International Cooperation in EU Aeronautics Research

FP7: The 7th EU Research Framework Programme

EUROPEAN COMMISSION
Liam Breslin DG Research Aeronautics
AirTN – London – 13th March 2008

International Cooperation in EU FP7 Aeronautics Research

Contents

WHAT is ?

- **FP7** Intro: the 7th EU Research Framework Programme
  Contributors / Structure / Cooperation / Transport / Aeronautics
- **FP7 Aeronautics:** Vision / Activities / Structure & Schemes
- **International Cooperation** - Definitions & Classification

WHY ? - Background

FOR WHAT in Aeronautics ? - Drivers / Objectives

WHERE & **HOW** to cooperate? - FP6 examples, 2007 results

WHEN & **HOW** to cooperate? - 2008 call, other, future

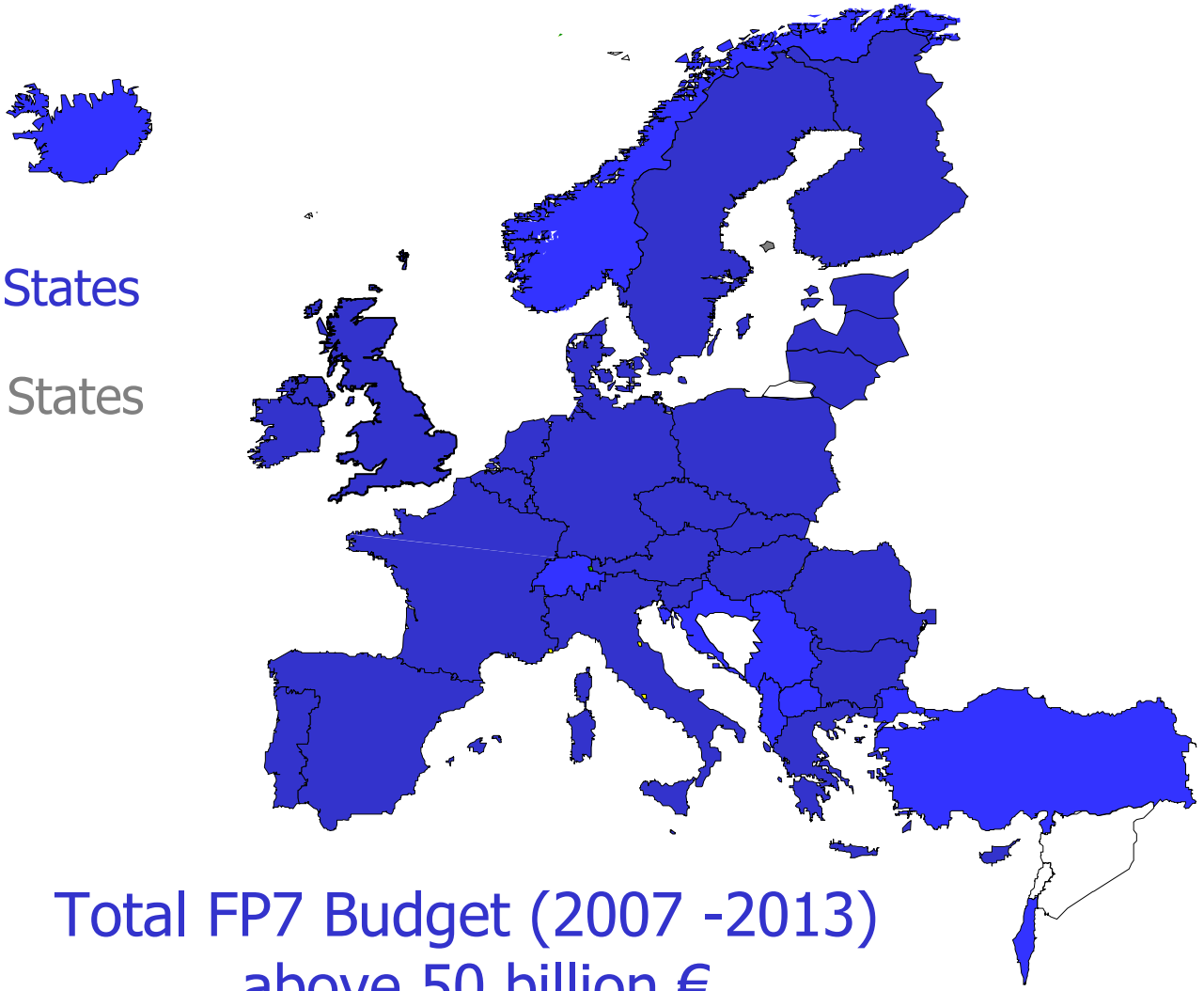
- Evaluation of proposals

HOW MUCH funding ? - Budget & Financing

WHO to contact ? - Directions

SEVENTH FRAMEWORK PROGRAMME

States contributing to FP7
- 7th EU Research Framework Programme -



- 27 EU Member States
- FP7 Associated States
  - Israel
  - Norway
  - Switzerland
  - Turkey
  - Iceland
  - Croatia
  - Serbia
  - Albania
  - Others TBC

Total FP7 Budget (2007 -2013)
above 50 billion €

European Union Research Policy : FP7= 7th Research Framework Programme

Four Specific Programmes 2007 -2013

- **Cooperation** 32 413 million €

  Support will be given to the **whole range of research** activities carried out in **trans-national** cooperation

- **Ideas** 7 510 million €

  An autonomous **European Research Council** will be created to support investigator-driven **"frontier research".**

- **People** 4 750 million €

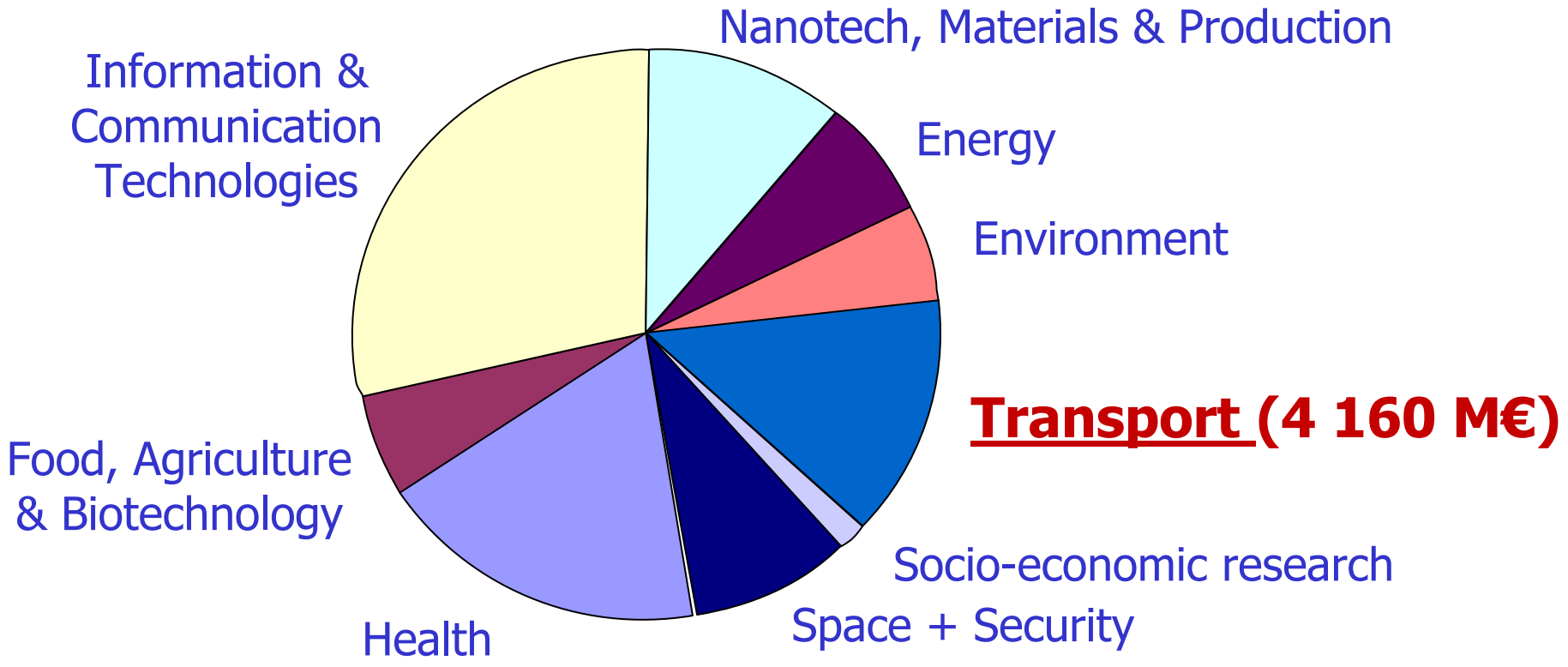
  The activities support **training and career development of researchers**, referred to as **"Marie Curie"** actions,

- **Capacities** 4 097 million €

  Key aspects of European research and innovation capacities will be supported: **research infrastructures**; research for the benefit of **SMEs**; **regional** research driven **clusters.**

FP7 Research Framework Programme / Specific Programme Cooperation

Thematic Priorities & Budget breakdown

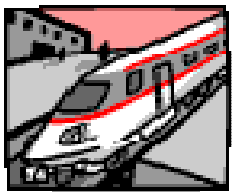


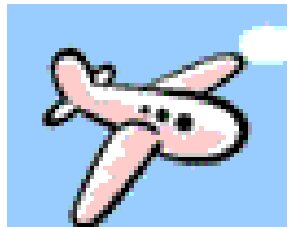
FP7 Research Framework Programme / Cooperation / Transport (incl. Aeronautics)

CIVIL ONLY !

Overall Objectives

- Develop **"safer", "greener"** and **"smarter"** transport systems for:
  - respecting environment and natural resources
  - the benefit of citizens and society
- Secure and develop the **competitiveness** of European industry in the global market



FP7 Cooperation
Transport (incl. Aeronautics)

Budget breakdown (7 years: 2007 - 2013)

Aeronautics & Air Transport (AAT): **2300 M€**

Clean Sky JTI (Joint Tech Initiative) - 800 M€

SESAR JU (Single Eu Sky Research) - 350 M€

Collaborative Research & Support

Sustainable Surface Transport (SST): 1510 M€

Road (including urban)

Rail (including urban)

Waterborne (maritime & inland)

SST integrated approach

Support to EU Navigation Satellite System: 350 M€

(EGNOS & **Galileo**)

- Horizontal actions (TPT)
  (co-modality synergies, impact,...)

DG RESEARCH

DG TREN

SEVENTH FRAMEWORK PROGRAMME

FP7 Aeronautics: ACARE Vision

2000: European Aeronautics
A Vision for 2020

2002: Strategic Research Agenda
Six Challenges for Aeronautics

2005: 2nd Issue - Strategic Research Agenda
Six High Level Target Concepts

Society's needs ***Global leadership***

FP7 Aeronautics - Activities
1. The Greening of Air Transport

Embraces both the **global** issue of **climate change** (CO2, NOx, soot, vapour, particulates) and **local** issues of **noise** and **air quality**

- **Green Aircraft**

Flight Physics,

Aero-structures,

Propulsion,

Systems and Equipment

- **Eco - Production and Maintenance**
- **Green Air Transport Operations**

Flight and Air Traffic Management, Airports

Goals

-50% CO_2
-80% NOx

-50% noise
ie -10 dB

+recycling
--waste

ACARE SRA2
Ultra Green HLTC

FP7 Aeronautics - Activities
2. Increasing Time Efficiency

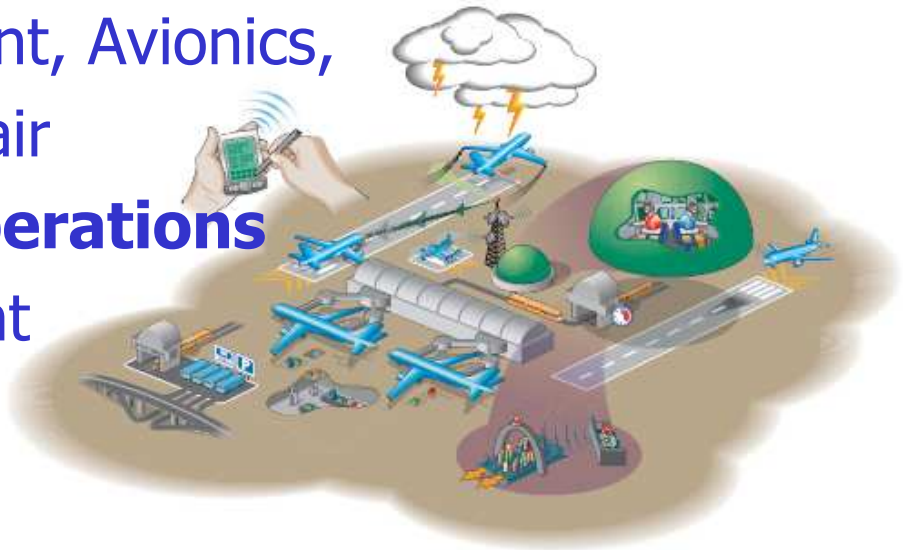
Aims at significant **reduction of journey time** through maintaining flight time within **schedule** and minimising the time that passengers have to spend in **airports** in the travel-related process.

- **Improved Aircraft Throughput**

Systems and Equipment, Avionics, Maintenance and Repair

- **Time Efficient Operations**

Air Traffic Management (only SESAR!), Airports



Goals

x3 a/c movements

99% flights within 15 min schedule

Time in airports:
15 min for short-haul
30 min for long-haul

FP7 Aeronautics - Activities
3. Safety & Customer Satisfaction

Aims at a significant reduction in **accident** rate and at a quantum leap in passengers **choice**

and **schedule flexibility**

- **Aircraft Safety:** Aero-structures, Systems & Equipment, Avionics, Human Factors
- **Operational Safety:** Design systems and tools, Maintenance, ATM (only SESAR!), Airports, Human Factors
- **Passenger Friendly Cabin:** Design, Noise and Vibration, Systems & Equipment
- **Passenger Friendly Operations** Maintenance and Repair, Airports

Goals

-80% accident rate

+ elimination and recovery of human errors

+ mitigation of effects of survivable accidents

+ passenger choice

ACARE SRA2
Highly Customer Oriented HLTC

FP7 Aeronautics - Activities
4. Improving Cost Efficiency

Embraces all the **cost** that arise in the **whole air system design** and **operation**

- **Aircraft Development Cost**:

Design Systems and Tools, Aero-structures, Systems & Equipment, Avionics, Production

- **Aircraft Operational Cost**

Flight Physics, Aero-structures, Propulsion, Systems, Avionics, Maintenance

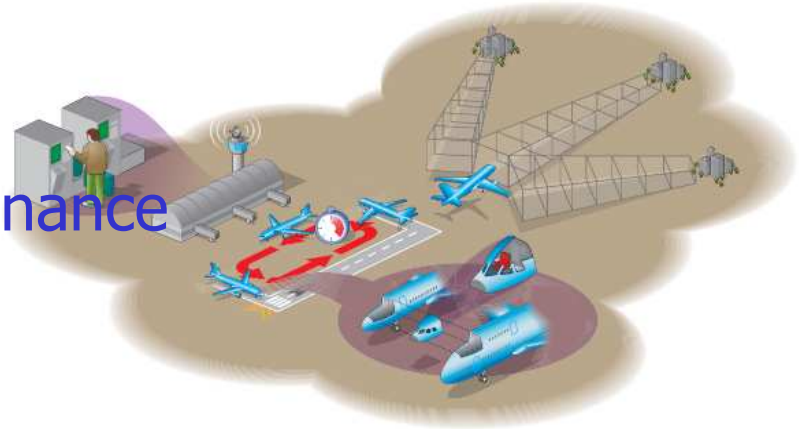
- **ATS Operational Cost:**

Design Systems and Tools, ATM (only SESAR!), Airports, Human Factors

Goals

- 50% aircraft development cost
- 50% time to market
- 50% aircraft operating costs

-- travel charges



ACARE SRA2
Highly Cost Efficient HLTC

FP7 Aeronautics - Activities
5. Protection of Aircraft & Passengers

Aims at making **impossible** that
an **attacking** force of any kind succeeds in
creating **injury, loss, damage or disruption**
either on the travellers or on citizens.

Goals

0% hostile
on-board or
external actions
against aircraft
or
against the air
transport system

- **Aircraft Security**

Aero-structures,

Systems and Equipment,

Avionics

- **Operational Security**

Airports, Human Factors,

Air Traffic Management (only SESAR!)

FP7 Aeronautics - Activities

6. Pioneering Future Air Transport

Beyond 2020 horizon, to explore and pioneer the more **radical, revolutionary** technologies that might configure the **step changes** required in the air transport of the **second half of this century.**

Goals

Setting the foundations of new technology base & new paradigms

- **Breakthroughs & Emerging Technologies**

  Lift, Propulsion,

  Interior space, Life-cycle

- **Step Changes in Air Transport Operation**

  Novel Air Transport vehicles,

  Guidance and control, Airports

FP7 Aeronautics - Activities Structure & Schemes

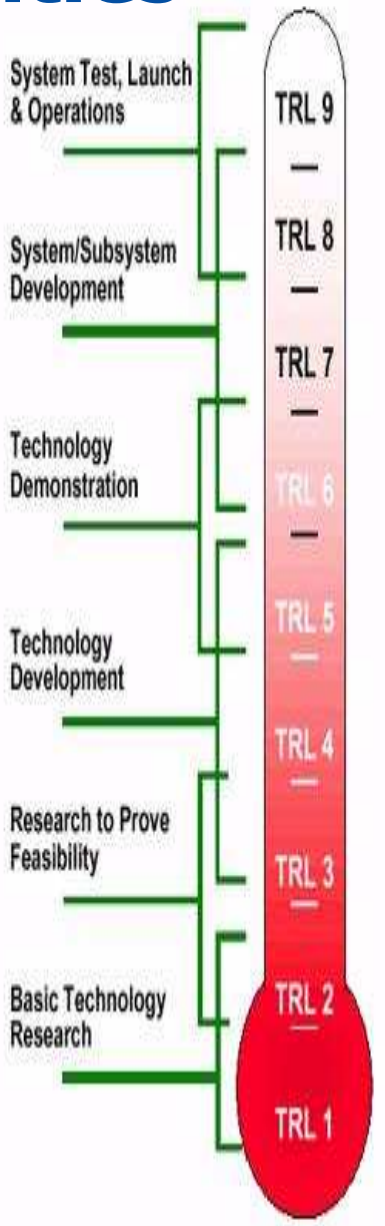
In perspective of Research & Technology acquisition levels prior to product development.

◆◆◆ **Level 3: Combination** of systems, final **proof** in fully **integrated** system of systems
- PPPs: CLEAN SKY JTI, SESAR Joint Undertaking

◆◆ **Level 2: Downstream** R&D, multidisciplinary **integration** & **validation** (eg large test beds)
- Collaborative Projects (CP-IP) 6M€ to 50M€

◆ **Level 1: Upstream** R&D up to validation at component or subsystem level
- Collaborative Projects (CP-FP < 6M€),Coord.Action

Supporting Programme Implementation
- Support Actions (CSA-SA) (and CP-FP)



FP7 Aeronautics - Activities Structure & Schemes

	1. Greening	2. Time Efficiency	3. Customer & Safety	4. Cost Efficiency	5. Protection	6. Pioneering
◆◆◆ **Level 3** RTD up to the highest technology readiness – final proof in systems of systems – **JTI, JU**	---------- "Clean Sky" JTI					
	---------- SESAR JU					
◆◆ **Level 2** Downstream RTD – Multidisciplinary integration &validation at sys level – **CP-IP**	1	2	0	2	1	
◆ **Level 1** Upstream from basic research to validation at component or subsystem level – **CP-FP, CsA**						
Supporting implementation mechanisms & strategies -**cSA(&CP)**						
Structuring Aeronautics Research lasting integration - **NoE**						

Flight Physics · Aero-structures · Propulsion · Systems and Equipment · Avionics · Production · Design systems and tools · Noise and vibration · Maintenance and disposal· Airports · Human factors

FP7 Aeronautics
Joint Technology Initiative
« Clean Sky »

Objectives

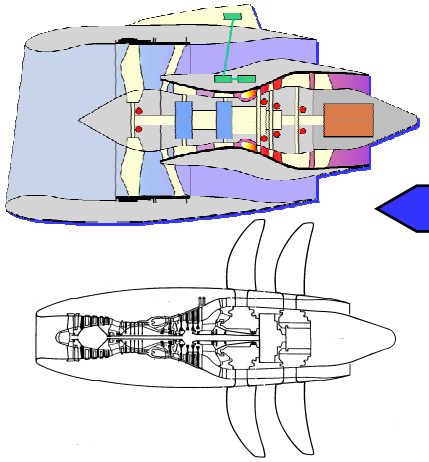
- Provide a step forward in the technology capability of ATS **environmentally-friendly systems**:
  - integration of advanced technologies
  - full scale demonstrators
- Improve on the overall ATS impact on environment:
  - **noise** and **emission** reduction
  - fuel **consumption**
- **Consolidate the European industry** around a project of common European interest

FP7 Aeronautics JTI « Clean Sky »

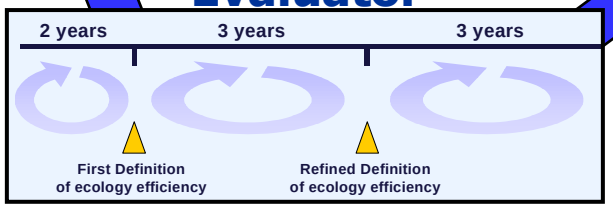
SMART Wing Aircraft

Systems for Green Operation

Green Engines

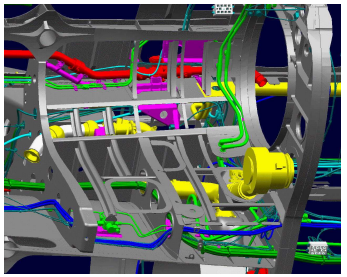


Evaluator



Simulator Platform AC, ATM, AP (flight segment)

Eco-Design

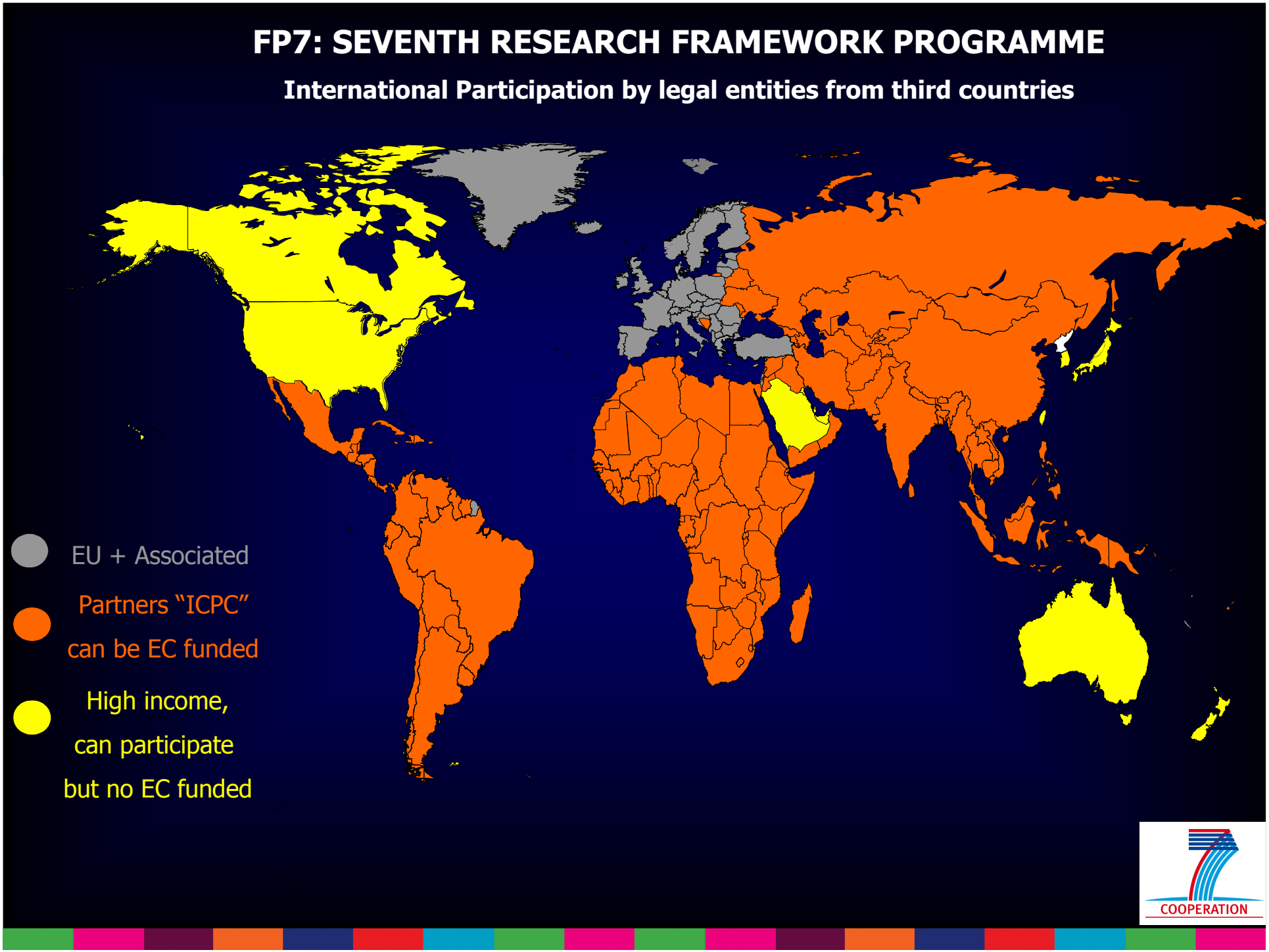


Green Rotorcraft

Regional Air Transport

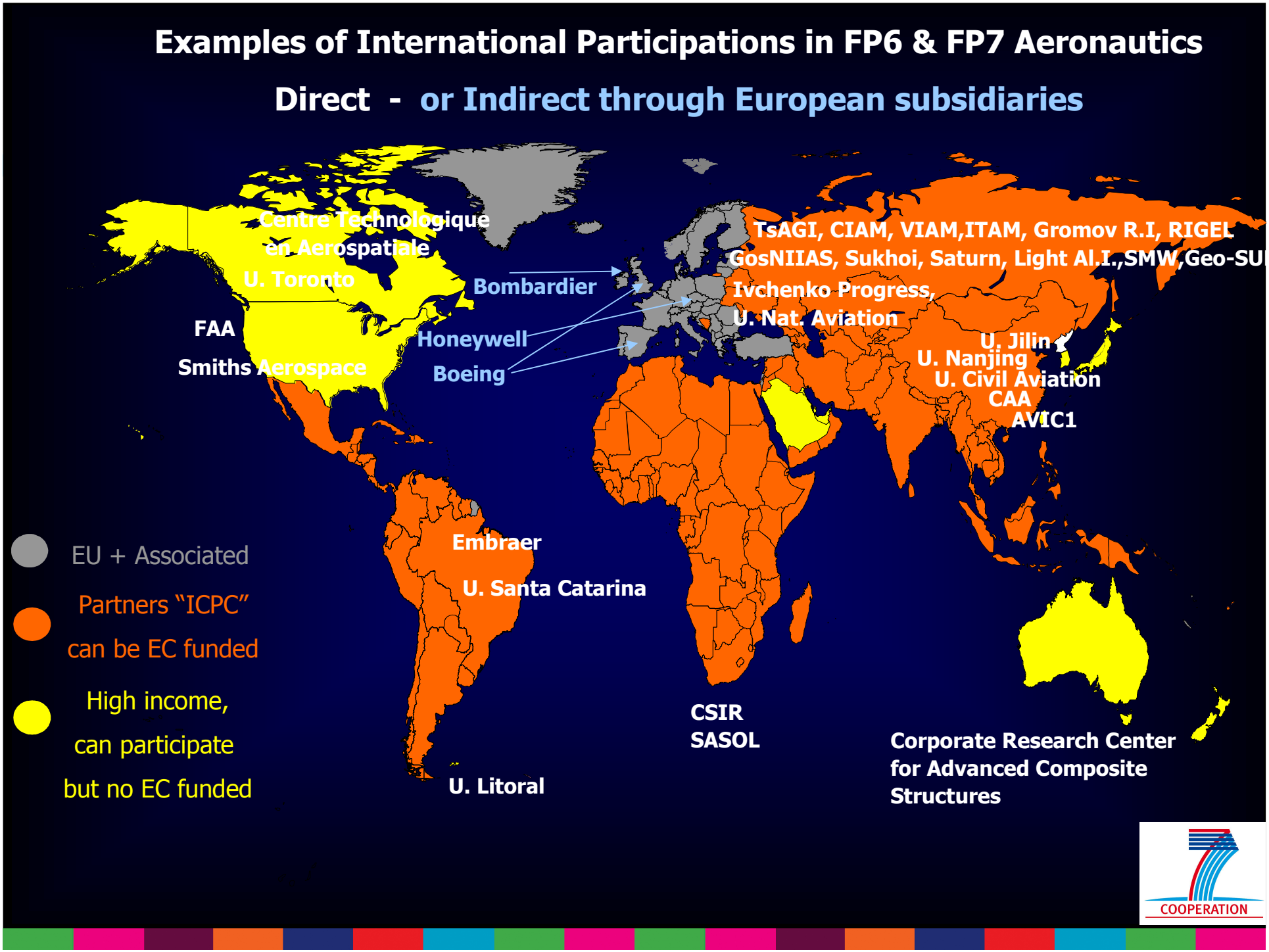
FP7: SEVENTH RESEARCH FRAMEWORK PROGRAMME

International Participation by legal entities from third countries



Examples of International Participations in FP6 & FP7 Aeronautics

Direct - or Indirect through European subsidiaries



International Cooperation in EU FP7 Aeronautics Research

WHAT is "INTERNATIONAL COOPERATION"?:

FP7 Specific Programme Cooperation / Transport / Aeronautics:

Scheme	Minimum conditions
Collaborative projects	**three** legal entities from different **EU Member** or **Associates**
Coordination & **Support** Actions	**one** legal entity

OPEN to Third countries - once minimum conditions met

- **Participation**: any Company, University, Research centre, Organisation or Individual, legally established in any country
- EC **Funding**: only for entities from **EU, Associated States** and possible for **ICPC** – better if with their own **matching fund**

- In general, no EC funding for entities from other third countries

International Cooperation in EU FP7 Aeronautics Research

WHY ? - Background

Globalisation: Aeronautics is enabler and affected

- **Economy** goes global: demand <> offer
  supply chain, competition / partnerships
- **Knowledge** goes global: linked to global competitiveness:
  ability to generate, **access, absorb** and **apply new** knowledge.
- **Challenges** go global: fuel & climate, safety, security
- **Policies** go global: trade, energy, environ't, dev't, …

Diverse long-term interests for EU stakeholders

- Integrators <->Suppliers <-> R&D Centres <-> Universities

Opportunities / Threats

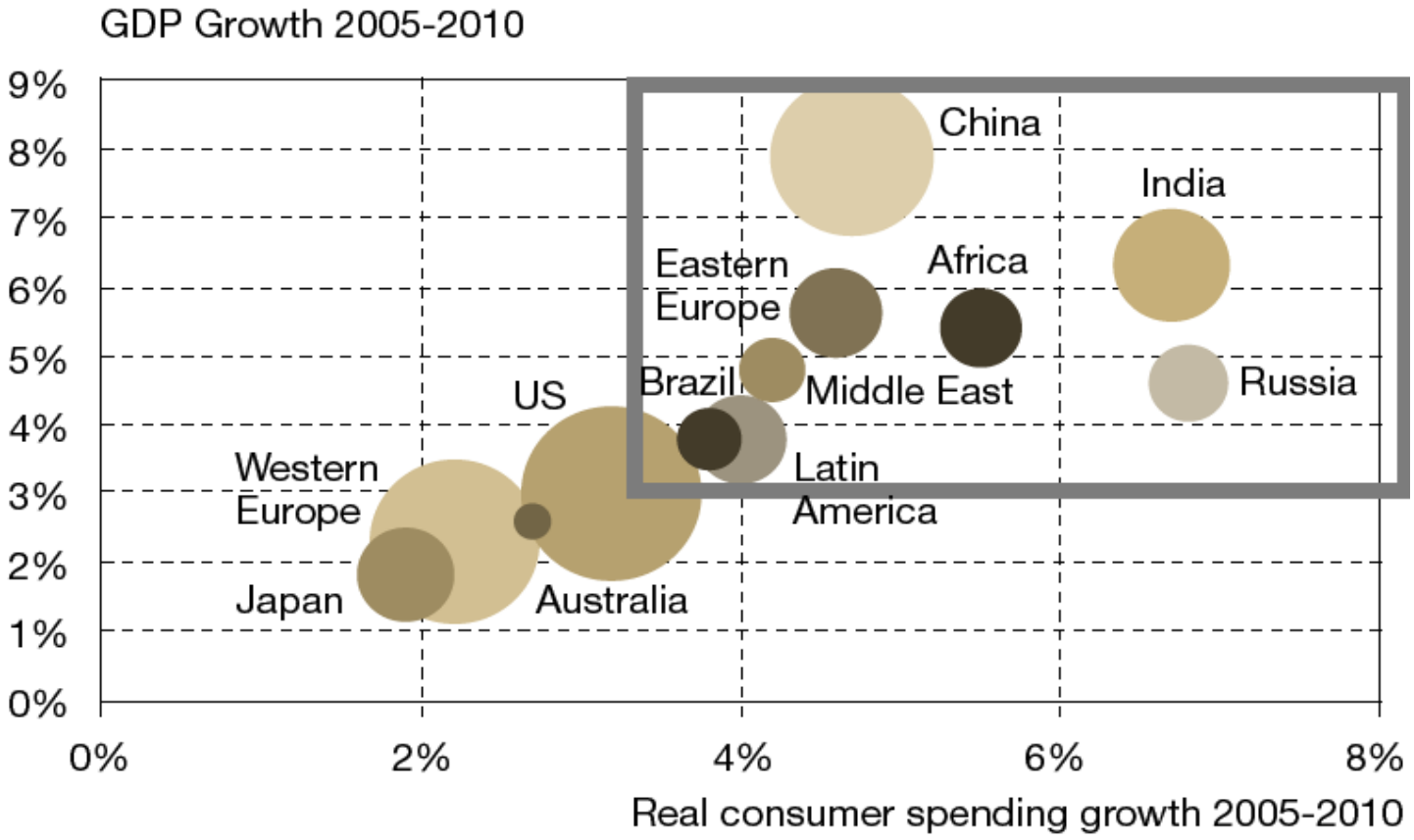
- Look at competitors going global or emerging

International Cooperation in EU FP7 Aeronautics Research

Emerging countries will drive the world economy

Source: Global Insight, Airbus

Bubble size proportional to real Gross Domestic Product (GDP) at Purchasing Power Parity (PPP) in US$ billion in 2010



International Cooperation in EU FP7 Aeronautics Research

FOR WHAT ? – Drivers / Objectives

Market: attraction

- research as a vector for market penetration
- pre-normative research for **standardisation**
- management of global low-cost supply chain

Science & Technology: acquisition

- complementary to current EU knowledge
- mutual benefit

Global issues: tackling:

- needs as **climate change**, security, safety
- systems and infrastructure, **interoperability**
- regional assistance

1. **Greening**
2. Time efficiency
3. Customer & **Safety**
4. Protection
5. Cost efficiency
6. **Pioneering**

SEVENTH FRAMEWORK PROGRAMME

International Cooperation in Aeronautics Research

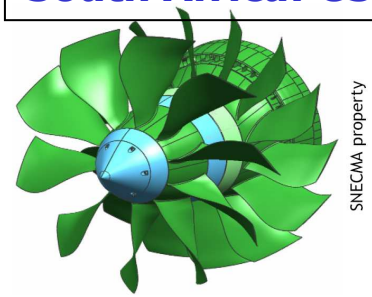
WHERE & HOW to cooperate? FP6 Example: VITAL

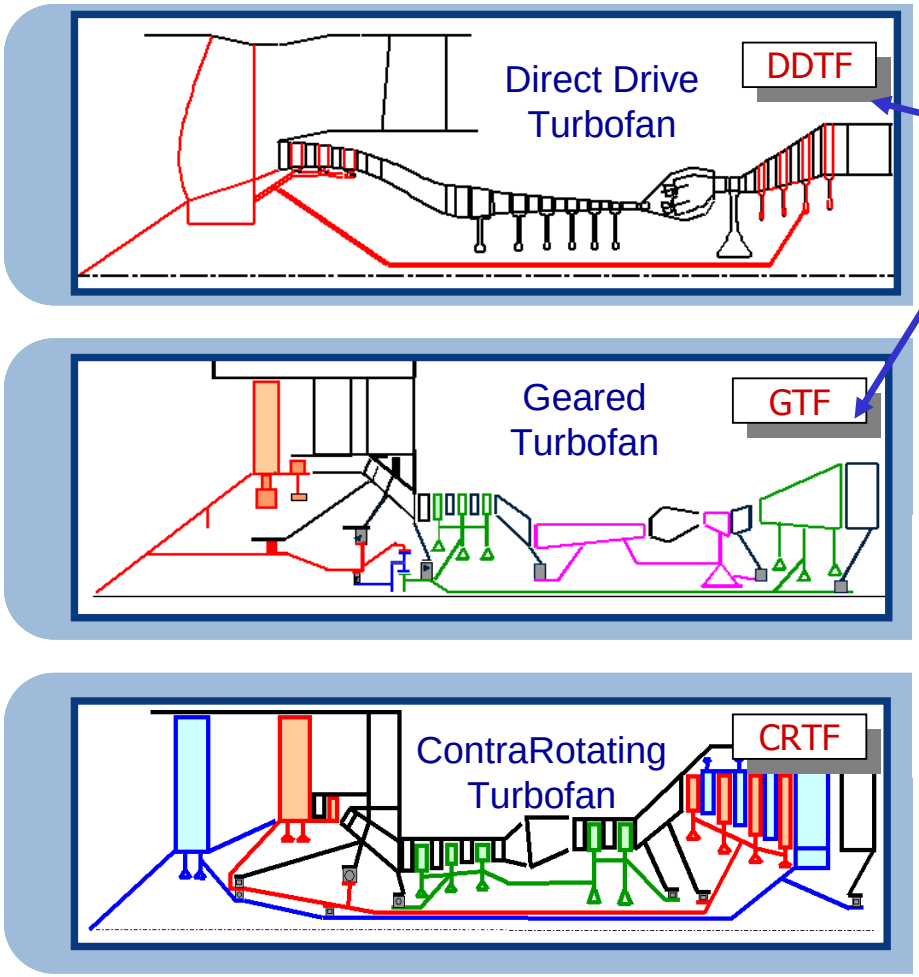
Integrated Project « Environmentally friendly Aeroengine » (2005 – 2008)

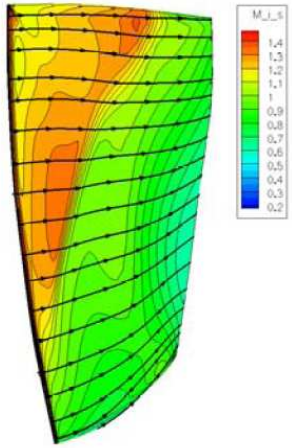
Total Cost: 90M€
EC grant: 50M€

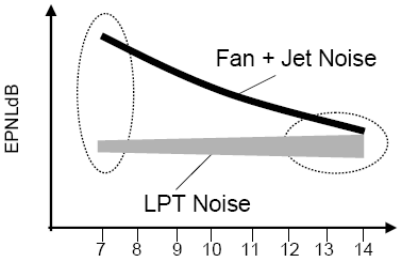
Over 50 Partners eg: SNECMA(F;Coordinator), Rolls-Royce(UK,D),MTU, Volvo,Avio,ITP,… R&D centers,… Universities

Russia: CIAM
South Africa: CSIR









SEVENTH FRAMEWORK PROGRAMME

International Cooperation in EU FP7 Aeronautics Research

WHERE & HOW to cooperate? FP6 Example

Specific **Support Action AEROCHINA**

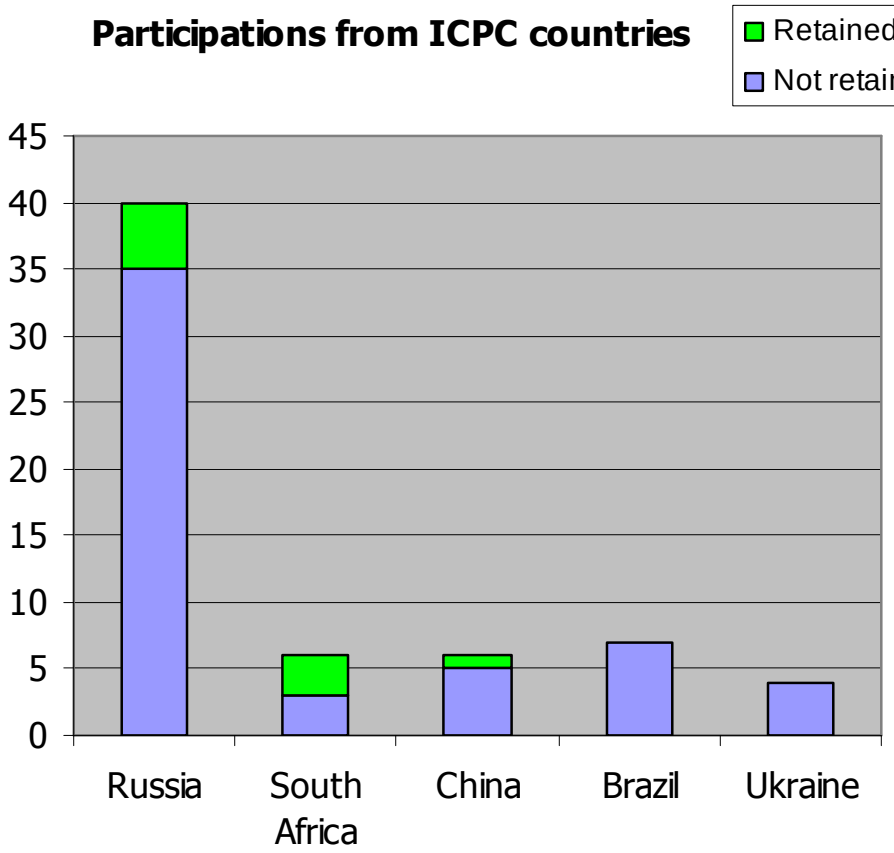
Goal: **Foster future collaboration** between university and research organisations in **aeronautics** numerical modelling in Europe & China.

Method: Collect, store and exchange existing academic knowledge in Europe and China through seminars and workshops.

Consortium: 12 European & 12 Chinese partners

International Cooperation in EU FP7 Aeronautics Research

WHERE & HOW to cooperate? Call 2007 results



Total ICPC participations: 65

Retained : 9

5.52 M€ EC grant

eg TSAGI (Russia) in Level 2 projects

Other Third countries: 8

(eg Canada, Australia, US)

Retained: **1**

Alternative Fuels project ALFA-BIRD eg U.Toronto (Canada) & SASOL (South Africa)

International Cooperation in Aeronautics Research

WHERE & HOW to cooperate? Call 2008

International Cooperation **embedded** (opening to all).

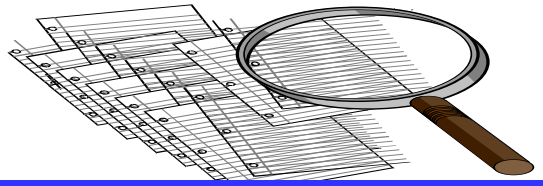
Emphasis on issues of global air transport eg **Safety**, **Environment** + Pioneering

+ where mutual benefit opportunities as identified in **joint workshops**:

◆ **Support Action** to explore & stimulate further International Cooperation e.g. Asia , Latin America (Brazil, Argentina, …),… through information events, networking, studies and workshops.

◆ Russia, Ukraine, EECA - flight physics - propulsion - adv. Materials - avionics	◆ China - multi-disciplinary design, simulation and validation, - computational fluid dynamics (CFDs).
◆ South Africa - adv. materials & manufacturing - adv. electronics - software	◆ India - adv. materials - sensors - software

FP7 Cooperation Aeronautics Research Proposals Selection

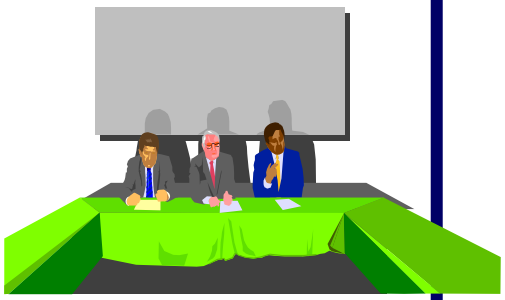


CALL FOR PROPOSALS

- Official Journal
- CORDIS
- NCPs

Eligibility Check: Commission

EVALUATION: Peer review principles/ independent experts



MARKING AND PRIORITY ORDER OF PROPOSALS

Panel (optional)

INFORMATION

Programme Committee

FUNDING SCENARIO(s)

Commission

SIGNATURE

International Cooperation in EU FP7 Aeronautics Research

HOW to cooperate? Other means

FP7 "COOPERATION" – Coordination of Research - Building upon **AirTN**

FP7-ERA-NET – 2008-RTD Call open till 12 August 2008

Now including explicit activity on opportunities in Aeronautics with Third Countries

FP7 "PEOPLE" – International dimension

→ International **Incoming** Fellowships: For attracting experienced researchers

← International **Outgoing** Fellowships: 1-2 years at non-EU partner organisation AND 1 year **mandatory** at EU 'return host organisation'

→ International **Reintegration** Grants: For regaining European researchers

←→ International Staff **Exchange** Scheme, for short periods (S&T agreement)

FP7 "CAPACITIES" - International cooperation

- Coordination of programmes through "INCONets" incl. thematic **workshops**
- Bi-regional S&T policy support through high-level agreements, best practice, forums, workshops, …
- FP7 contact points in third countries (~**NCPs**)

International Cooperation in EU FP7 Aeronautics Research

WHEN & HOW to cooperate? Potential calls

< 2007	2008	(2009)	**2010**	2011	2012	2013

... SUPPORT ACTIONS .....

... OPENING .....

... ENCOURAGED AREAS .....

SYNCRONISED CALLS .....

More focused & balanced

COORDINATED CALLS .....

- Co-participation
- Co-funding = each-side-pays-its-nationals
- Co-evaluation (peer review)

Pre-agreement - Intellectual Property Rights

RECIPROCITY

... *ASSOCIATE TO FP7 ?*

***eg WG EU-RU**

3rd Countries experts as evaluators: *https://cordis.europa.eu/emmfp7/*

International Cooperation in EU FP7 Aeronautics Research

HOW MUCH ? – Budget & Financing

EC contribution only for EU, Associate and "Partners" ICPC (unless essential for the project)

No quota/limit predefined for ICPC participation

- grant to ICPC in FP6 Aeronautics: < 1.5 % of total
  in FP7 Aero first call: > 2.5% of total

EC contribution rates for ICPC as for EU & Associate **up to**:

- **50%** Demonstration activities; RTD activities except:
- **75%** RTD if Non-profit public/education/research orgs/SMEs:
- 100% Coordination and Support Actions, management, …

- matching funds from emerging economies ICPC welcomed –

Option for ICPC of EC grant in lump-sum.

International Cooperation in EU FP7 Aeronautics Research

WHO to contact ? - Directions

European Commission – DG Research:

- Directorate H "Transport (incl. Aeronautics)":

Aeronautics (H3) Head of Unit: Liam.Breslin@ec.europa.eu

International Cooperation: Pablo.Perez-Illana@ec.europa.eu

➔ FP6 Aeronautics Synopses Books (Coordinators and EC):
http://ec.europa.eu/research/transport/more_info/publications_en.cfm

- InCo infodesk: inco@ec.europa.eu

  InCo Portal: www.cordis.europa.eu/inco/home_en.html

Networks of National Contact Points (NCPs):

- In EU Member States to facilitate INCO activities.
- In Third countries to aid participation in FP7:
  http://cordis.europa.eu/fp7/third-countries_en.html

SEVENTH FRAMEWORK PROGRAMME

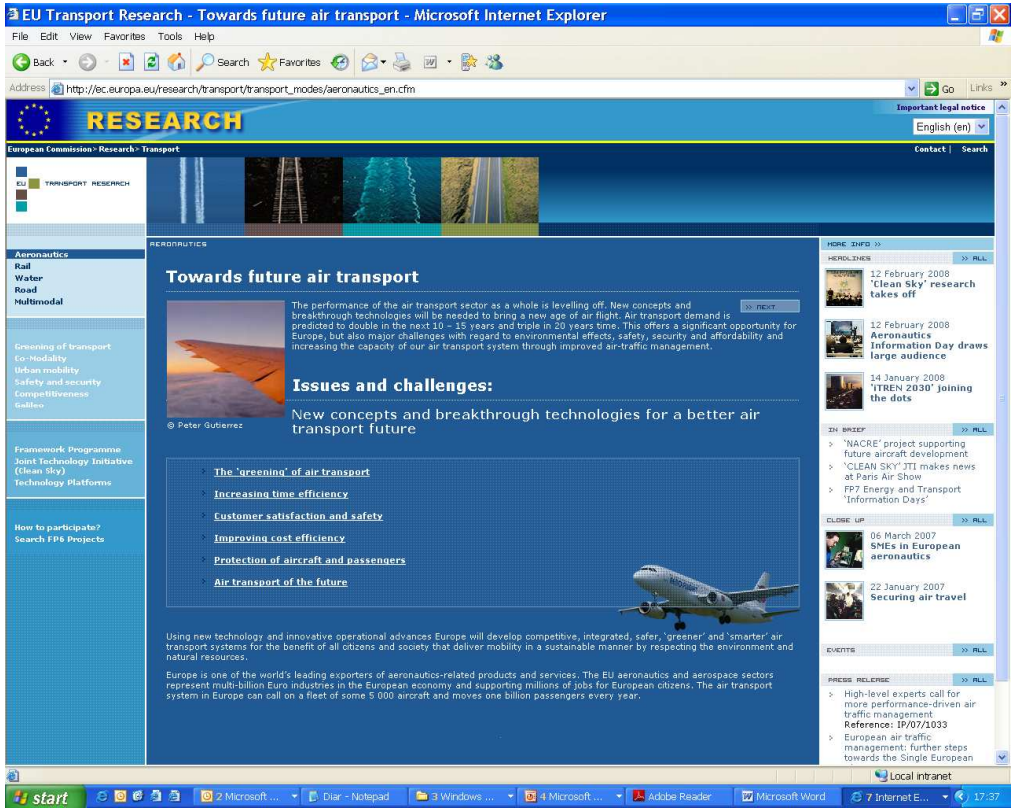
International Cooperation in Aeronautics Research

CONCLUSIONS

- International Cooperation open for **all** topics and countries
- To enhance EU **competences** and tackle **global** issues such as on **Safety**, **Environment** and **Pioneering**
- Some topics **encouraged** in 2nd call for collaboration with **Russia, Ukraine**, **China, South Africa** and **India.**
- A dedicated **Support Action** topic open for exploring further International Cooperation
- **Funding** available for **ICPC** (low, middle income) e.g. **emerging** economies – matching funds are welcomed
- **Future** calls: more **focused & balanced** mechanisms
  - e.g. Synchronised & **Co-ordinated calls**, …
  - more feed-back from EU & International stakeholders expected eg preferred topics & countries, IPR issues,…

EUROPEAN COMMISSION
Community research

Thanks for your attention
& Good collaboration !



Visit our web: http://ec.europa.eu/research/aeronautics

SEVENTH FRAMEWORK PROGRAMME