

# **A380 Progress Report**

By the

**A380 International Working Group**

WakeNet USA – Boca Raton, FL

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# Main Working Group Task

**Task 5** Evaluate the Airbus A380, in comparison with other heavy aircraft, using the agreed methodology

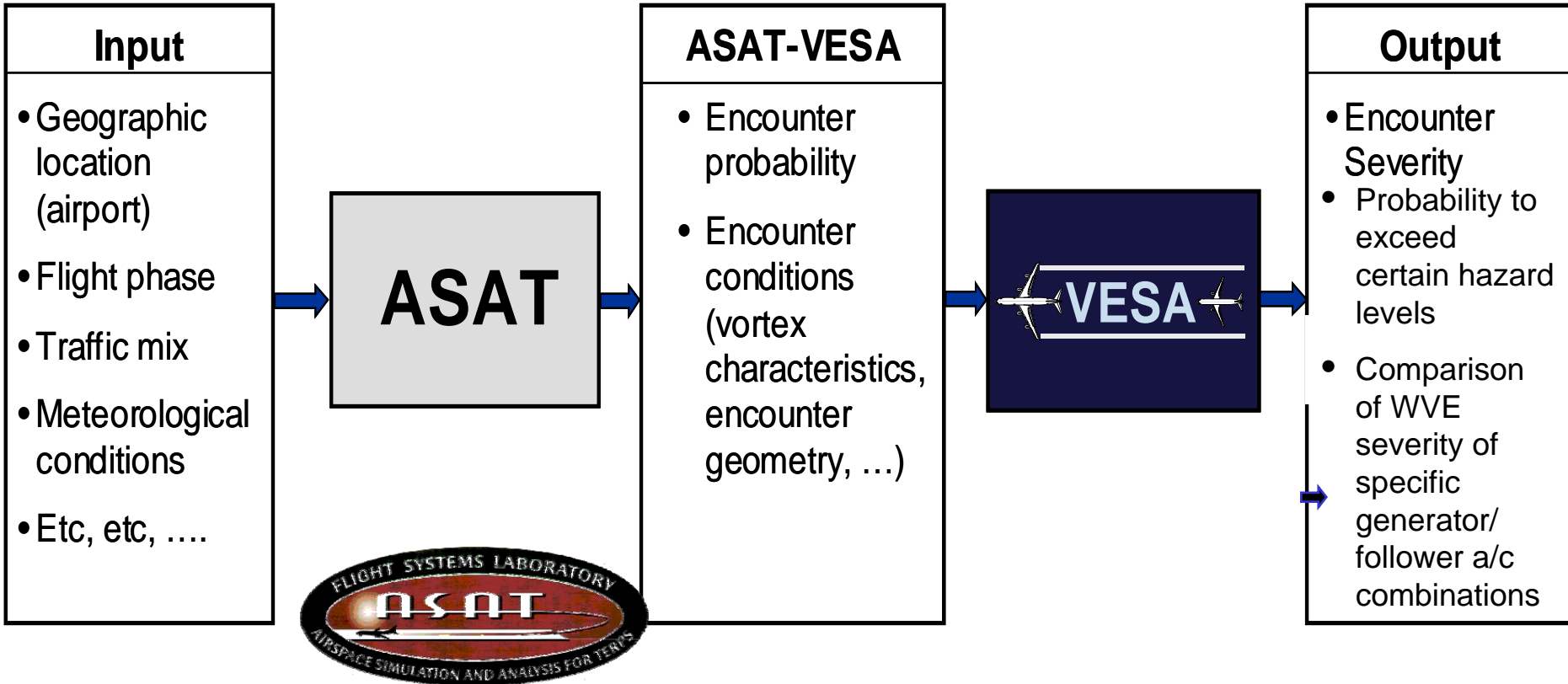
- Does the A380 generate more encounters?
- Would those encounters be more severe?

# Task 5

## Steering Group priorities:

- Landing, departure single runway
- Vertical Separation (terminal, RVSM)
- Closely spaced parallel runways
- May answer only highest priorities within allotted schedule and resources
- Some assessment of vertical separation issues will be conducted (TBD).

# Methodology



*Final Result:*

Probability for a severe encounter =  
Probability of encounter (ASAT) \* Probability to exceed severity limit (VESA)



# Status

- **What we have done:**
  - Parametric model studies of wake encounters for B747 and A380 for different weather conditions
- **What we **have not done yet:****
  - Statistical hazard evaluation based on expected occurrence frequency of different weather conditions
  - Validated current results with Lidar measurements of B747 and A380 wakes

# Validation Issues

- Wake models used in the ASAT/VESA methodology require validation
- Vortex characteristics validation will be achieved through wake measurements during flight
  - Wake measurements of B747 and A340 at Frankfurt airport
  - A380 wake turbulence measurements at ???

# A380 WV Separation Standard

- Safety Argument -

Dr Bernd Tiemeyer

EATM DAP/SAF

A380 Working Group, 10 January 2005

# Proposal

## Top-level Argument

**A001**

Current separation minima for heavy a/c are accepted as being safe

**Cr001**

The risk of an accident resulting from encountering a hazardous wake vortex generated by an A380 shall be:

1. no greater (and preferably lower) than currently exists with heavy a/c;
2. reduced as far as reasonably practicable.

**Arg 0**

A380 operations are *acceptably safe* regarding hazardous wake vortex encounters

**J001**

A380 separation minima need to be established before a/c enter into operational service

**C001**

All phases of flight

# Argumentation Strategy

**St 001**

Specify safety criteria for 'Concept', 'Implementation' and 'On-going Operation' stages and show that each stage is / will be acceptably safe – ie the safety criteria are sufficient to achieve the required level of safety, and are satisfied

Who will be responsible for doing this ?

**Arg 1**  
A380 WV operational **Concept** is *acceptably safe, in principle*

**St002**  
Show that Safety Requirements satisfy Cr001 items 1 & 2

Fig 2

**Arg 2**  
Sufficient **guidance** exists to enable complete and correct implementation of the Safety Requirements by States

Fig 7

'Group'

**Arg 3**  
**Implementation** of WV operational **Concept** is complete and correct

State/  
ANSP  
Evidence

'States'

**Arg 4**  
**On-going Operation** of A380 will be shown to be *acceptably safe regarding WV encounters*

**St003**  
Safety Monitoring will satisfy Cr001 items 1 & 2

Fig 8

# Summary

- ASAT/VESA operational
- Initial parametric runs completed
- WG identified the following as critical:
  - validation (methodology, wake measurements)
  - safety case
  - stakeholder involvement
  - external communication