

U.S. Parallel Runway Crosswind Dependent Wake Separation Reduction Research Prototype Update

WakeNet Europe Workshop 2007

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Outline

- **Briefing Purpose**
- **WTMD Concept**
- **WTMD Implementation Decisions**
- **WTMD Prototype Planning**
- **WTMD Prototype Development**
- **KSTL Prototype Status**
- **KIAH Prototype Status**
- **Questions**



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Briefing Purpose

- **Provide overview and status of Parallel Runway Crosswind Dependent Wake Separation Reduction Research Program Prototypes**



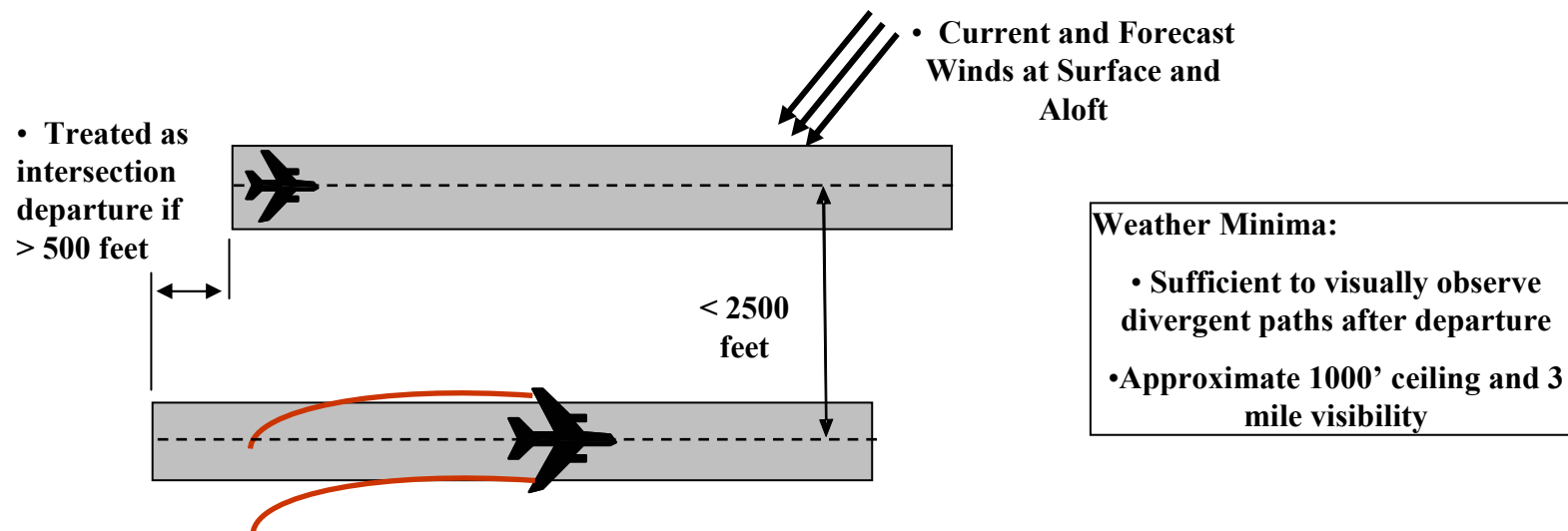
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Problem and Proposed Solution

Under current U.S rules, any aircraft departing the top runway after a 757 or Heavy wake category aircraft departs the bottom runway must be separated by wait 2 minutes (or 4 or 5 miles), or 3 minutes if the runway thresholds are offset by 500 ft or more.

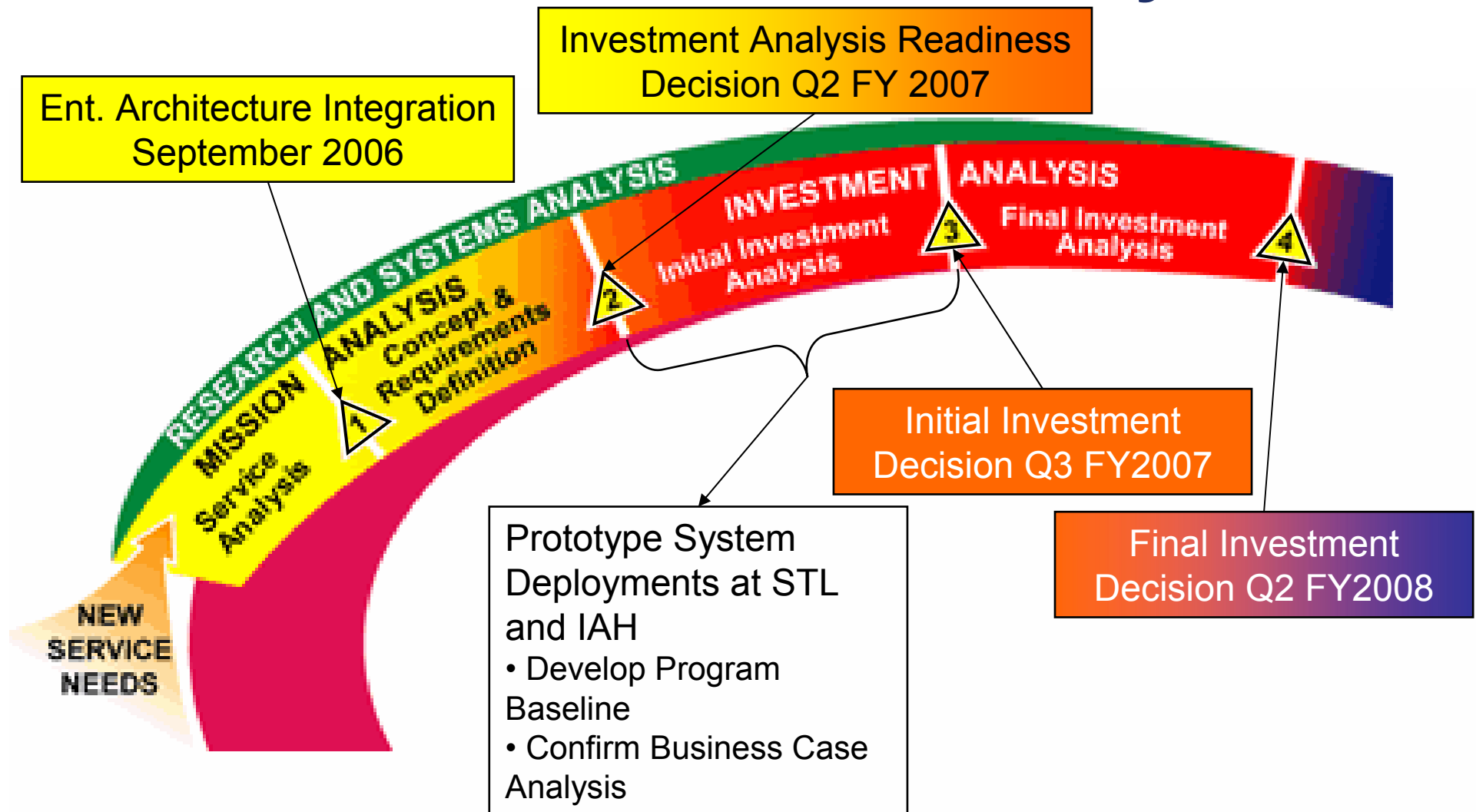
Under certain wind conditions, like those depicted below, the wake is not a factor and the separation should not be required. Stakeholders have requested the joint NASA-FAA research program develop a system that predicts these conditions and provides ATC with an indication that it is safe to depart without applying today's separation.



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WTMD Investment Decision Cycle



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WTMD Candidate Airports

17 OEP airports w/ CSPRs

- ATL
- BOS
- CLE
- DFW
- DTW
- EWR
- IAH
- LAS
- LAX
- MCO
- MEM
- MIA
- PHL
- PIT
- SEA
- SFO
- STL



Preliminary Downselect

- ATL
- BOS
- CLE
- DFW
- DTW
- EWR
- IAH
- LAX
- MEM
- MIA
- PHL
- SEA
- SFO
- STL



Investment Analysis Downselect

- BOS
- DTW
- EWR
- IAH
- MEM
- MIA
- PHL
- SEA
- SFO
- STL



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WTMD Prototype Planning

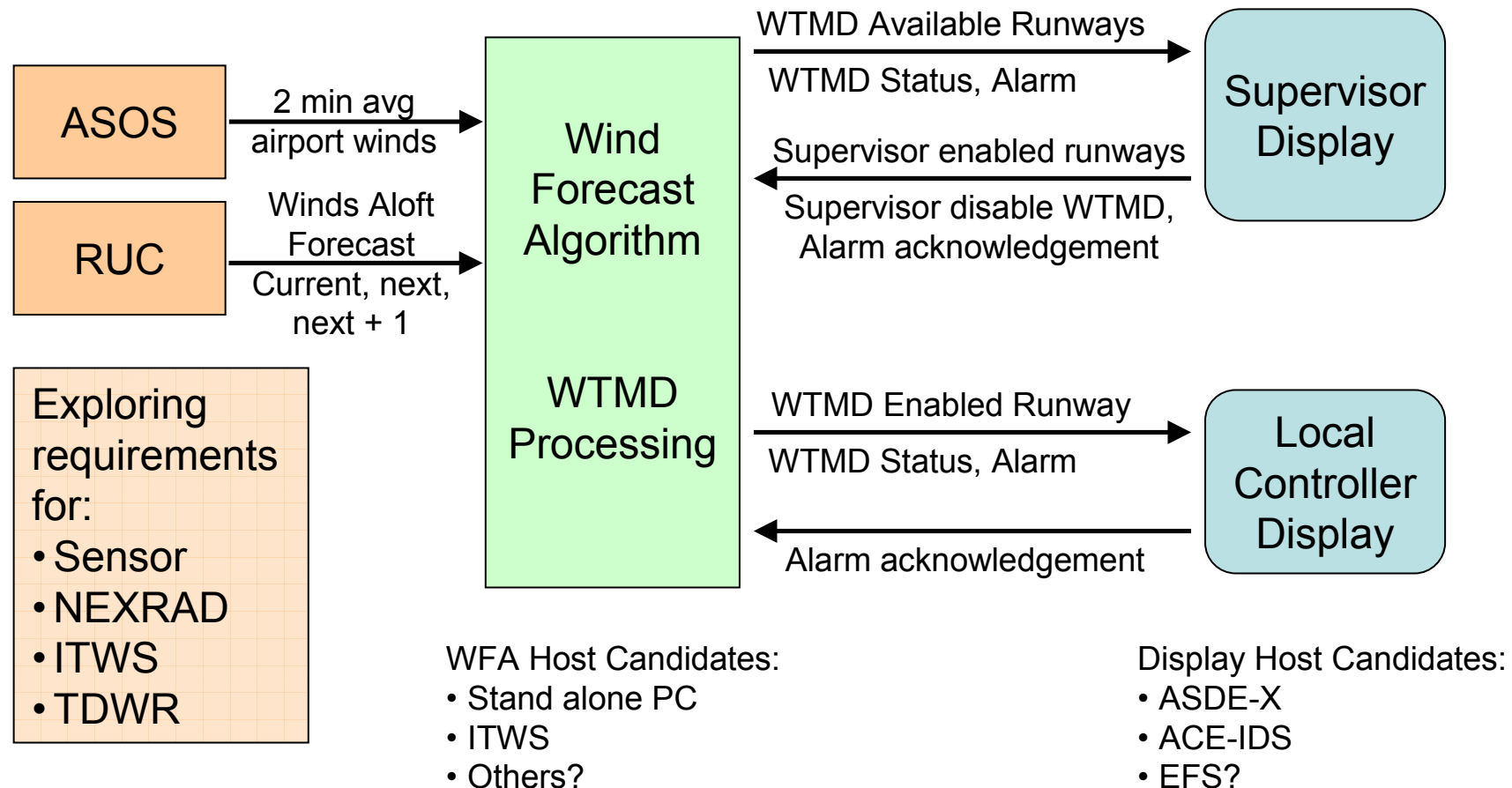
- **Prototypes Support Requirement Validation**
 - Benefit
 - Site Dependent due to Weather and Traffic
 - Safety
 - Multiple Layers of Safety Assurance
- **St. Louis (KSTL) site supports basic science**
 - Wake sensors for wake science
 - Multilateration data used for departure tracks
 - Wind sensors to determine minimum winds to be predicted
- **Houston (KIAH) site for benefits and feasibility assessment**
 - Attended shadow mode deployment to work through operational use feasibility issues with ATC
 - Unmanned shadow mode deployment for operational benefits assessment



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WTMD Prototype Architecture

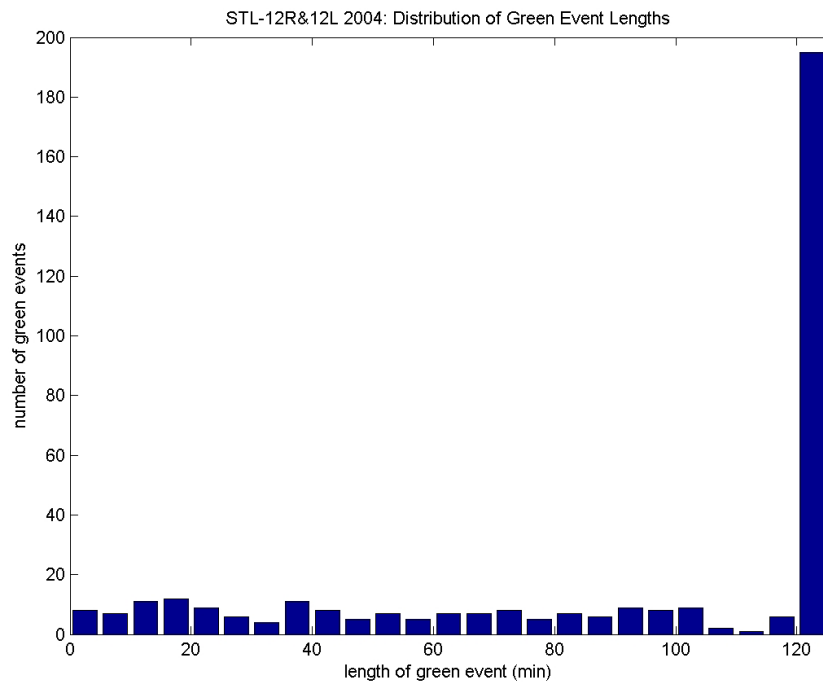


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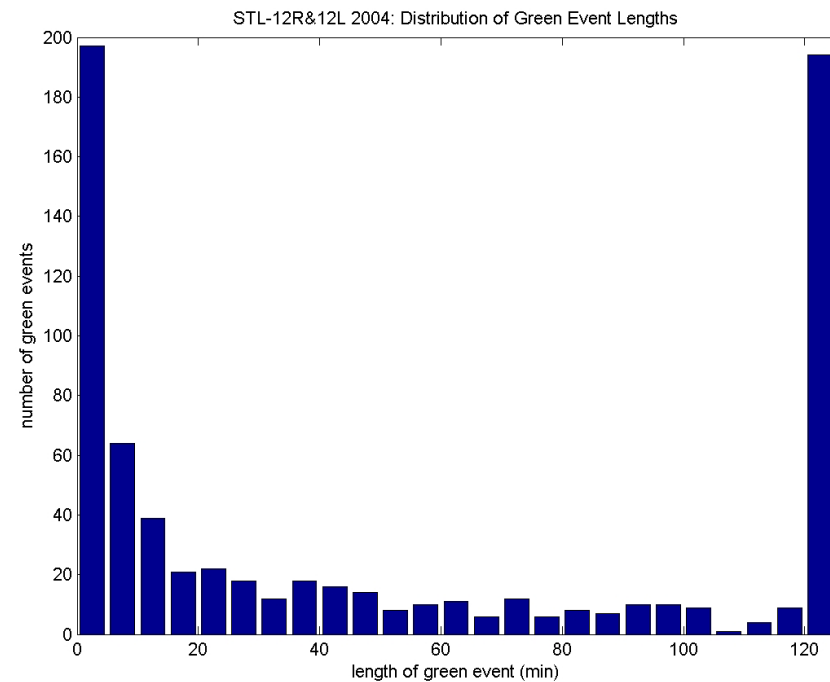


WFA Tuning Effects

Current Version



Alternate Version



Procedure Availability Duration: STL 12s, all 2004

Data analysis and results by MIT/LL



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KSTL Prototype Status

- **Intent- Demonstrate engineering feasibility of system integration; develop system requirements**
- **Shadow-mode operations from October 2006 through present in ATC tower facility**
 - Training room with surface surveillance and controller planning tool real time displays
 - Nearby airport winds being used for prototype
- **STL historical winds being analyzed for system performance**
- **Controller feedback interviews nearing completion**
- **Prototype removal expected during 2007**



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KIAH Prototype Status

- **Intent- Demonstrate benefit potential of system at potential implementation site; finalize system requirements**
- **Shadow-mode operation expected from February through August 2007**
 - WakeNet USA, March 28-29 2007 at KIAH
- **Analyses will support Final Investment Decision**



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Questions?



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