



# ***Clean Sky SAGE ITD***

***NEWAC Workshop***

***Warsaw 3 June 2009***

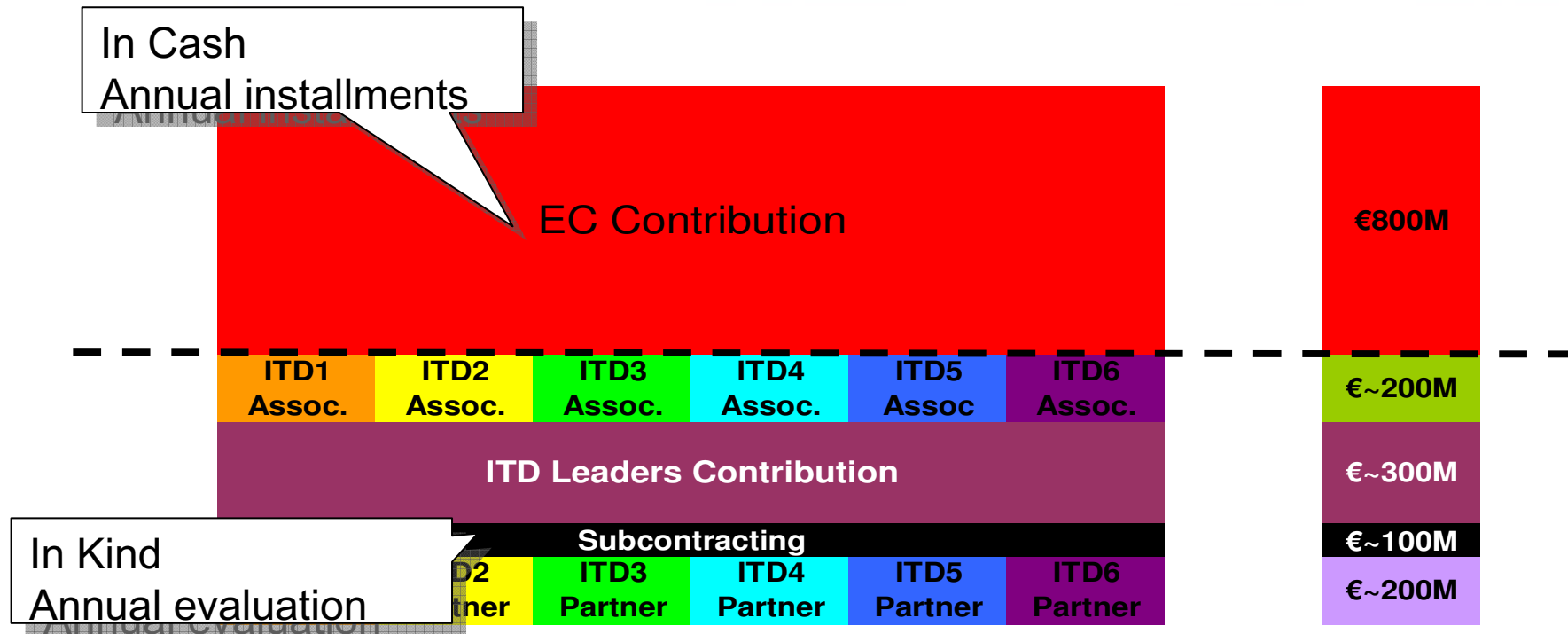
***Mark Pacey***

# Clean Sky – Introduction

- ❖ Largest ever EU aeronautics programme – €1.6bn over 7 years
- ❖ Public-Private Partnership between the Community (represented by the European Commission) and the Aeronautical Stakeholders
  - ▶ Managed by a Joint Undertaking with dedicated staff, led by an Executive Director and governed by a Governing Board
- ❖ Wide industry participation
  - ▶ Strong central team of **ITD Leaders** coordinate effort to deliver the envisaged goals
  - ▶ To broaden participation, **Associates** contribute for the full duration and participate in strategic decision making
  - ▶ More specific tasks will be allocated to **Partners** via Calls for Proposals as the programme progresses
  
- ❖ **“Members” = ITD Leaders + Associates**



# Clean Sky – Financial Share



- ❖ Up to 75% of the budget (including subcontract) will go to the ITD leaders and Associates (selected by Call for Associates in 2007, per ITD, following clear criteria)
- ❖ At least 25% of the budget will be dedicated to Partners via Calls for Proposals, enabling wider accession to Clean Sky
- ❖ Participants from EU member states and FP7 associated countries eligible for Grants

# Clean Sky – Broad Industry participation

## Clean Sky Joint Undertaking

1.600M€ (<50% Leads, <25% Associates, >25% Partners)  
Running costs shared by EC and Members

### Technology Evaluator

Thales, DLR + 21 Members  
31M€

#### Smart Fixed Wing Aircraft (SFWA)

Airbus, Saab  
+ 25 Members  
388M€

#### Green Regional Aircraft (GRA)

Alenia, EADS-CASA  
+ 22 Members  
175M€

#### Green Rotorcraft (GRC)

Eurocopter, AgustaWestland  
+ 18 Members  
159M€

#### Sustainable and Green Engine (SAGE)

Rolls-Royce, Safran  
+ 6 Members  
424M€

#### Systems for Green Operations (SGO)

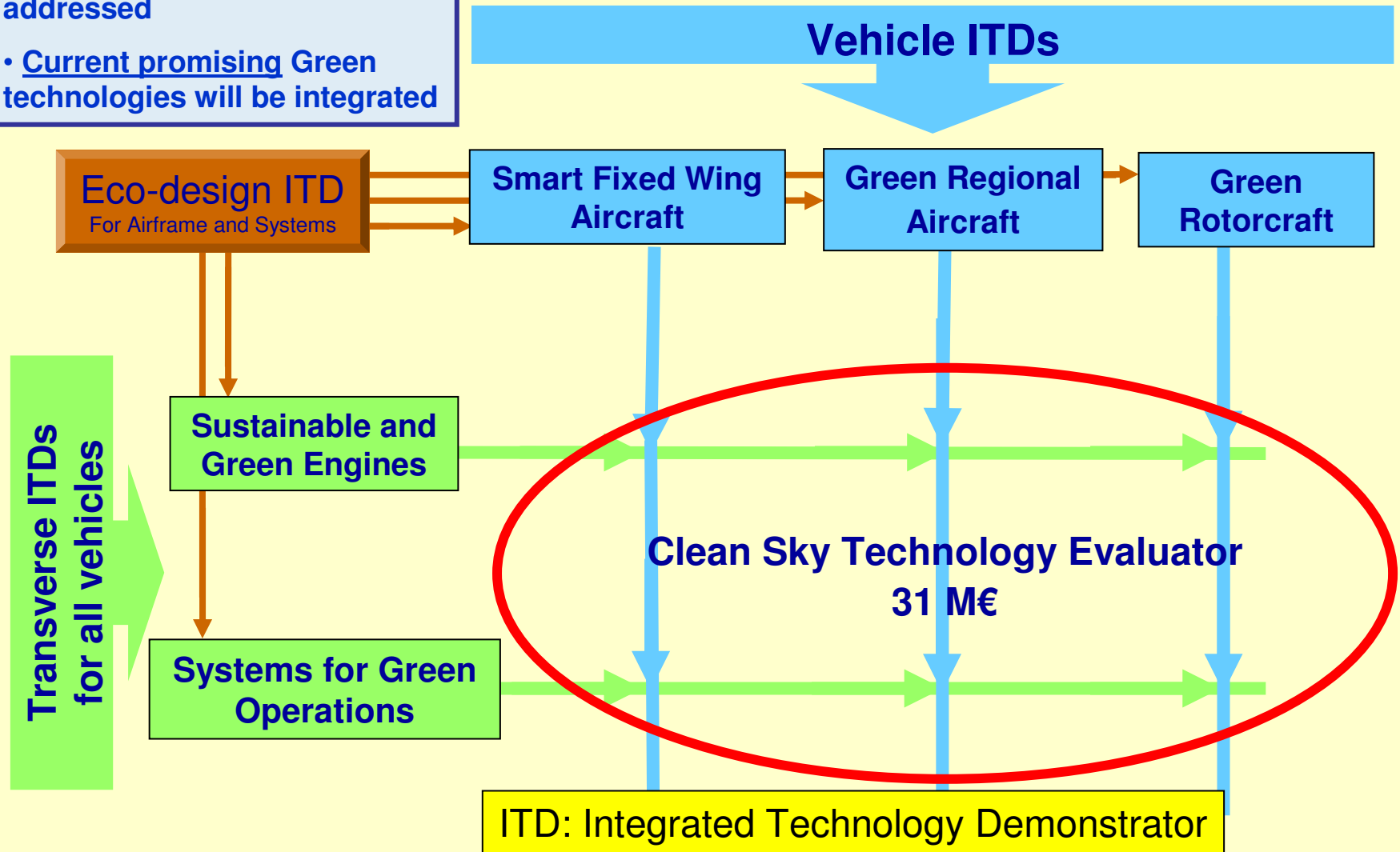
Liebherr, Thales  
+ 21 Members  
306M€

#### Eco-design (ED)

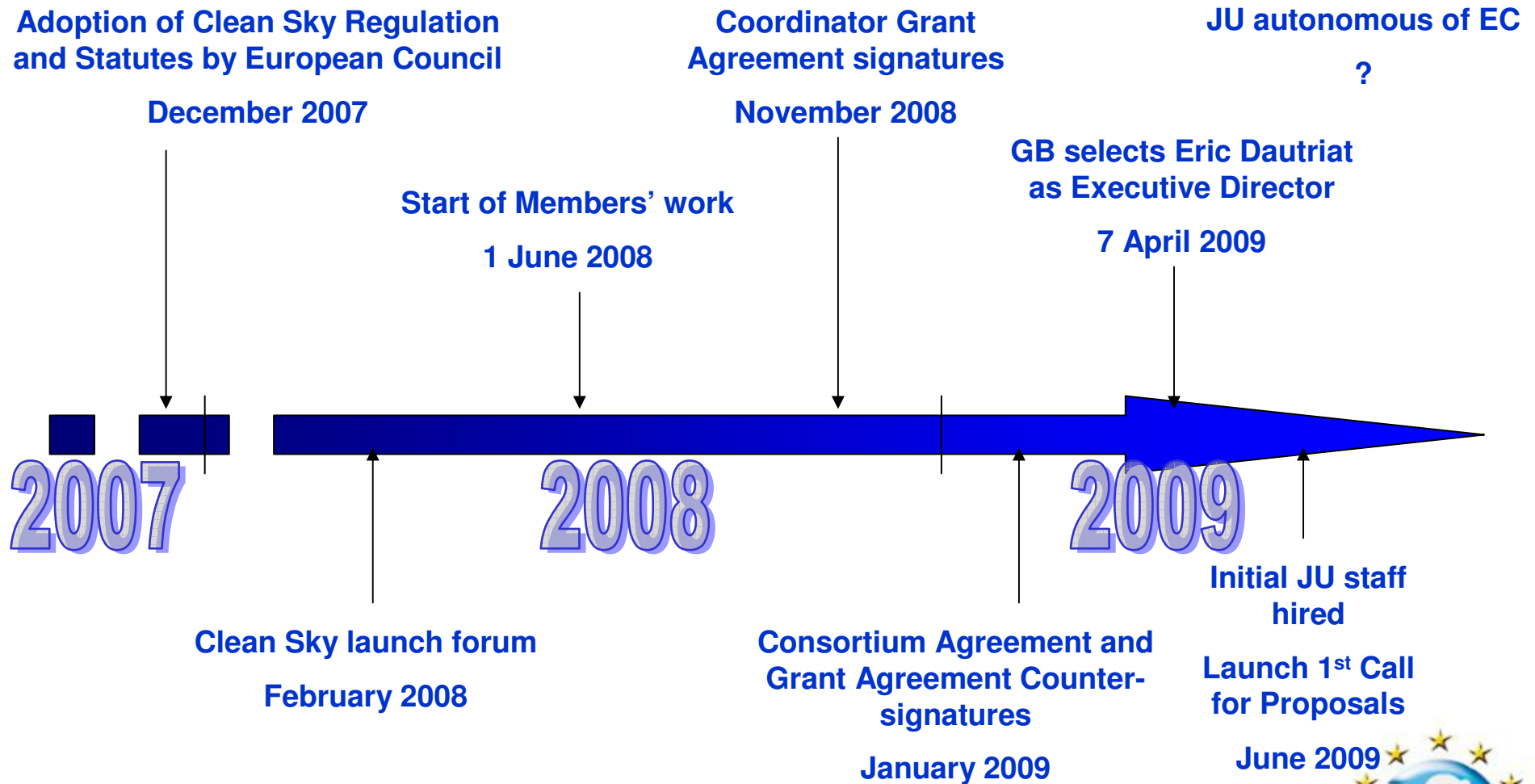
Dassault, Fraunhofer  
+ 26 Members  
117M€

# Clean Sky – Technical Interactions

- All market segments addressed
- Current promising Green technologies will be integrated



# Clean Sky - Timeline





## *Introduction to SAGE ITD*

# SAGE ITD – Objectives & Strategy

## ❖ Objectives

- ▶ To increase the competitiveness of the European engine manufacturers
- ▶ To accelerate the reduction in global engine emissions\*
- ▶ To encourage the rest of the world to make greener engines

## ❖ Strategy

- ▶ To deliver innovative architectures and mature technologies through ground tests
- ▶ To build on the results from previous programmes (VITAL, NEWAC, DREAM) and demonstrate the technology at engine level

(\*) : vs. 2000 baseline

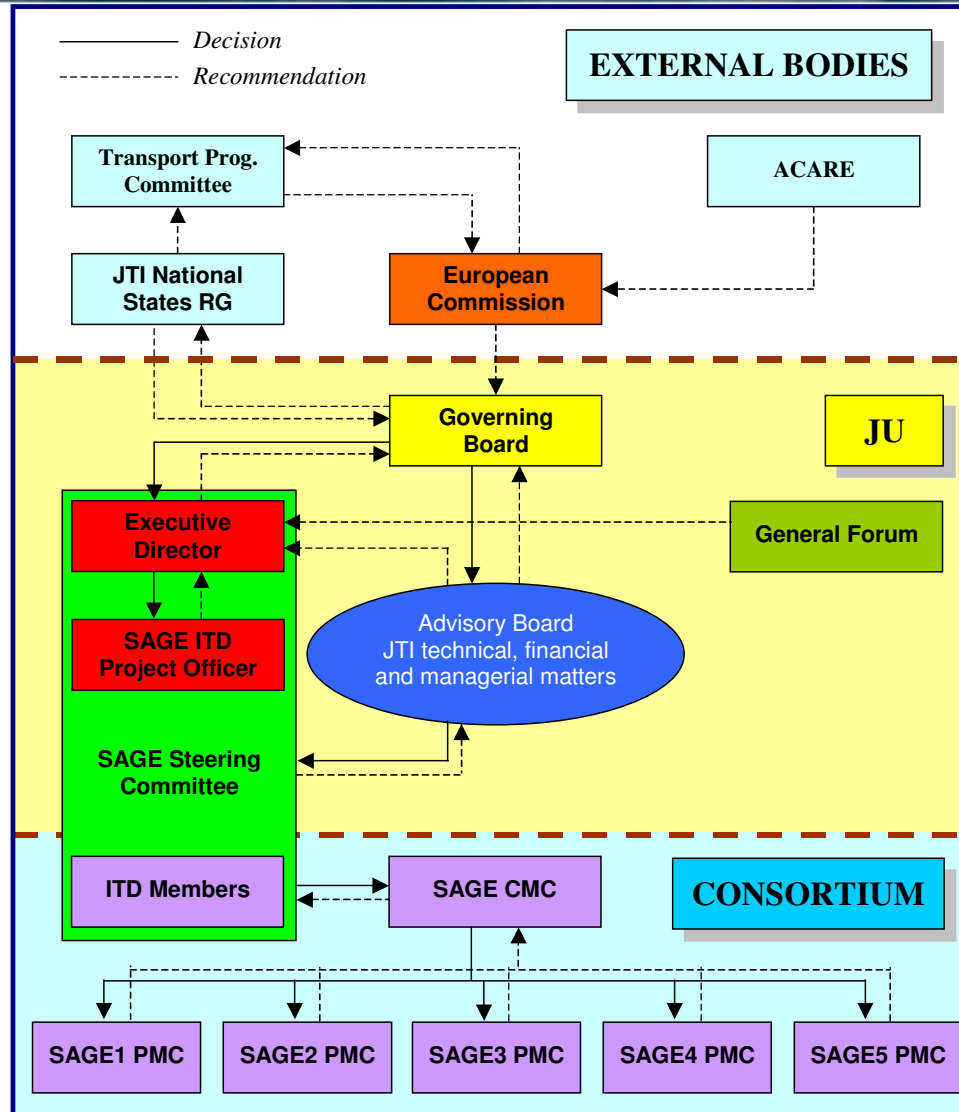


# SAGE ITD – Organisation

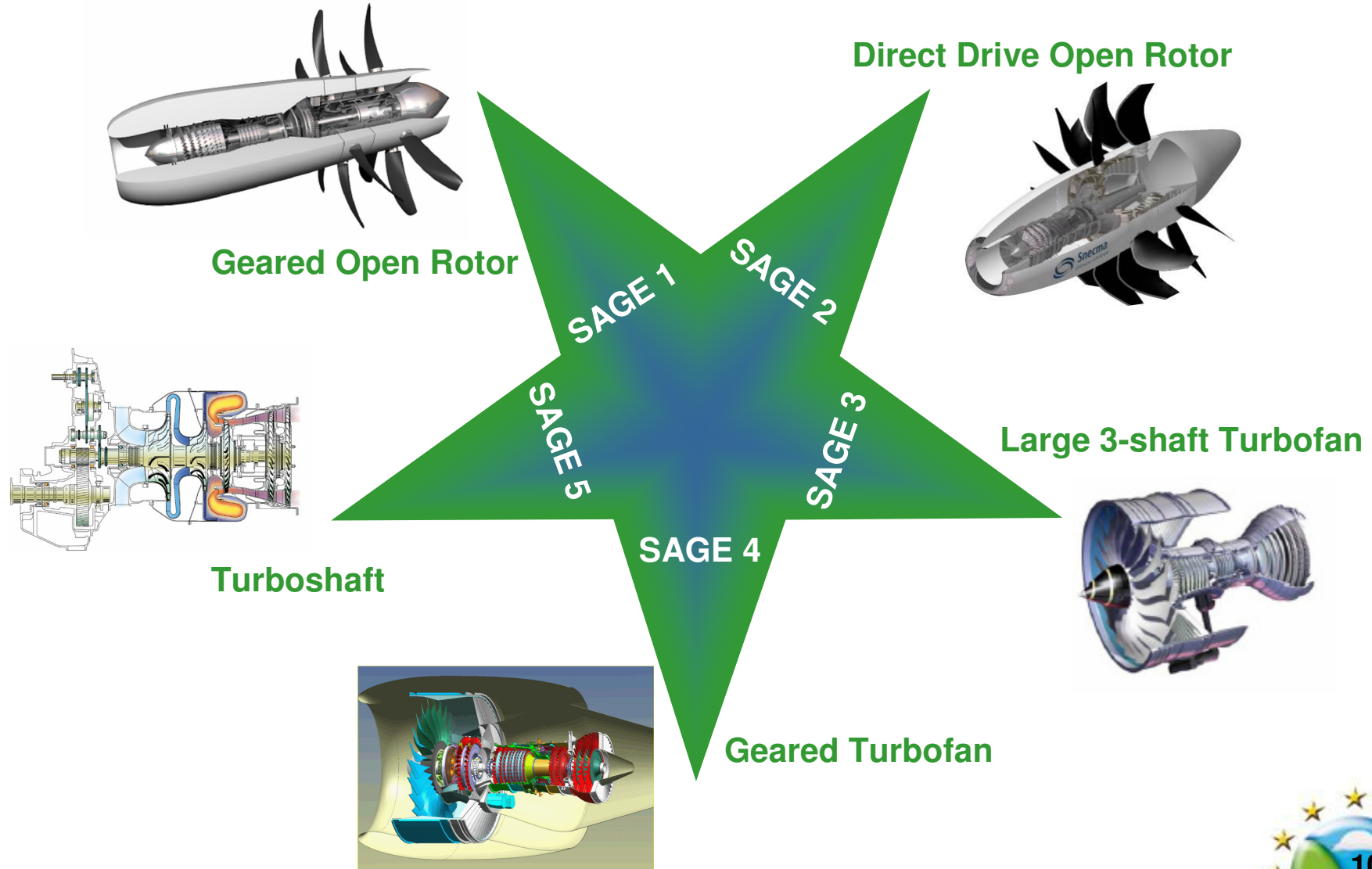
SAGE Coordinator  
Rolls-Royce

CMC/SC Chair  
SAFRAN

SC Members  
MTU  
AVIO  
ITP  
Volvo Aero  
Airbus  
Alenia  
CSJU



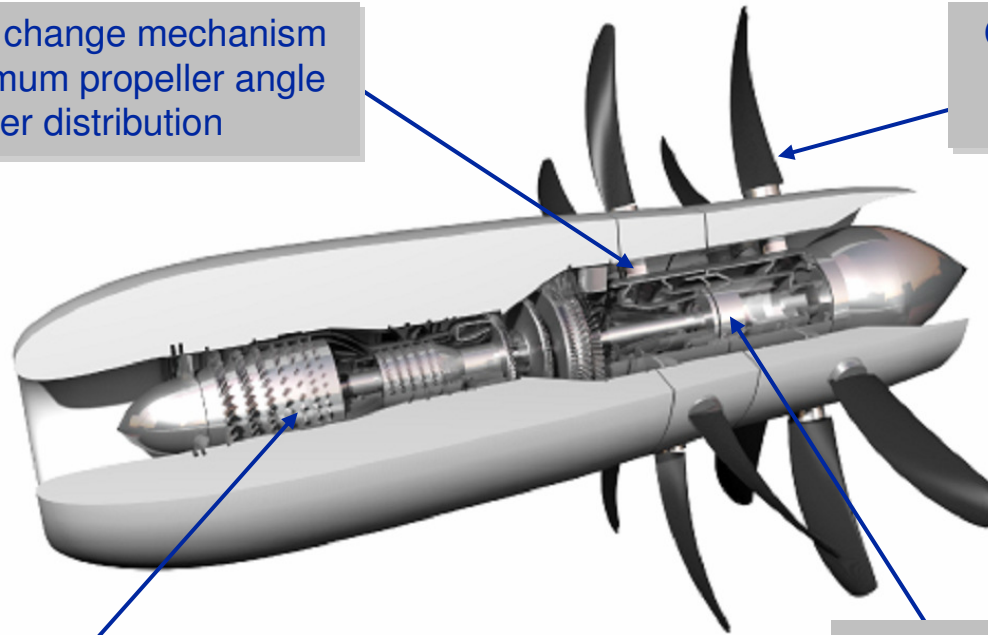
# SAGE ITD – 5 Demonstrators



# SAGE ITD – SAGE1, Geared Open Rotor

Propeller pitch change mechanism maintains optimum propeller angle and power distribution

Contra rotating propellers  
Noise optimised configuration



Donor core gas turbine

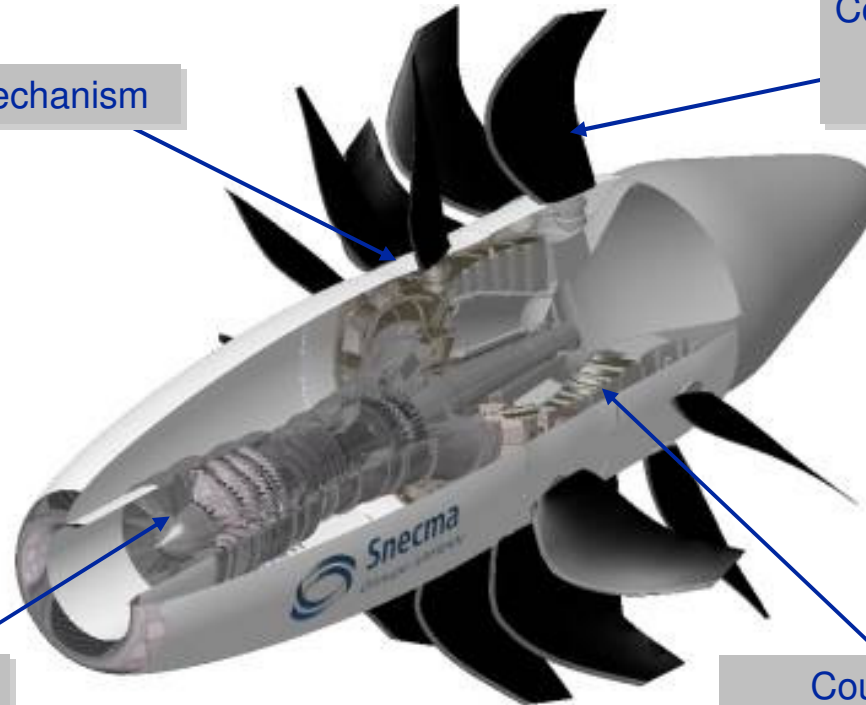
Transmissions system transfers energy from free power turbine to contra-rotating assemblies

- ❖ Led by Rolls-Royce plc
- ❖ Affiliates and Associates
  - ▶ Rolls-Royce Deutschland, Volvo Aero, ITP, Airbus, Alenia
- ❖ 111M€ programme, 26M€ of opportunities for Partners

# SAGE ITD – SAGE2, Direct Drive Open Rotor

Propeller pitch change mechanism

Counter-Rotating Propellers  
Noise optimised  
configuration

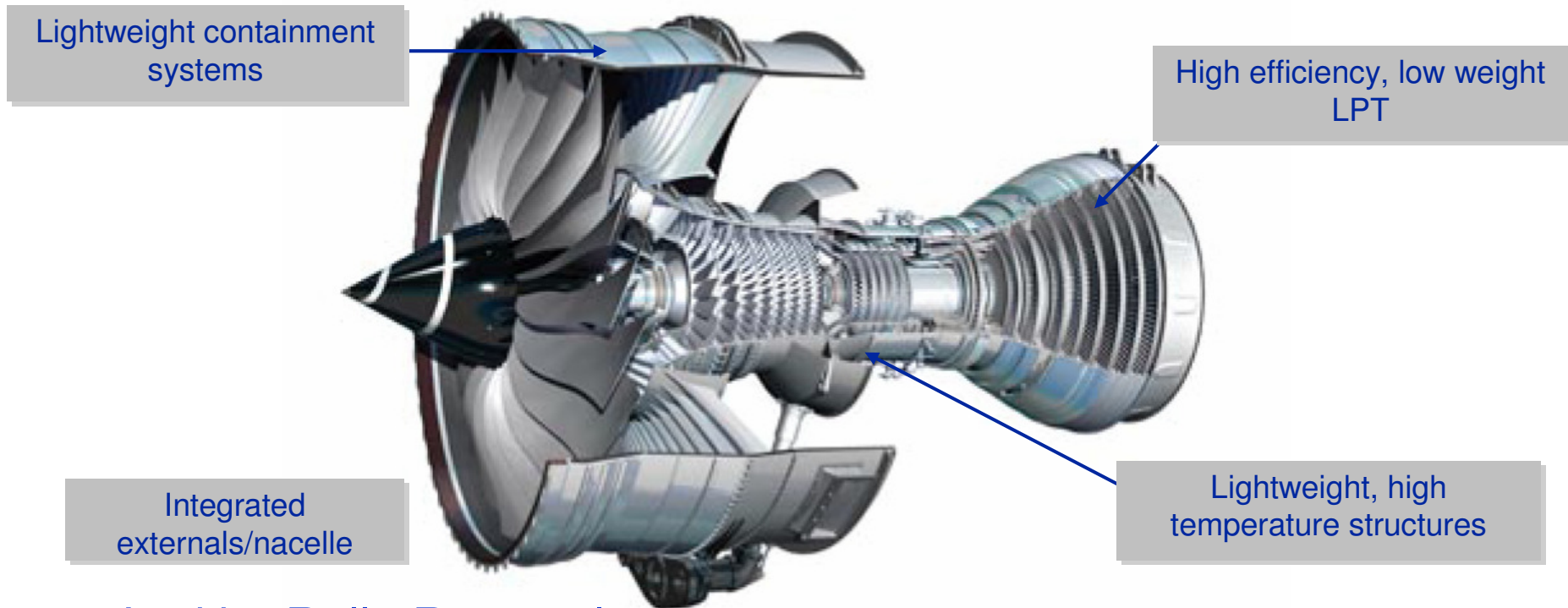


Gas generator

Counter-Rotating Turbine  
directly linked to the propellers

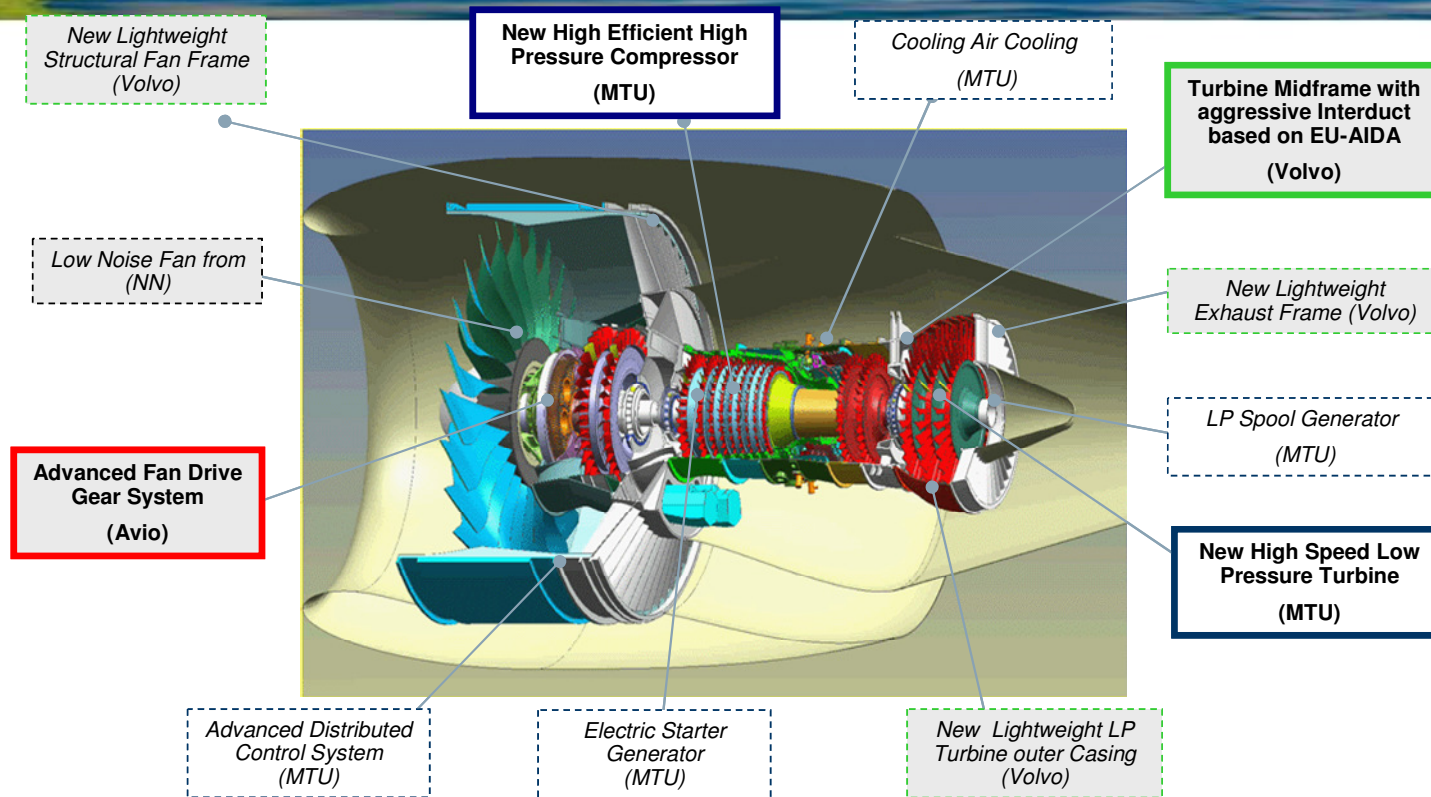
- ❖ Led by SNECMA
- ❖ Affiliates and Associates
  - ▶ Hispano-Suiza, Techspace Aero, Aircelle, AVIO, Volvo Aero, Airbus, Alenia Aermacchi
- ❖ 135M€ programme, 26M€ of opportunities for Partners

# SAGE ITD – SAGE3, Large 3-shaft Turbofan



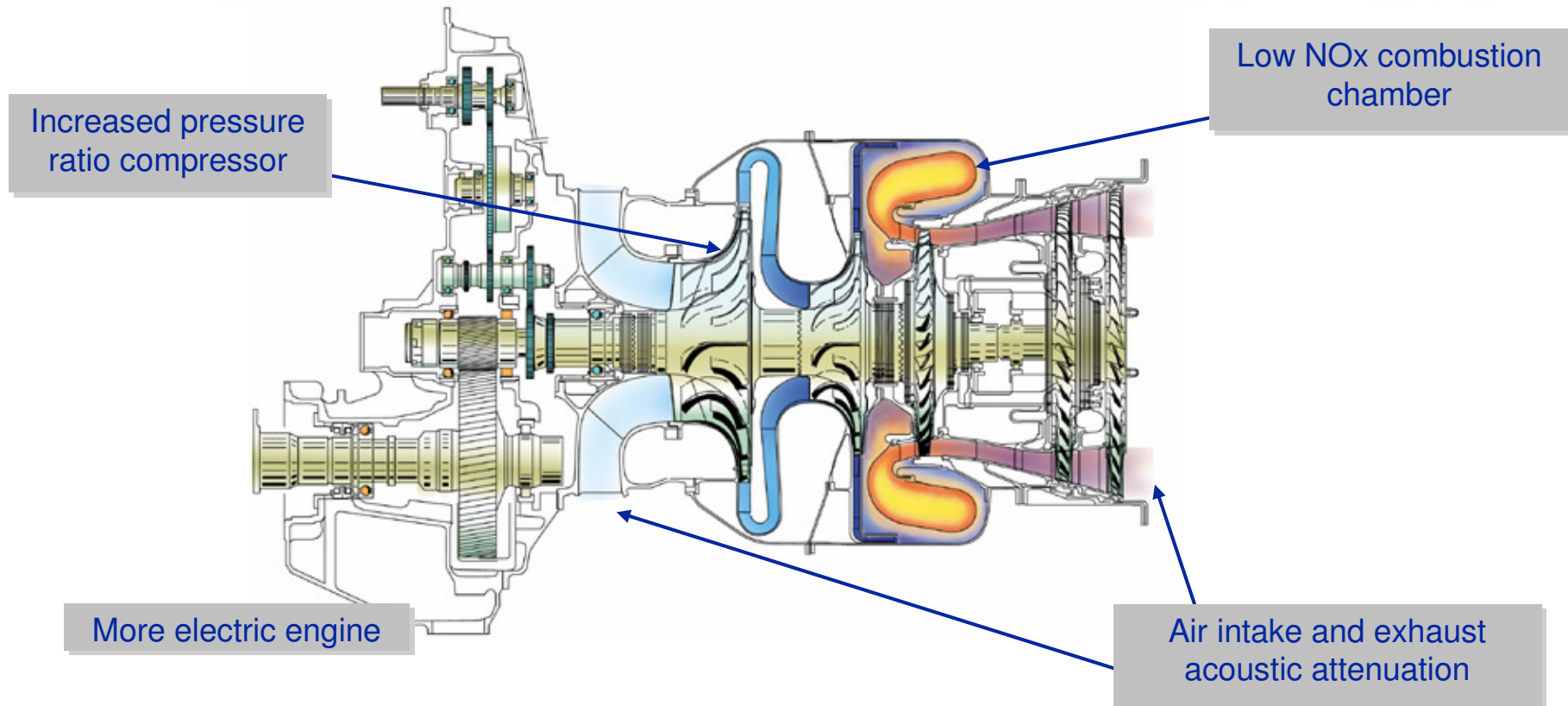
- ❖ Led by Rolls-Royce plc
- ❖ Affiliates and Associates
  - ▶ Rolls-Royce Deutschland, ITP, Volvo Aero
- ❖ 69M€ programme, 22M€ of opportunities for Partners

# SAGE ITD – SAGE4, Geared Turbofan



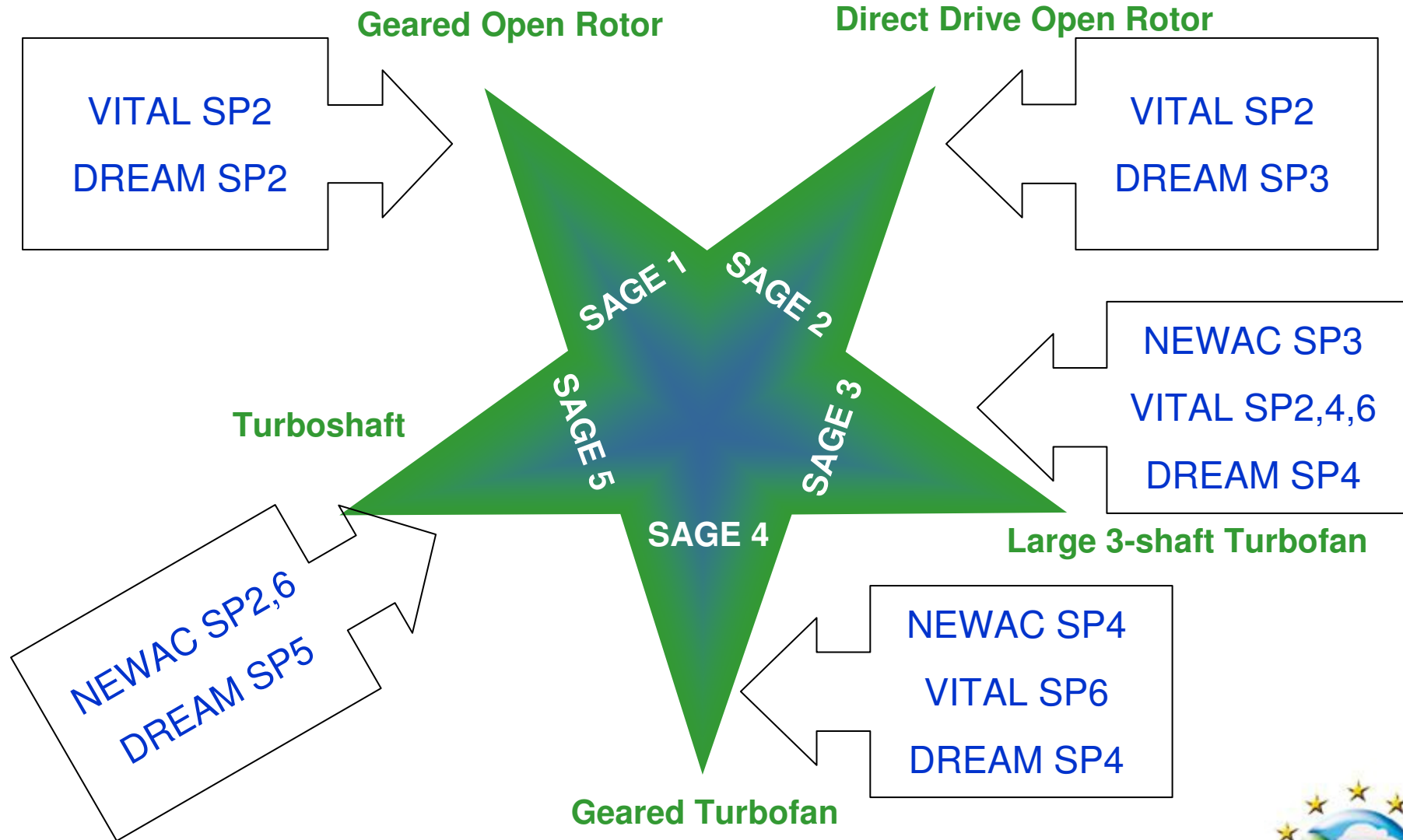
- ❖ Led by MTU
- ❖ Affiliates and Associates
  - ▶ AVIO, Volvo Aero
- ❖ 66M€ programme, 18M€ of opportunities for Partners

# SAGE ITD – SAGE5, Turboshaft



- ❖ Led by Turbomeca
- ❖ 29M€ programme, 13M€ of opportunities for Partners

# SAGE ITD – Interactions with FP6/FP7 Programmes



# SAGE ITD – Opportunities for Further Involvement

## ❖ Calls for Proposal

- ▶ Work packages defined by Leads and Associates
- ▶ Partners selected by open call process
- ▶ Partners cover 25-50% of costs
- ▶ Partners own resulting foreground IP
- ▶ Typically specialised research topics

## ❖ Subcontracting

- ▶ Work packages defined by Leads and Associates
- ▶ Partners selected by competitive tender
  - Above 175k€ : via Calls for Tender (CfT) on Clean Sky website\*
  - Below 175k€ : via Members' usual procedures
- ▶ Subcontractors fully funded
- ▶ Managing Lead/Associate owns resulting foreground IP
- ▶ Typically for enabling activities

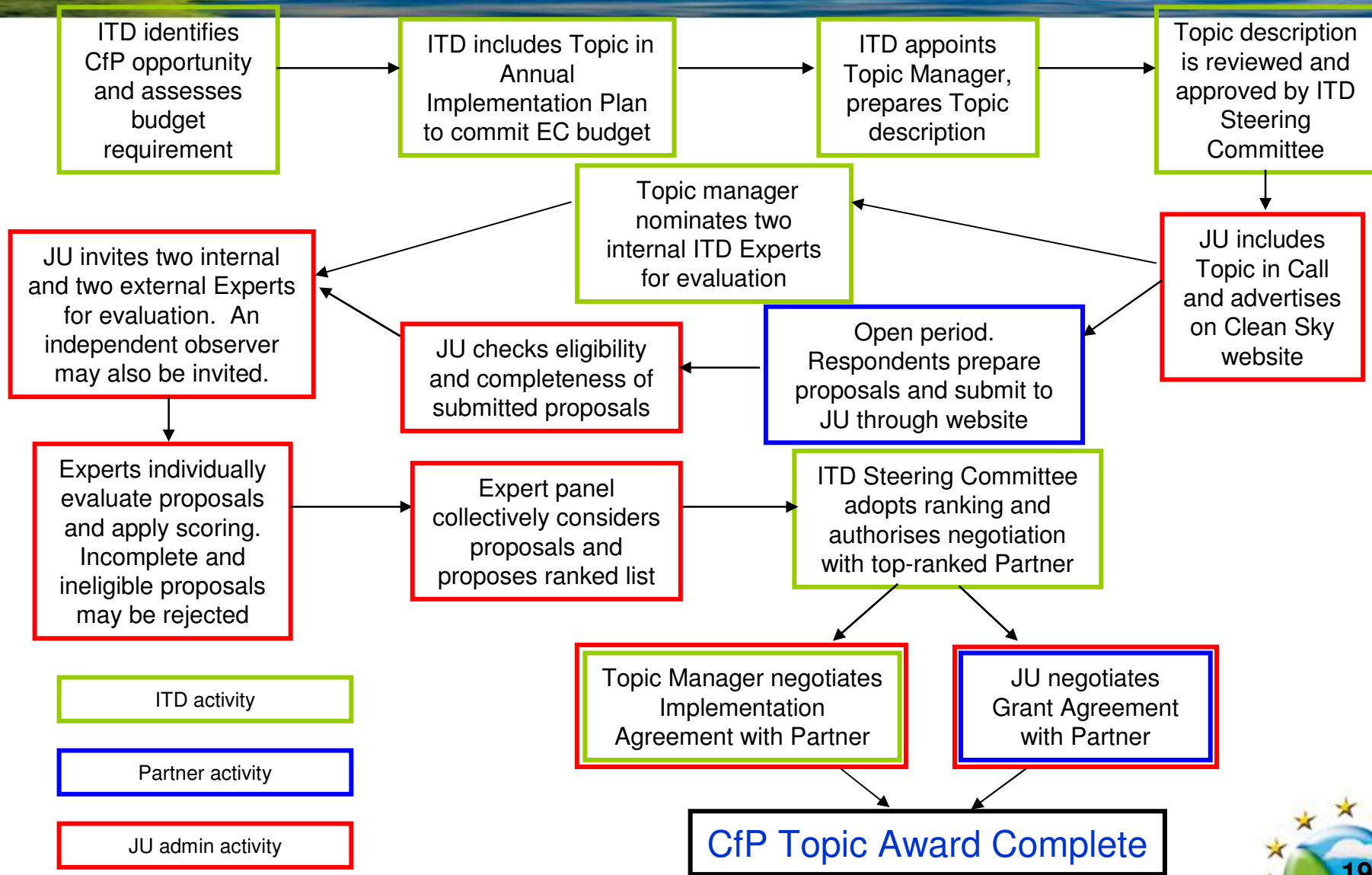
## ❖ The rules are the same for every ITDs

(\*) [www.cleansky.eu](http://www.cleansky.eu)

# Calls for Proposals

- ❖ At least 25% of Clean Sky budget to be allocated by Call for Proposal
  - ▶ >200M€ of EC contribution
- ❖ Open Calls to be launched on Clean Sky website
  - ▶ [www.cleansky.eu](http://www.cleansky.eu)
  - ▶ Call for Proposal Topics will be advertised by all ITDs,
  - ▶ Specific work packages to support the wider ITD research programmes, one Partner to be selected for each Topic
  - ▶ May be advertised at any time during Clean Sky, majority advertised during 2010/2011, may be several call per year
  - ▶ First Call to be launched June 2009 (TBC)
- ❖ Particular opportunities for organisations not currently participating
  - ▶ Members restricted to responding to Calls in other ITDs
  - ▶ Rules on funding allocations to Leads and Associates further restrict applications by existing Members
  - ▶ Applications welcome from individual participants and consortia
  - ▶ Open to member states and Associated countries only
- ❖ SMEs, Universities and Research Establishments encouraged to apply
  - ▶ 75% funding available to these groups
  - ▶ 50% funding available to other applicants

# Call for Proposal Process Outline



# SAGE ITD – Topics for First Call for Proposals

## ❖ SAGE2 Topics

- ▶ SAGE2-09-1 Pitch Change Mechanism – Conceptual & preliminary design activities
- ▶ SAGE2-09-4 Power GearBox (PGB) advanced planet bearings development

## ❖ SAGE5 Topics

- ▶ SAGE5-09-1 Development of a thermoelectricity generator for the supply of the engine control system
- ▶ SAGE5-09-2 Development of a high pressure fuel pump with integrated metering system
- ▶ SAGE5-09-3 Development of high accuracy, low weight “Smart” sensors for pressure, position, temperature measurement
- ▶ SAGE5-09-4 Development of sensor for the measurement of turbine engine temperature
- ▶ SAGE5-09-5 Development of high temperature survival electronic devices for engine control systems
- ▶ SAGE5-09-6 Development of high power density electrical actuators with Smart electrical interfaces in severe environment

More information – <http://www.cleansky.eu>

#### ❖ Demonstrator Lead Contacts

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- ▶ SAGE4
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More information ? – <http://www.cleansky.eu>

Clean Sky Home page - Microsoft Internet Explorer provided by SNECMA

Fichier Edition Affichage Favoris Outils ?

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Adresse [http://www.cleansky.eu/index.php?arbo\\_id=83&set\\_language=en](http://www.cleansky.eu/index.php?arbo_id=83&set_language=en) OK Liens

# CLEANSKY

ABOUT CLEAN SKY - TECHNOLOGY DOMAINS - ORGANISATION - SRA - NEWS AND EVENTS - CALLS


## THE "CLEAN SKY" JTI

Aviation is an essential element of today's global society, bringing people and cultures together and creating economic growth across the globe.

The air transport industry is paying a lot of attention to growing public concern about the environmental issues of air pollution, noise and climate change. Although today air transport only produces 2 % of man-made CO2 emissions, this is expected to increase to 3 % by 2050.

Clean Sky is a "Joint Technology Initiative" that will develop breakthrough technologies to significantly improve the impact of the air transport on the environment.

**What is a Joint Technology Initiative (JTI)?**  
A JTI is a type of project created by the European Commission for funding research in Europe to allow the implementation of ambitious and complex activities, including the validation of technologies at a high readiness level. The size and scale of JTIs requires the mobilisation and management of very substantial public and private investment and human resources.



## NEWS

**UPDATE: Calls likely to be deferred**  
*February and March 2009 launch dates unlikely*  
23/01/2009  
Calls for Proposals planned for February and March 2009 are likely to be deferred to the second quarter of 2009, due to unavoidable delays.  
[See Details](#)

**Pre-announcement: Spring 2009 Calls**  
*Partners sought for 93 technical projects*  
05/12/2008  
The Clean Sky JTI will be issuing 93 calls for proposals in the Spring of 2009. Find out now if one of these could interest your organisation!  
[See Details](#)

CONTACTS - NEWSLETTER - SITE MAP

Terminé Internet