

FY09 NextGen Portfolio



Federal Aviation
Administration

Reduce Weather Impact - Weather Forecast Improvements

Date: December 2008

Overview

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Project Capability

- **RWI Weather Forecast Improvements addresses the need to enable better weather decision making and use of weather information in the transformed NAS. It includes:**
 - Develops forecast applications needed for Air Traffic Management (ATM) decision-making
 - Expedites transitioning NextGen weather improvements from R&D to operations
 - Coordinates with the ATM community to ensure focus on weather impacts
 - Metrics to evaluate the effectiveness of weather improvements
 - Probabilistic forecasts for traffic flow management
 - Determines the most effective solution for a NextGen Weather Processing (NWP) architecture



Project Smart Sheet

<ul style="list-style-type: none"> • Project Description <p>RWI Weather Forecast Improvements addresses the need to enable better decision making and use of weather information in the transformed NAS</p>	
<ul style="list-style-type: none"> • Problem/Performance Gaps ➤ 70% of delays of 15 minutes or more, on average caused by weather ➤ Forecast information not consistent nor well integrated ➤ Forecast information not suitable for automated DSTs 	<ul style="list-style-type: none"> • Solution ➤ Integrate weather information tailored for DSTs ➤ Transition improved forecasts from research to operations ➤ Coordinate with ATM to ensure focus on weather impacts ➤ Determine best processor architecture solution
<ul style="list-style-type: none"> • Support to Goals ➤ FAA Strategic Goal – Greater Capacity <ul style="list-style-type: none"> – Increase reliability and on-time performance of scheduled carriers – Increase capacity to meet projected demand and reduce congestion 	<ul style="list-style-type: none"> • Interdependencies ➤ FAA legacy programs ➤ NNEW (4-D Weather Data Cube) ➤ Aviation Weather Research Program ➤ RWI Weather Observation Improvements ➤ Weather Technology in the Cockpit ➤ FAA NextGen Solution Set Requirements for weather information integration



Project Schedule (FY '09)

Description	S	O	N	D	J	F	M	A	M	J	J	A	S
NAS legacy system migration architecture study													▲
Plan for NAS legacy sensor configuration to support Segment 1 advanced forecast applications													▲
Preliminary OMB-E300 update pPR and BCAR											▲		
Update enterprise architecture products												▲	
Evaluations of advanced weather national ceiling & visibility analysis, and forecast icing & turbulence products												▲	
Establish advanced convective forecast summer demonstration													▲

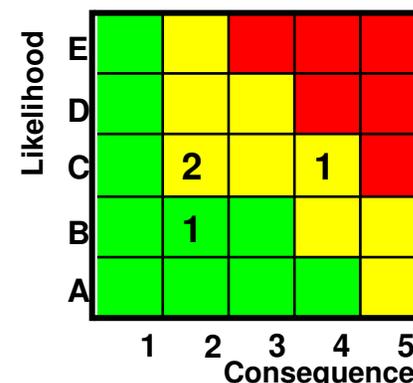


Project Schedule (FY '10)

Description	S	O	N	D	J	F	M	A	M	J	J	A	S
Continued evaluations of advanced national ceiling & visibility analysis and forecast icing & turbulence products								△					
Evaluation of prototype weather decision support tools										△			
OMB-E300 Program Baseline												△	
Assessment of use of probabilistic weather forecasts in ATM												△	
Conduct advanced convective weather forecast demonstration													△



Project Risks (Preliminary)



Risk Level	Description	Impacts	Mitigation Strategy
S-C2	Management of Legacy system transition (Management)	WARP/CIWS functionality not hosted on new system in time for IOC.	Work closely with service units to develop transition plan
T-B2	Transition of weather research products in operations (Technical)	Some advanced capabilities not be available by IOC. Possible interim level of performance provided.	Expand research effort to lessen risk
S-C2	Undefined Integration needs for decision support tools (DST) (Operability)	Lack of appropriate weather information integrated. NextGen capacity improvements due to weather not realized.	Assign ownership to operational units responsible for ATM decision tools
C-C4	Alignment of interagency plans and programs (Cost Estimate)	Duplicative resources expended.	Focus efforts on interagency planning to control risk

T, S, C: Technical, Schedule, or Cost



Project Details

- **Acquisition Strategy**

- Segment 1

- Implement NextGen Weather Processing (NWP) capability
 - Initiate migration of legacy capabilities to NWP
 - Transition advanced weather forecast applications into operations

- Segment 2

- Initiate integration of weather information into DSTs
 - Evolve NWP architecture
 - Continue migration of legacy capabilities
 - Continue transition of advanced forecast applications

- Segment 3

- Complete integration of weather information into DSTs
 - NWP evolution to support required advanced forecast capabilities
 - Continue transition of advanced forecast applications



Project Details (cont.)

- **What are the related projects/programs?**
 - NNEW enables universal access to advanced forecast information via the 4-D Wx Data Cube
 - Aviation Weather Research Program develops weather forecast improvement packages for transition into operations by RWI
 - RWI Weather Observation Improvements provides required spatial and temporal resolution to improve quality of forecast information
 - WTIC develops aircraft as a node technology which may result in improvements to advanced forecast applications
 - NextGen automated decision support tools provide integration requirements for weather forecast information



Project Details (cont.)

- **What system requirements will be developed?**
 - HW/SW documentation
 - NextGen requirements for weather forecast information in terms of accuracy, coverage, spatial resolution, refresh rate, time scale, latency, reliability
- **What other activities are required to reach implementation?**
 - Investment analysis to determine cost/benefit, select best alternative for NWP
 - Formal evaluation of new weather forecast capabilities for safety, human factors, IT security, and operational effectiveness
 - Aviation Weather Research to provide new weather capabilities for transition to operations



Resources

- **FAA Personnel**
 - NNEW, AWRP government FTEs; service unit personnel from ATO-E, ATO-R, ATO-T; System Engineering, WHJTC
- **Other Government Personnel**
 - NWS, DoD
- **Contract Personnel**
 - AvMet, SETA, MCRI, FFRDCs (MITRE, NCAR, MIT/LL)
- **Challenges**
 - Full understanding of NextGen capabilities for integration
 - Ensure meteorological information is suitable for ATM action
 - Operational acceptance of new way of using weather for decision making



Acquisition Status/Requirements

- **Existing Contracts**

- DTFACT-07-X-00002; NCAR; 6/1/2008-5/31/2013; Warren Fellner;
- DTFAWA-08-X-8008; ESRL; 7/30/2008-12/30/2013; Tom Ryan;
- DTFAWA-06-X-00015; MIT LL; 8/2/2006-3/31/2010; Warren Fellner;
- DTFAWA-07-F-00076; AvMet; 8/1/2007-7/31/2011; Debi Bacon;
- DTFAWA-08-C-00049; MCRI; 7/1/2008-6/30/2009; Robert Smith;
- SETA DTFA01-00-C-00068; BAE; 2/1/2008-9/30/2008; Ed Harris;

- **New Contracts**

- “Weather Support” (WJHTC) ; 3/1/2009-3/1/2014; Colleen Horan;



FY '09 NextGen Implementation Plan Commitments

- **Major '09 milestones to be reported in NextGen Implementation Plan**
 - NAS Legacy processing architecture study
 - Establish advanced convective forecast summer demonstration
- **NASEA Decisions supported**
 - Initial Investment Decision (IID) for NextGen Wx Processor WP1 (DP#86, 2010 Q4)
 - Final Investment Decision for NextGen Wx Processor WP1 (DP#89, 2011 Q4)
- **Deliverables/Products**
 - Initial investment analysis, architecture for legacy migration; advanced convective forecast summer demo; operational evaluation of advanced C&V, icing, turbulence forecasts, preliminary OMB-300 product
- **Funding Request**

