



Enhanced Runway Throughput with Wind/Wake vortex sensors



Amsterdam 23/04/2015



◆ SESAR P12.2.2 : Runway Wake Vortex Detection, Prediction and Decision Support Tools

● D4 report « Recommendations on sensor technologies » (based on XP trials at CDG) :

- ***Some available wind sensor technologies performances are not compliant for operational use by « wake-vortex predictor »***
 - SODAR & UHF Wind Profiler : too slow update rate (10 mn), only local vertical profile
 - Lidar Wind Profiler : non operational in rainy conditions, only local vertical profile
- ***New need in all weather conditions for operational 3D wind monitoring capability:***
 - in rainy weather with Electronic Scanning X-band Radar
 - in clear air with 1.5 micron High-Power LIDAR

◆ SESAR P15.4.9a : Weather sensing technologies specifications

● D1 report «Study on up-to-date technologies / recommendations »

- ***Same recommendations than P12.2.2 D4 Report***

◆ WAKENET-3 Europe

● Research Needs Report on “wake-vortex & wind Monitoring Sensors”

- ***Research Needs for E-scanning X-band Radar and High Power Lidar Sensors Technologies***

UFO: Ultra Fast wind sensOrs for wake-vortex hazards mitigation

- ◆ **Contrat : Grant Agreement 3142237 (ACP2-GA-2012-314237-UFO)**
- ◆ **Official EC letter signed 04/07/2012**
- ◆ **Customer : European Commission**
- ◆ **FP7 Call 5 Collaborative Project**
 - Identification : FP7-AAT-2012-RTD-1
 - AREA : Area 7.1.3.3. Aircraft safety
 - Sub-topic Area : AAT-2012.3.3-2 Systems & Equipments
- ◆ **Global Budget: 6276,563 k€ (EC funding: 4463,215 k€)**
- ◆ **Duration : 36 months**

T0 = 01/11/2012

Industries

- ◆ **TR6** : Thales Air Systems (*FR*)
- ◆ **TSA** : Thales Systèmes Aéroportés (*FR*)

SME

- ◆ **LEO** : Leosphere SME (*FR*)

Weather Meteorological Offices

- ◆ **KNMI** : Royal Netherlands Meteorological Institute (*NL*)
- ◆ **DWD** : Deutscher Wetterdienst Abteilung Flugmeteorologie (*GE*)

European Aeronautic Research Laboratories

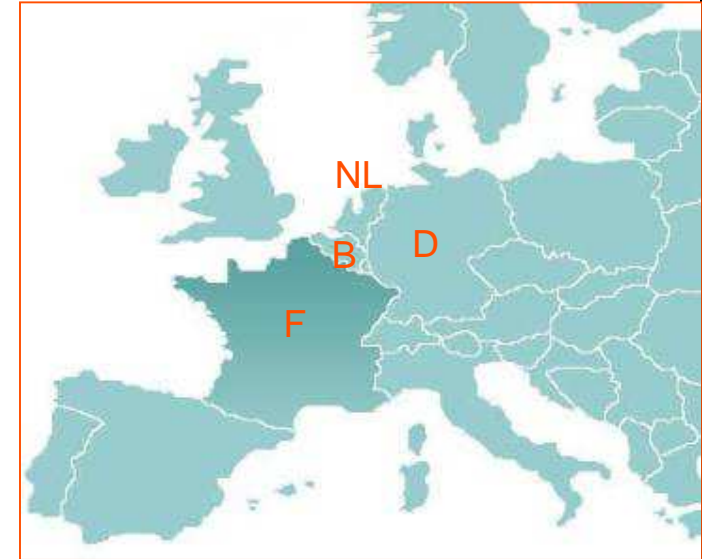
- ◆ **DLR** : Deutsches Zentrum fuer Luft und Raumfahrt (*GE*)
- ◆ **NLR** : Air Transport Safety Institute (*NL*)
- ◆ **ONERA** : Office National d'Etudes et Recherches Aéropatiales (*FR*)

European Academic Laboratories

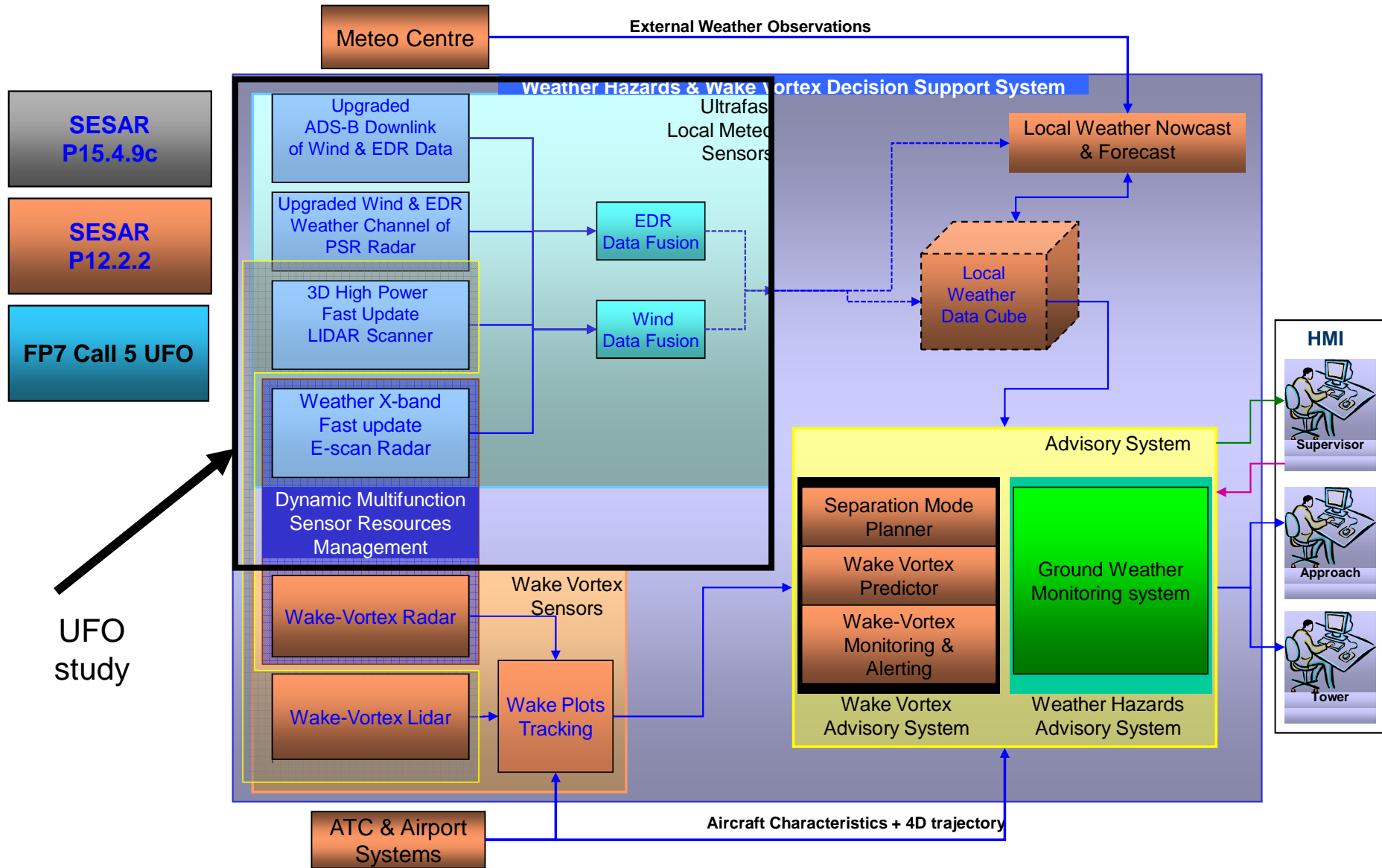
- ◆ **TUBS** : Technische Universitaet Braunschweig (*GE*)
- ◆ **UCL** : Université catholique de Louvain (*B*)
- ◆ **TUD** : Delft University of Technology (*NL*)
- ◆ **UPMC** : Université Paris 6 Pierre et Marie Curie, labo LATMOS (Institut Simon Laplace) (*FR*)

Associated Partner for coordination with SESAR and EUROCONTROL

- ◆ **ERC** : EUROCONTROL (Dennis Hart for WP11.2, Robert Graham for P6.8.1) (*EU*)
- ◆ **FM** : Munich Airport (Flughafen München) (*GE*)
- ◆ **MF** : Meteo France (*FR*)
- ◆ **(ISL** : Institut Saint-Louis (Prof. Cheinet) (*FR& GE*)) – Proposition to be integrated as associated partner
- ◆ **(DGAC/STAC** (*FR*)) – Proposition to be integrated as associated partner



Complementarities with SESAR P12.2.2 & P15.4.9



◆ Wind

- Accurate measurement and short term forecast of the headwind is mandatory for Time Based Separation
- Accurate measurement and short term forecast of the crosswind for Weather Dependant Separation
- Wind shears and micro burst measurements are required for safety.

◆ EDR

- The EDR has a strong impact on the wake vortex decay which is the key parameter to setup Time Based Separation

◆ Rain rate

- The rain rate measurement and short term forecast will allow a better runway condition awareness for optimizing the Runway Occupancy Time

Thanks to UFO developments, improved Lidar & an X Band radar have demonstrated to reach the required performances to enhance the runway throughput



THALES



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THE FRENCH AEROSPACE LAB



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Delft University of Technology



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Munich Airport



Toujours un temps d'avance

