperative level playing field in aeronautics in Europe? (2)

Operational level

How to help the development? What are the instruments the European Commission and Governments can support this process?

- A national aeronautics programme should be created.
- Financing can be from ESIF budget and/or from state budget.

Those states who have a small or basically no aeronautics industry at the moment but they plan to have one: should follow a more integrated approach.

Applicable RIS3 methods:

- Transition
- Diversification
- Radical foundation of a new domain (more applicable)

Radical foundation of an aeronautics industry

- The best is to use both ESIF and state funding.
- ESIF cannot finance everything, especially not from scratch!
- Dedicated thematic calls are important as otherwise the yet bigger sectors would consume all or nearly all of the budget.

The need for cooperation in development projects

AirTN type of activities:

- Bilateral calls among countries are needed
- Complementary industries should be mapped
- Establish country pairs in certain domains

ERA-NET related co-operations, such as the AirTN joint calls therefore can be a vital second step for those states who are starting to develop their aeronautics industry.

Role of H2020

A clear role specification between H2020 and ESIF.

- H2020 to support research (lower TRL) in those areas where a Europe wide cooperation is needed.
- ESIF and national programmes/funding should carry the research further to higher TRL levels in Member States.

The priority for smaller Member States when participating in H2020: to learn and get the know-how.

Financing the own development programmes should be maintained either from ESIF and/or from own state/regional sources. The Commission should also recognise and disseminate this towards Member States.

Best practice for Smart Specialisation

Smart Specialisation in England

- Eleven sector strategies with industry
- **Aeronautics focus in all English regions**
- Leadership Councils: Aerospace Growth Partnership
- Aerospace Technology Institute: 2 billion joint funding
- government and industry in 2013 – 2020
- focuses on those areas where the UK has particular strengths: high-value, highly complex areas of modern aircraft:
  - wings,
  - engines,
  - aero structures
  - advanced systems.
- Advisory Hub creation to establish institutional arrangements to build coordination and synergies, better coordination between different European Funds, e.g. ESIF and H2020.
- Local Enterprise Partnerships (LEPs), each LEP has received a notional allocation of ESIF for the period 2014-2020

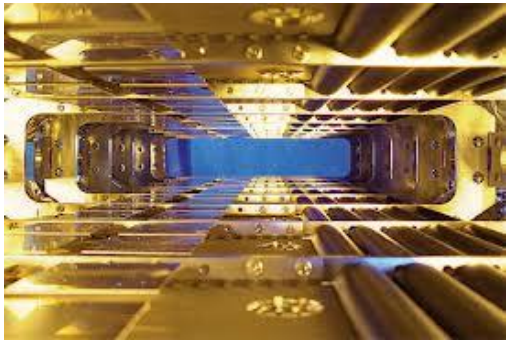
Best practice for national programme

Austria

- Revenues increase over the last two decades from € 30 million to more than € 620 million.
- Austria's aeronautics supply industry has had success in specialised niche areas
- Supplied to markets all over the world, with an export ratio of nearly 100%.
- Aeronautics research and technology programme Take Off.
- Also active in the AirTN joint calls following the needs from aeronautics companies in the state.

The use of ESIF for infrastructure development

- ESIF can also be used for developing research infrastructure
- Austrian examples:
  - Graz
  - Vienna



Recommendation – Optimising the instrument mix

- H2020 Collaborative projects to learn and get the know-how
- Smart Specialisation in aeronautics or in connected categories (e.g. manufacturing industry)
- National money for basic developments and for those areas where European budget is not accessible
- ESIF money to finance a significant part of the development projects of the aeronautics industrial companies
- AirTN related co-operations in areas where for the development foreign partners are needed and ESIF can also support the cooperation of states
- Fostering JTI participation when a certain level of development is reached at an applicable sub-area

Recommendation for smaller and possible new players

Why to use RIS3 and how to use ESIF?

Newer Member States with significant aeronautics industry (CZ, PL, RO):

- Regional RIS3 aeronautics focus
- Use ESIF Modernisation and growth

Member States without a larger aeronautics strategy but potentials in the area (e.g. Hungary, Slovakia)

- Diversification from other industries (e.g. automotive),
- Use ESIF for diversification related developments

Member States without diversification and modernisation possibilities but having interest in developing aeronautics:

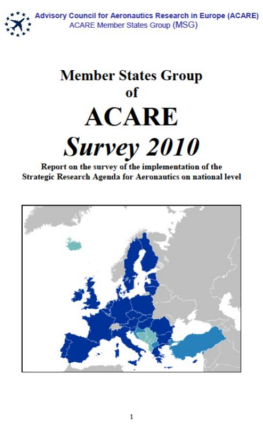
- Strong government support before the possible use of ESIF
- Or focus on „auxiliary" industries, e.g. ICT

Advice to help decision making

Lack of coherent approach on the aeronautics activities at Member States, regional level, relevant studies are getting outdated

- Competiveness study 2009

- The ACARE Member States survey and workshop – 2010



There is a need for a new study and a continuous mechanism to measure aeronautics related activities, use of synergy possibilities in Europe.

Air Transport Net

Thank you for your attention

Roland Guraly

rolandguraly@slotconsulting.hu