



European Rotorcraft Forum
Hambourg, September 22nd, 2009



Clean Sky

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ACARE and Clean Sky



Vision 2020 (January 2001)

- To meet Society's needs
- To achieve global leadership for Europe

ACARE

October 2002 : The Strategic Research Agenda (SRA) → 5 Challenges



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October 2004 : The SRA 2 → High level Target Concepts



- 80% cut in NOx emissions
- Halving perceived aircraft noise
- 50% cut in CO2 emissions per pass-Km by drastic fuel consumption reduction
- A green design, manufacturing, maintenance and disposal product life cycle



What is the Clean Sky Joint Technology Initiative ?



Public-Private Partnership between Commission and Industry

- ❖ **Start: 02/2008**
- ❖ **7-year research project on Greening of Aeronautics: 2008-2014**
- ❖ **Total budget 1.6 billion €**
 - ▶ 800 million € from Commission in-cash
 - ▶ 800 million € from industry in-kind
- ❖ **An independent legal entity (“Community Body”), will employ own staff of 18 persons and place the contracts / grant agreements**
- ❖ **In Interim Phase, the Joint Undertaking is run by Commission services; autonomy of the Joint Undertaking foreseen for mid-October 2009**

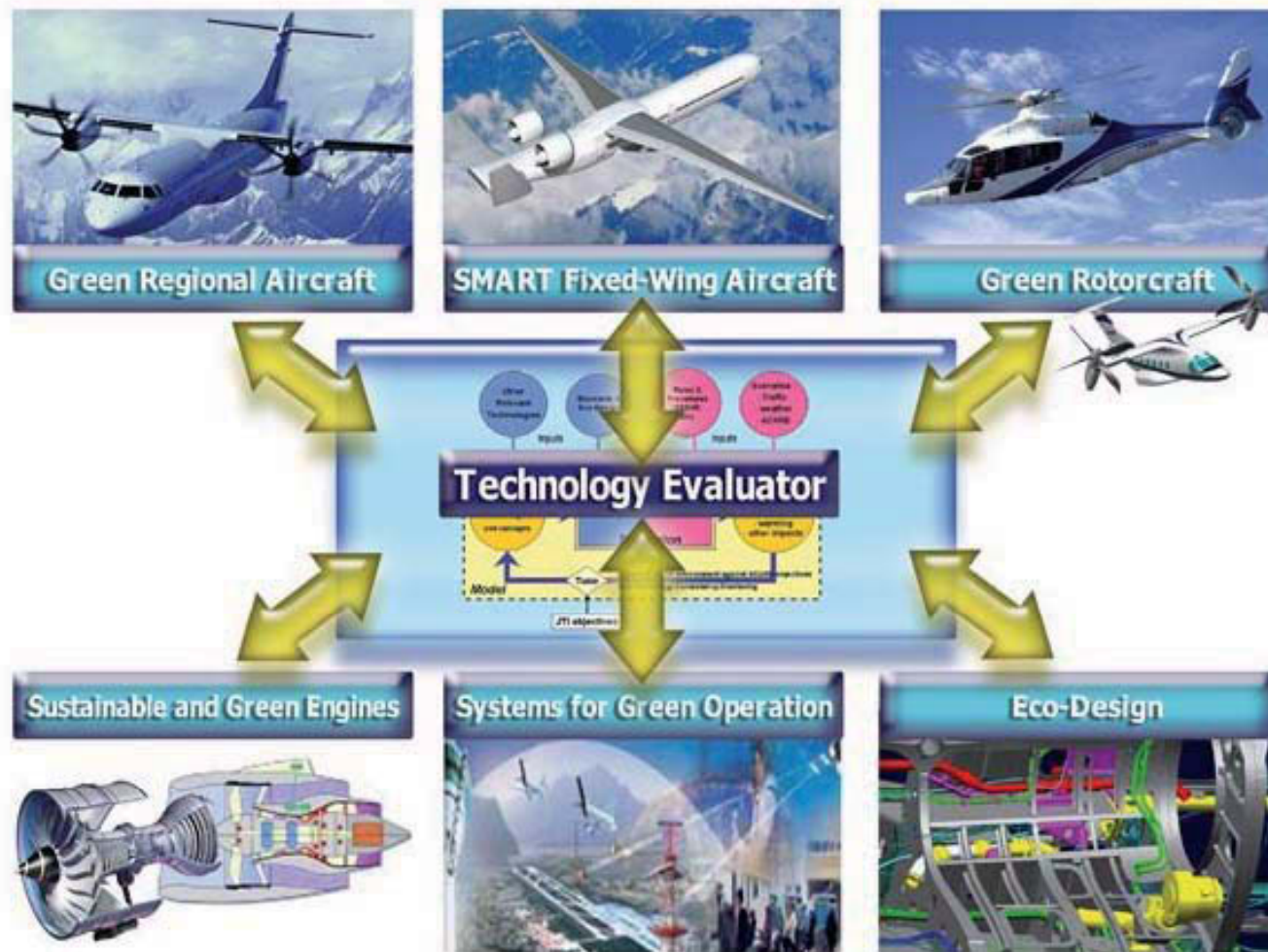


Integrated Technology Demonstrators (ITD)



ITD Leaders:

- ❖ **SMART Fixed Wing:**
 - ▶ Airbus (F, D, UK, E)
 - ▶ SAAB (SE)
- ❖ **Green Regional Aircraft**
 - ▶ Alenia Aeronautica (I)
 - ▶ EADS CASA (E)
- ❖ **Green Rotorcraft**
 - ▶ AgustaWestland (I, UK)
 - ▶ Eurocopter (F, D)
- ❖ **Green Engines**
 - ▶ Rolls-Royce (UK)
 - ▶ Safran (F)
- ❖ **Systems for Green Operation**
 - ▶ Thales (F)
 - ▶ Liebherr (D)
- ❖ **Ecodesign**
 - ▶ Dassault Aviation (F)
 - ▶ Fraunhofer Gesellschaft (D)



A set of demonstrators



Clean Sky is focused on reaching high Technology Readiness Levels:

It will result in demonstrators at « system » level, including in-flight demonstrators

Keeping the schedule is key to provide for these demonstrations in time for the next generation of aircraft



Split of the EC Contribution



Maximum Overall EC Contribution:
800 M€

Members

(max. 600 M€ i.e. 75%)

ITD Leaders

(max 400 M€ i.e. 50%)

*match EC contribution
50% (in-kind)*

Associates

(max 200 M€
i.e. 25%)

*match EC
contribution 50%
(in-kind)*

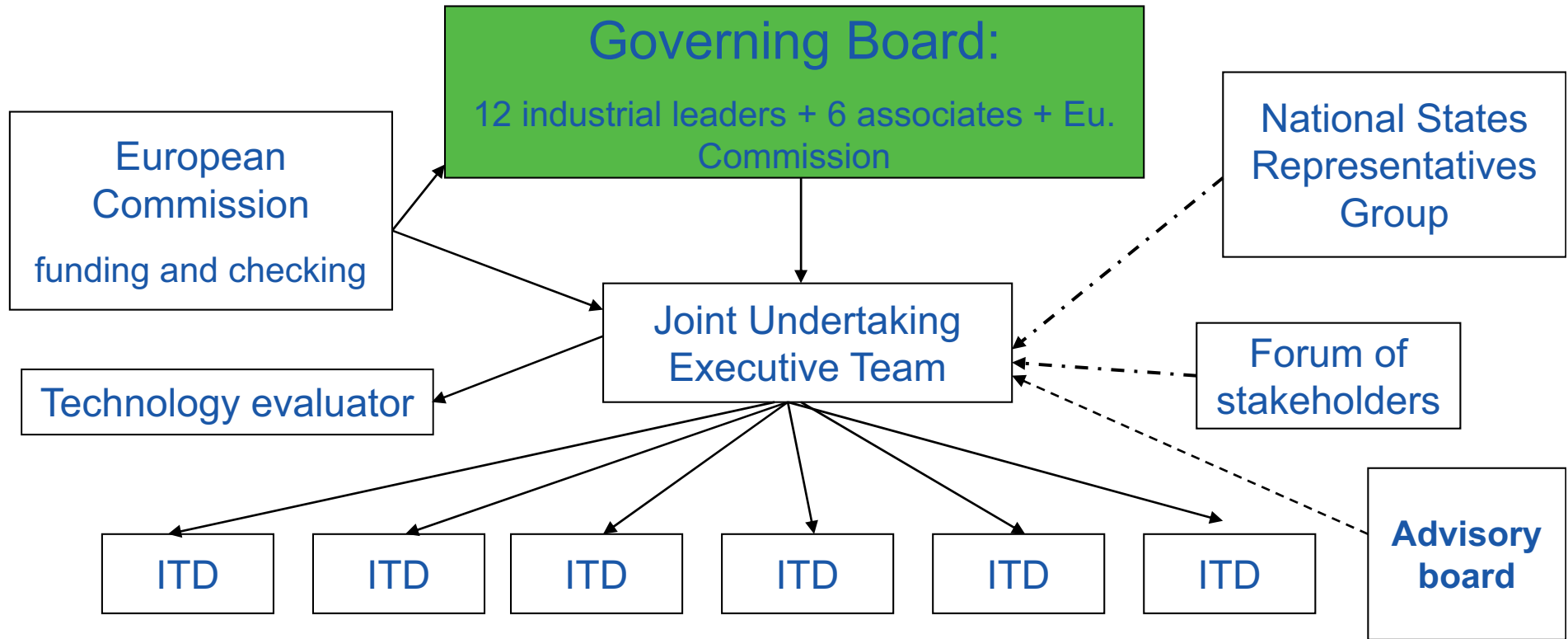
Partners

(min 200 M€
i.e. 25%)

***Call
for
Proposals***



Governance



ITD: integrated Technology Demonstrator








"Clean Sky" – Targets



Technology Evaluator

| ITD | Smart Fixed Wing Aircraft | Green Regional | Green Rotorcraft | Sustainable & Green Engines | Systems for Green Operations | Eco Design |
|-------------------|--|---|--|---|---|--|
| Activities | Active Wing New Aircraft Configurations | Advanced Aerodynamics (Low Drag & Noise) Low Weight Structures | New Powerplants Innovative Blades & Rotors New Aircraft Configurations | Advanced LP & HP System Technology New Engine Concepts (i.e. Open Rotor) | Mission & Trajectory Management Aircraft Energy Management | Whole Life Cycle Environmental Impact Analysis |
| Targets | CO ₂ ~12 to 20% Noise ~10dB | CO ₂ ~10 to 20% Noise ~10dB | CO ₂ ~26 to 40% NO _x ~53 to 65% Noise ~10dB | CO ₂ ~15 to 20% NO _x ~15 to 40% Noise ~15dB | CO ₂ ~10 to 15% Noise ~17dB | CO ₂ ~10% Noise ~10dB |

Note: Targets shown represent the incremental impact of JTI

| Products | Widebody 2020 | Narrowbody 2015 | Regional 2020 | Corporate 2020 | Rotorcraft 2020 |
|----------|---|---|---|---|---|
| |  |  |  |  |  |
| | CO ₂ -30% NO _x -30% Noise -20dB | CO ₂ -20% NO _x -20% Noise -15dB | CO ₂ -40% NO _x -40% Noise -20dB | CO ₂ -30% NO _x -30% Noise -10dB | CO ₂ -30% NO _x -60% Noise -10dB |

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Clean Sky Technology Evaluator

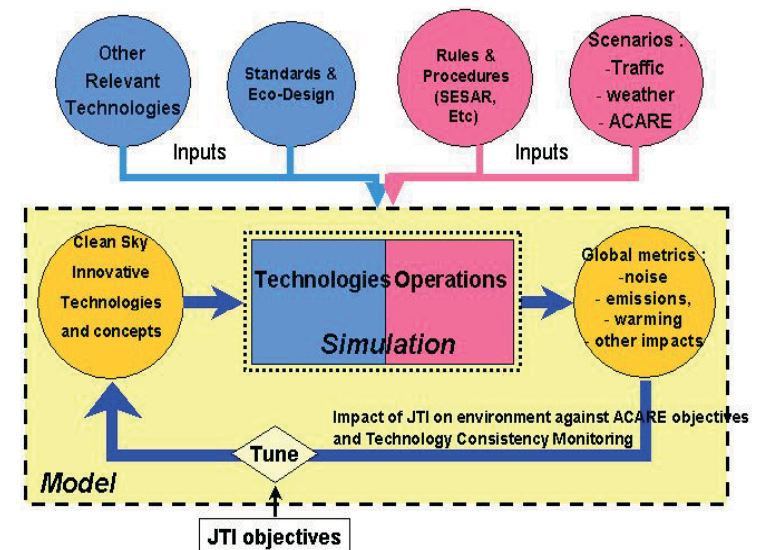


❖ A networked simulation suite

- ▶ That will translate the impact of innovative technologies in term of overall ATS performance wrt environmental challenges

❖ A networked simulation suite

- ▶ contribution of R&T activities in the platforms in relation to ACARE SRA targets
- ▶ monitoring tool
- ▶ guidance and justification
- ▶ consistency within each platform and between all the platforms



Calls for Proposals



- ▶ Calls managed by the Joint Undertaking
- ▶ Not «open» in scope, but very targeted to contribute to the Demonstrators
- ▶ Single entities can apply - one proposal selected by topic
- ▶ Description of Topics made by industry (checked by the JU)
- ▶ Direct industrial participation in evaluation

First Call for Proposals



- ▶ 1st Call for Proposals launched on June 15th, 2009:
- ▶ 72 topics
- ▶ Funding up to 25.6 million €
- ▶ Evaluation took place mid-September

with good results despite some topics unanswered, some with no acceptable proposal

- ▶ Contracts will be signed before end of the year
- ▶ Some lessons to learn from this first call; in 2010, 2011, ..., 3 or 4 calls a year



Conclusion



A conclusion? rather an introduction:

- To a large and ambitious programme, close to the industrial applications, which has just started
- To a « green » ambition that must be preserved despite the economical contingencies that will occur during a 7 years programme
- To a new way of managing research as a PPP, which means fulfilling transparency, fairness and effectiveness requirements

Clean Sky will be deemed a success if and when the technologies demonstrated will fly as commercial products