



# Clean Sky impact on aeronautical research

Eric Dautriat

Clean Sky Executive Director



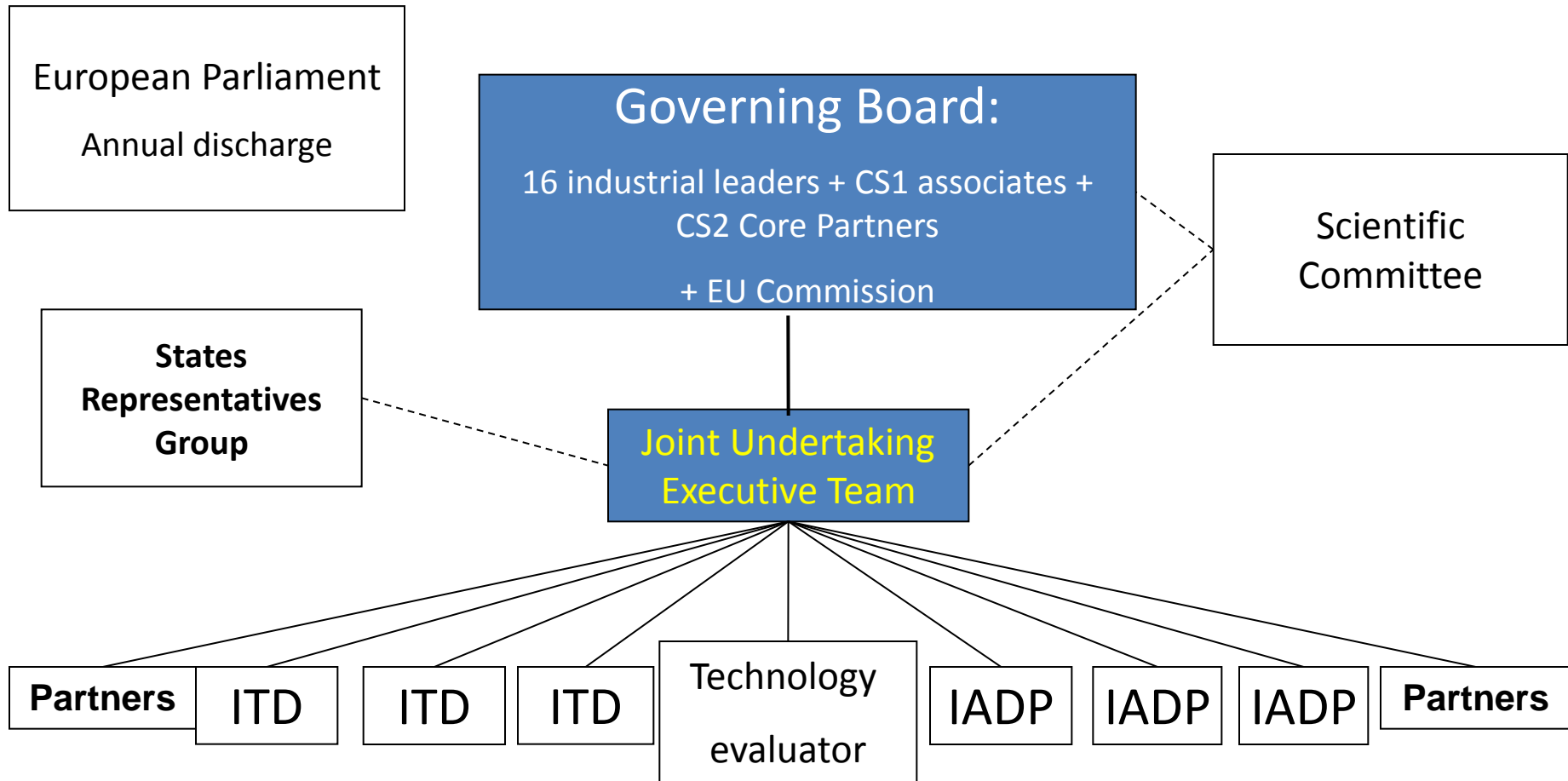
# Clean Sky : Innovation takes off

## Europe's largest Aeronautics Research Programme ever

- CS1 started in 2008 within FP7, up to 2017; **continuation decision in 2014 with CS2 in H2020**
- Environmental objectives for CS1; **Environment, competitiveness and mobility for CS2**
- CS1: 1.6 B€ value, split 50/50 between the Commission (cash) and Clean Sky members and partners (in kind); **CS2: 4 B€**
- Integrated technologies, industry-led, up to **full scale demonstrators**
- 80 % of CS1 work achieved by end 2014, completion end of 2016
- **CS2: 2014-2020 (2024)**
- 600 participants in CS1 – **CS2: up to 1000?**



# Governance and organization



ITD: integrated Technology Demonstrator

IADP: Integrated Aircraft Demonstration Platform



Technology platforms

# Organisation du programme Clean Sky 2

Vehicle  
**IADPs**

**Fast  
Rotorcraft**  
Agusta  
Westland  
Eurocopter

**Large  
Passenger  
Aircraft**  
Airbus

**Regional  
Aircraft**  
Alenia  
Aermacchi

Large  
Systems  
**ITDs**

**Eco-Design**  
Fraunhofer Gesellschaft

**Airframe ITD**  
Dassault – EADS-CASA – Saab

**Engines ITD**  
Safran – Rolls-Royce – MTU

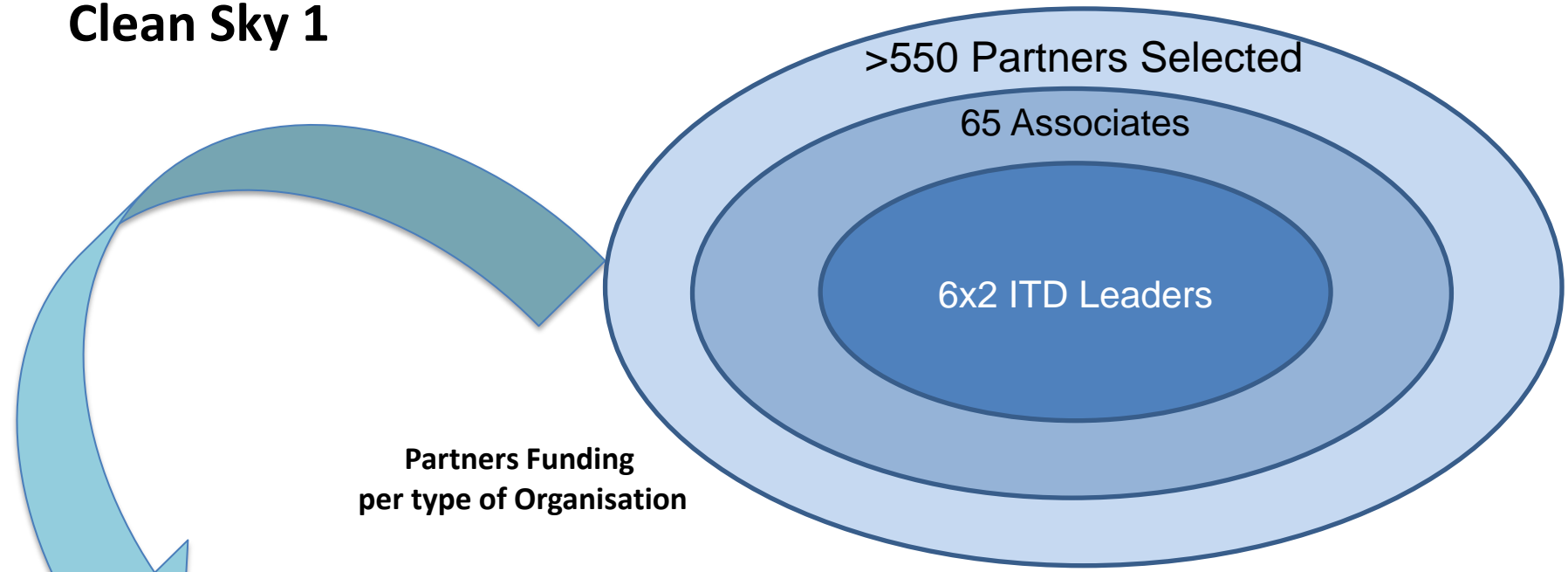
**Systems ITD**  
Thales – Liebherr

**Small Air Transport**  
Evektor – Piaggio

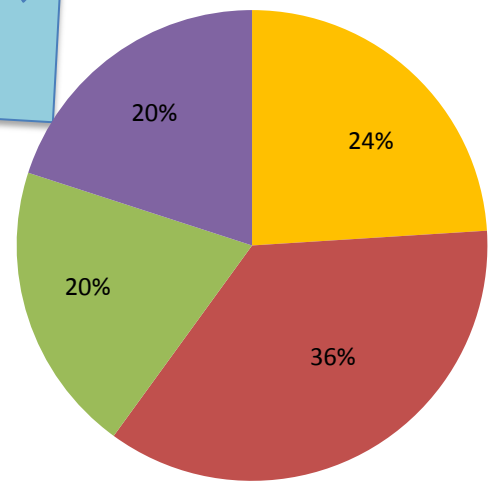
**Technology Evaluator (TE)**  
German Aerospace Center (DLR)

# Clean Sky: Broad and Open Participation

## Clean Sky 1



Partners Funding per type of Organisation

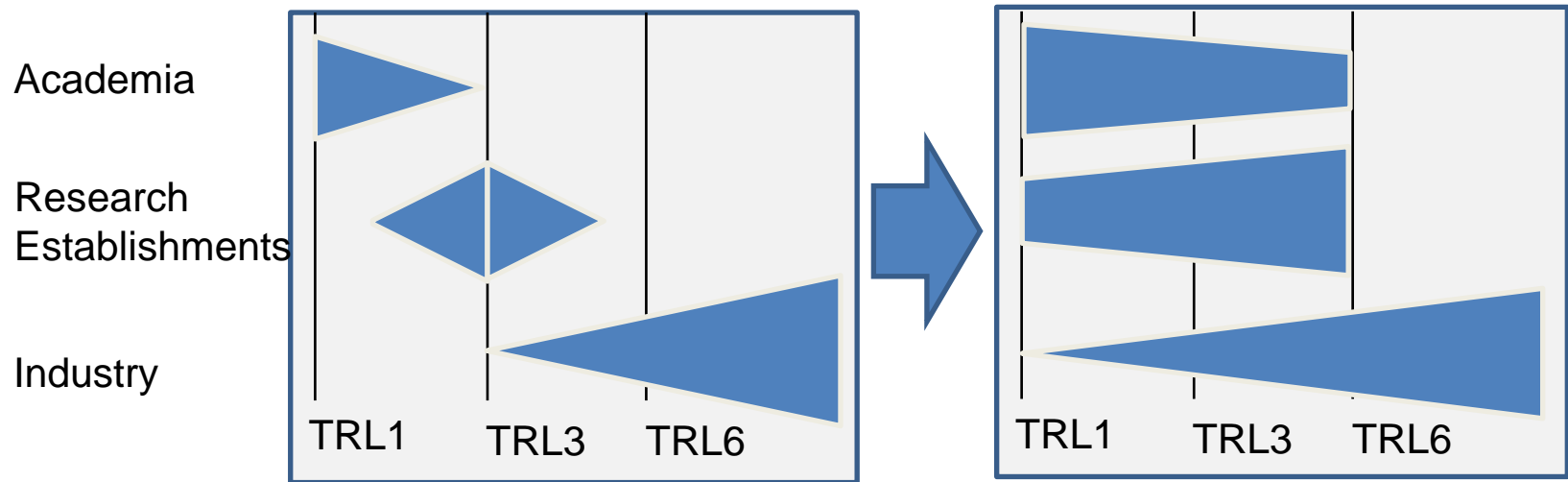


- Industries
- SMEs
- Research Organisations
- Universities

CS2: 16 leaders  
Already 75 "Core Partners"  
(=Associates)

# The innovation pipeline

*Peter Hecker, Chairman of Clean Sky Scientific Committee: The innovation pipeline has changed*



More and more interactions between players

More comprehensive and complex ecosystem

Clean Sky size allows for a wide working-together network

... But the fragmentation between research programmes in Europe is not fully solved



# What Clean Sky intends to demonstrate by 2017

- An ambitious / effective / consistent / far-looking / stable / flexible programme
- Focused on the right priorities for environment, mobility and competitiveness
- Transparent and well understood by all political decision makers
- Playing the role of flagship for all EU aero research – strongly contributing to an overall consistency
- Leveraging and including lower-TRL activities thanks to the mainstream of demonstrators
- Open to bottom-up approaches
- An “Undertaking” where all stakeholders find themselves at home and consider as their optimal instrument for R&I: Industry-led... but fostering wide SME, RE and Academia participation



# A tentative SWOT

## STRENGTHS

- Well-established community;
- CS1 is delivering and perceived as a successful JTI;
- H2020 (incl. CS2) size creating momentum;
- Appetite and involvement of the full supply chain: “innovation eco-system”;
- All policy-makers supportive of “innovation” in principle

## WEAKNESSES

- Still fragmentation between CS and upstream research funding;
- Out-of-the-box R&I to be better emphasized;
- Some complexity of the “EU aero R&T world” and its strategies, (+ National Programmes );
- Long timescale, inherent to aeronautics, from Research to New Product Introduction

## OPPORTUNITIES

- Aeronautics, “The” industrial sector of excellence of Europe deserves continued support;
- Available foundations for more efficient and visible transverse synergies / networking;
- H2020 and “ESIF” Structural Funds synergies via CS coordination / facilitation;
- “Re-industrialisation” EU objective

## THREATS (/RISKS)

- Relative lack of upcoming, large development programmes may deter supply chain to invest in research;
- Transport R&I may not be identified as top political priority;
- Aviation may be less perceived as innovative by policy-makers than in the past (vs e.g. ITC, Internet)



# Synergies with Structural Funds (ESIF)

requested by the CS2 Regulation

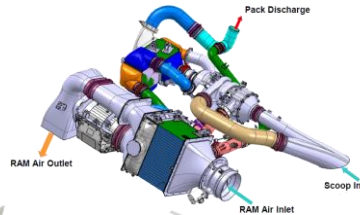
- The Joint Undertaking action with ESIF can contribute to unblock the “innovation potential” of those EU Regions with an existing background in aeronautics, help the Authorities to think strategic and complement / leverage the CS “direct” funding
- 4 scenarios for synergy are proposed
- Clean Sky is now creating a momentum **through pilot cases**: Use the existing channels in each region, implementing a “**Clean Sky label**”
- MoUs signed since Feb. 2015 with Midi-Pyrénées, Andalusia, Catalonia, Romania, Campania – 3 more in the pipeline

*More information on Clean Sky website*  
[www.cleansky.eu](http://www.cleansky.eu)



# What are / will be Clean Sky achievements?

- About 25 large demonstrators in CS1... 50 in CS2... from integrated equipments, engines, airframes to full aircraft...
- Ranging from general aviation application to wide-body airliners



- With high CO<sub>2</sub> and noise reductions



Clean Sky concept aircraft	CO <sub>2</sub>
Low Swee Biz-Jet	-32%
TP 90 Regional - Turbo-prop	-30%
Short-medium range	-34%
Long Range	-18%
Twin Engine Heavy Rotorcraft	-22%

- *... And the deployment of a wide eco-system for research and innovation, creating new, sustainable links between researchers, SMEs, integrators*