



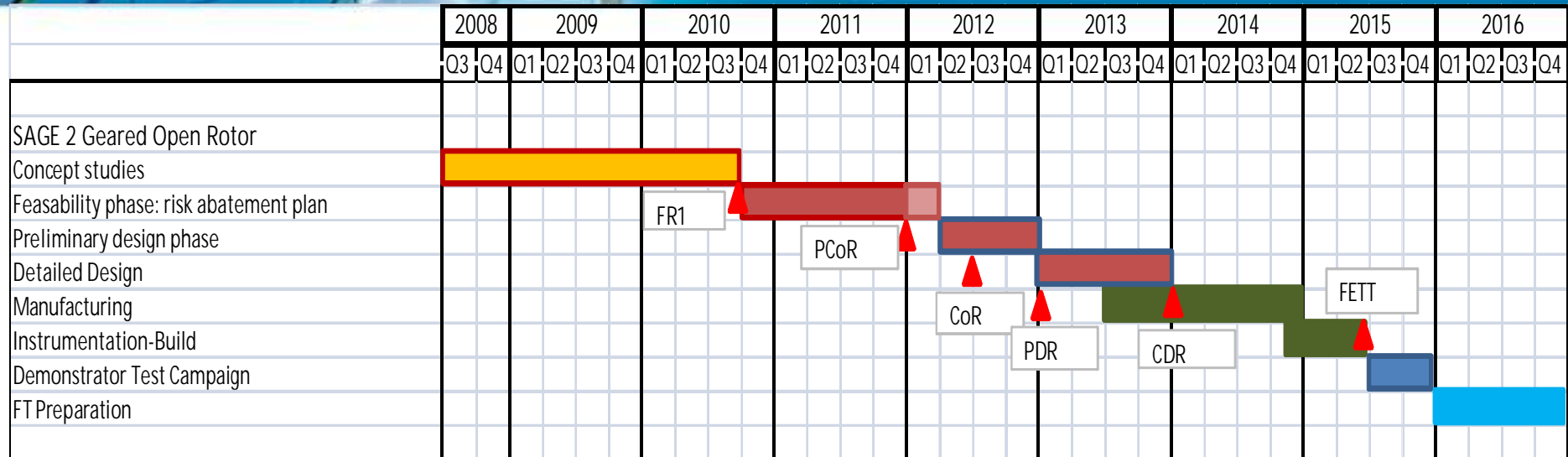
# Call for Proposals 11 SAGE 2 Engine Mounts and in-flight Balancing System

*Brussels, 21<sup>st</sup> of January 2011*

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# SAGE2 Timeline



- 4 Commitment to Airbus: deliver end 2016 a flightworthy engine to support flight tests
- 4 Constraint: keep to a minimum the hardware changes between the demonstrator for Ground and Flight Tests
- 4 Major dates
  - Ø Ground Tests demonstrator PDR end 2012; CDR end 2013; GT mid-2015
  - Ø Flight Tests demonstrator: tbd PDR end 2013, CDR end 2014, Delivery to FT chantier end 2016

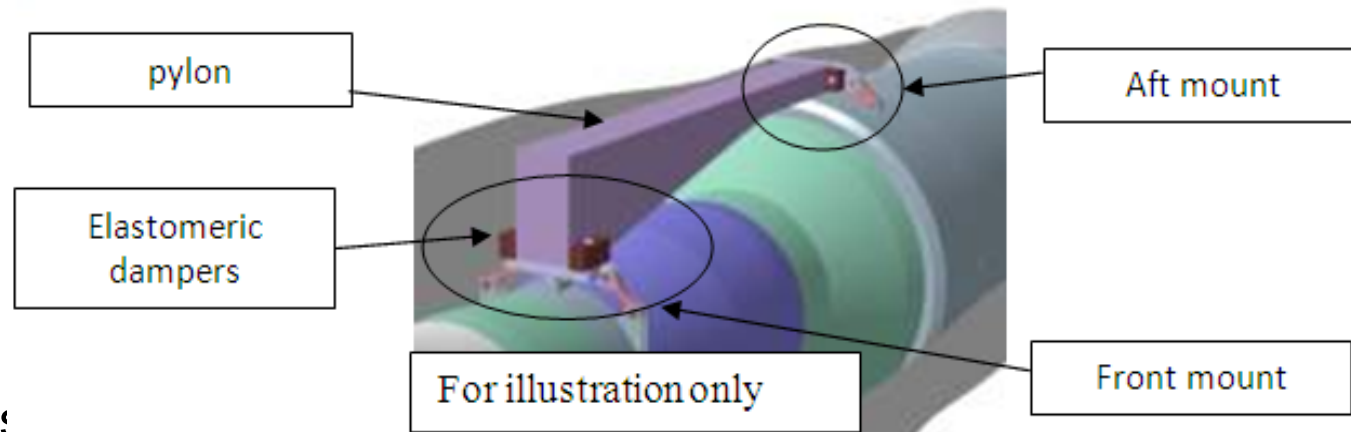


# SAGE 2 - CfP Budget and Scope

Budget: **3M€ gross budget** (maximum funding ratio via Clean Sky is **75%**)

Scope:

1. To design, manufacture and test an engine mount system

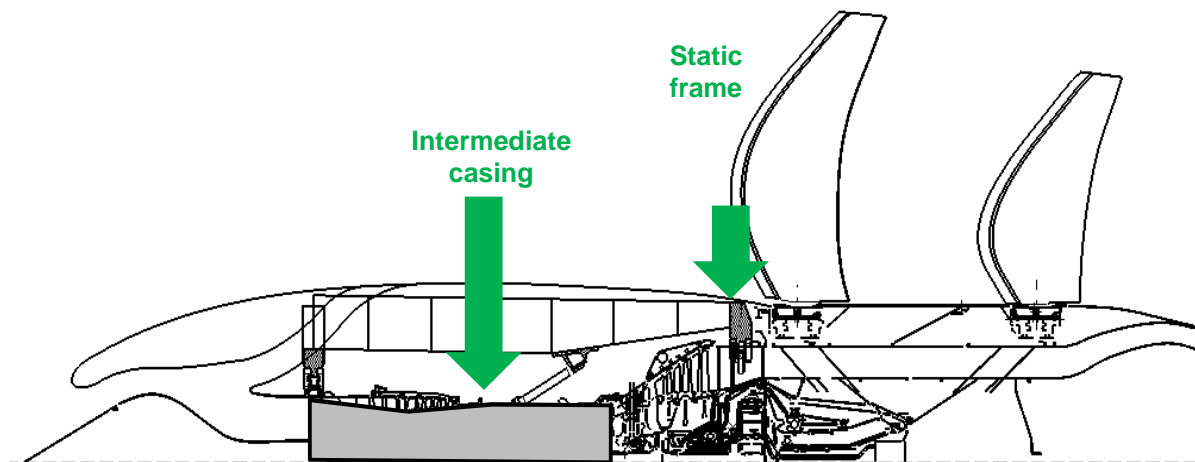


Requirements:

- Ø Model delivery T0+16m (circa dec 2013) and hardware delivery T0+28m (circa dec 2014)
- Ø Quality Standard: Parts will be tested during Ground and Flight Testing: **they must be flightworthy.**

# SAGE2 - Open rotor demonstrator

For illustration purposes only:  
Cross section showing attachment location on the engine



# Baseline Mounts system concept

## ✓ Principles & architecture:

### 4 1) Front mount

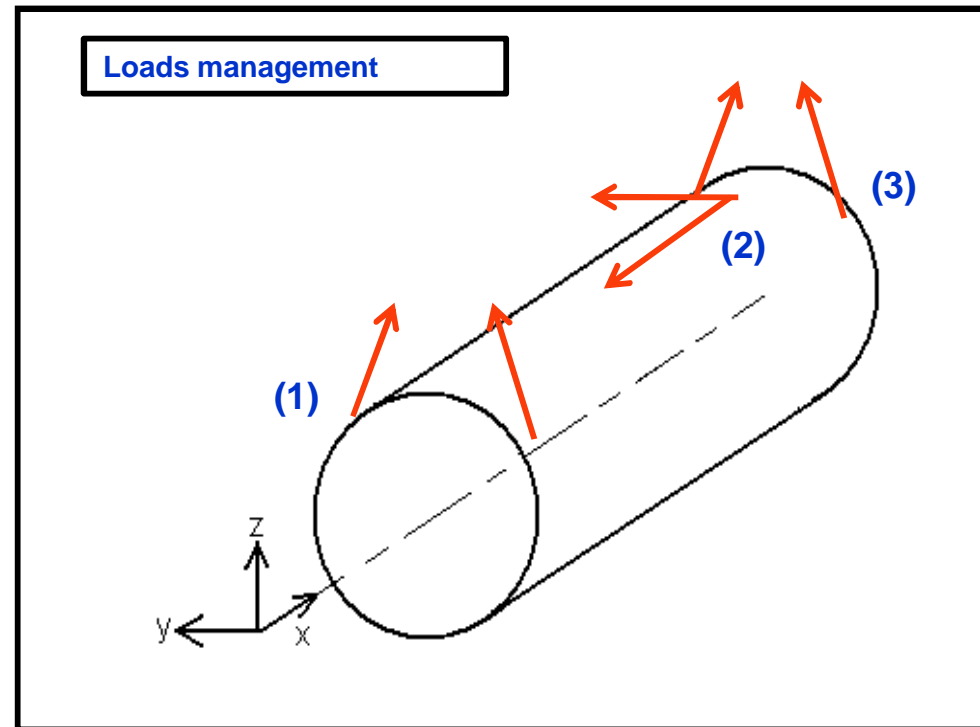
- ∅ 2 rods, mounted with ball joint
- ∅ **On the intermediate casing**

### 4 2) Thrust & torque management

- ∅ 1 Snout (= reprise  $F_x$  et  $F_\theta$ )
- ∅ **On the static frame**

### 4 3) Aft Mount

- ∅ 2 rods, mounted with ball joint
- ∅ **Located on the Static frame**



è Note that snout (that reacts axial thrust) is located on aft frame  
è Alternative concept: Thrust & torque loads are reacted on the fwd frame  
(as described in CfP ie. as for conventional engine mounts)



# SAGE2 Timeline

## Scope (continued)

2. To design, manufacture, and test an active in-flight engine balancing system

Aim: reduce the propeller vibration levels in flight.

## Requirements

- Ø Feasibility study: T0+4m (circa Dec 2012); detailed design T0+16m (circa Dec 2013); hardware delivery: T0 + 26m (circa oct 2014)
- Ø Quality Standard: Parts will be tested during Ground and Flight Testing: they must be flightworthy.