Exhibit 300: Capital Asset Summary

Part I: Summary Information And Justification (All Capital Assets)

Section A: Overview & Summary Information

Date Investment First Submitted: 2010-09-17
Date of Last Change to Activities: 2012-08-23
Investment Auto Submission Date: 2012-02-27
Date of Last Investment Detail Update: 2012-02-27
Date of Last Exhibit 300A Update: 2012-08-23
Date of Last Revision: 2012-08-23

Agency: 021 - Department of Transportation **Bureau:** 12 - Federal Aviation Administration

Investment Part Code: 01

Investment Category: 00 - Agency Investments

1. Name of this Investment: FAAXX801: NextGen R&D Arrivals/Departures at High Density Airport (HD)

2. Unique Investment Identifier (UII): 021-281304187

Section B: Investment Detail

1. **Provide a brief summary of the investment, including a brief description of the related benefit to the mission delivery and management support areas, and the primary beneficiary(ies) of the investment. Include an explanation of any dependencies between this investment and other investments.**
NextGen is a series of inter-linked programs, systems, and policies that implement advanced technologies and capabilities to dramatically change the way the current aviation system is operated. NextGen is satellite-based and relies on a network to share information and digital communications so all users of the system are aware of other users' precise locations. This solution set is a portfolio of research and development projects focused on improving the use of available capacity at airports with large numbers of operations that have multiple runways with both airspace and taxiing interactions and are in close proximity to other airports that have the potential for airspace interference. Operational issues make it difficult for an airport to achieve its maximum arrival or departure capacity. If the arrival stream to an airport contains a mixture of small and large aircraft, maximizing runway capacity is not possible. Differences in aircraft arrival speed or the effect of wake turbulence from large aircraft require increased separation between aircraft. Wake turbulence from a large aircraft requires controllers to increase separation to 5 miles or more between the two aircraft when a small aircraft is following a larger aircraft. Multiple runways at an airport can also complicate movement of aircraft on the ground and create restrictions on the number of takeoffs from available runways. In major metropolitan areas, multiple major hub airports that have overlapping terminal airspace must share that airspace, and significant restrictions on terminal operations result, when winds dictate that an approach path used for the active

runways at one of the airports limits the use of approach paths for certain runways at nearby airports. Operational improvements in this solution set address some of these limitations in order to make more efficient use of the available runways. This program is a Research and Development (R&D) effort that is currently in the planning phase and therefore final beneficiaries and dependencies have not been formally established and are subject to change. Such beneficiaries and dependencies will be clearly identified for NextGen transformational programs that are reported in their own Exhibit 300.

2. **How does this investment close in part or in whole any identified performance gap in support of the mission delivery and management support areas? Include an assessment of the program impact if this investment isn't fully funded.**
HD will increase efficiency and reduce congestion across the NAS. Initial Surface Traffic Management uses automation tools for departure scheduling to improve flow of surface traffic at high-density airports providing surface sequencing and staging lists for departures and predicts departure delays. By better scheduling departures from the gate, the time between leaving the gate and takeoff is reduced resulting in fuel and time savings. Time Based Metering Using RNAV and RNP Route Assignments allows more efficient use of runways and airspace in high-density airport environments. For those aircraft that are equipped to fly more precise routes and conform to time metering, arrival and departure paths are shortened to save fuel and minimize delays. Improved Management of Arrivals/Surface Departure Flow Operations integrates advanced arrival and departure flow management with advanced surface operations to improve overall airport capacity and efficiency. Arrival and departure scheduling tools and 4D trajectory agreements are used to make collaborative real-time adjustments to aircraft sequencing to optimize use of airport capacity. Time Based Metering in the Terminal Environment optimizes use of terminal airspace and surface capacity. Automation develops trajectories and allocates time-based slots for various points within the terminal environment, using RNAV routes enhanced surveillance, and data communications. Integrated Arrival/Departure Airspace Management will take advantage of terminal procedures and separation standards in adjacent en route airspace to increase flow and introduce additional routes and flexibility. Reducing funding would delay benefits beyond the 2012-2018 plan.

3. **Provide a list of this investment's accomplishments in the prior year (PY), including projects or useful components/project segments completed, new functionality added, or operational efficiency achieved.**
High Density Solution Set developed and evaluated concepts designed to improve surface operations in the mid-term, including the following. Surface Tactical Flow: Documented the results of the fast-time simulation/validation of the Collaborative Departure Queue Management (CDQM) algorithm on multiple airports, a concept that applies a just-in-time metering method to delivering aircraft to the departure runway, reducing fuel usage and environmental impact. Surface Conformance Monitoring: Conducted human-in-the-loop (HITL) simulations with air traffic controllers to evaluate the use of automation in monitoring the conformance of aircraft as they taxied to and from the runway, improving safety through the detection of non-conformance to assigned taxi routings. Surface Traffic Data Sharing: Installed second operational messaging node to enhance reliability of a system that provides surface movement data to the flying community via a service-oriented approach to information management.

4. **Provide a list of planned accomplishments for current year (CY) and budget year (BY).**

FY12: Surface Tactical Flow: Continue support to Tower Flight Data Manager (TFDM) program AMS effort; Continue technical transfer of mature surface capabilities to TFDM; Continue STBO field evaluations at Memphis and Orlando; Conduct two each field evaluations of Departure Runway Assignment, Airport Configuration, Departure Scheduling, and 2D Taxi Route Generation Tools at Memphis and Orlando; Conduct two each Field evaluations of Collaborative Departure Queue Scheduling at Memphis and Orlando; Conduct field evaluation of De-Ice Tool at Memphis; Develop 50% draft of Mid-to-Far-Term STBO Requirements documents for Data Communications, Surveillance, Navigation, Weather, and NAS Data Systems and a 50% Far-Term ConOps document; Conduct Field evaluation of Flight Operator Surface Application (FOSA) Interface concept at Memphis & Orlando. Surface Conformance Monitoring: Conduct two HITL simulations of Time-Based Surface Conformance Monitoring; Update ConUse, Requirements and ATC Procedures; Conduct proof of concept field evaluations at WJHTC and Orlando for Surface Conformance Monitoring and update ConUse, Requirements, ATC Procedures. FY13: Surface Tactical Flow: Continue support to Tower Flight Data Manager (TFDM) program AMS effort; Continue technical transfer of mature surface capabilities to TFDM; Complete initial TFDM platform migration; Develop final Mid-to-Far-Term STBO Requirements documents for Data Communications, Surveillance, Navigation, Weather, and NAS Data Systems and a final Far-Term ConOps document; Continue STBO field evaluations at Memphis and Orlando; Continue two each field evaluations of Departure Runway Assignment, Airport Configuration, Departure Scheduling, and 2D Taxi Route Generation Tools at Memphis and Orlando; Conduct two each Field evaluations of Collaborative Departure Queue Scheduling at Memphis and Orlando; Conduct field evaluation of De-Ice Tool at Memphis; Conduct initial efforts on Airport Gridlock Predictive Tool. Surface Conformance Monitoring: Conduct two HITL simulations of Time-Based Surface Conformance Monitoring and update ConUse, Requirements, ATC Procedures; Conduct two field evaluations of Surface Conformance Monitoring and update ConUse, Requirements, ATC Procedures; Execute technical transfer of ConUse, Requirements, ATC Procedures to TFDM program.

5. **Provide the date of the Charter establishing the required Integrated Program Team (IPT) for this investment. An IPT must always include, but is not limited to: a qualified fully-dedicated IT program manager, a contract specialist, an information technology specialist, a security specialist and a business process owner before OMB will approve this program investment budget. IT Program Manager, Business Process Owner and Contract Specialist must be Government Employees.**

2011-03-01

Section C: Summary of Funding (Budget Authority for Capital Assets)

1.

Table I.C.1 Summary of Funding

	PY-1 & Prior	PY 2011	CY 2012	BY 2013
Planning Costs:	$45.0	$23.2	$12.0	$11.0
DME (Excluding Planning) Costs:	$0.0	$0.0	$0.0	$0.0
DME (Including Planning) Govt. FTEs:	$0.0	$0.0	$0.0	$0.0
Sub-Total DME (Including Govt. FTE):	$45.0	$23.2	$12.0	$11.0
O & M Costs:	$0.0	$0.0	$0.0	$0.0
O & M Govt. FTEs:	$0.0	$0.0	$0.0	$0.0
Sub-Total O & M Costs (Including Govt. FTE):	0	0	0	0
Total Cost (Including Govt. FTE):	$45.0	$23.2	$12.0	$11.0
Total Govt. FTE costs:	0	0	0	0
# of FTE rep by costs:	0	0	0	0
Total change from prior year final President’s Budget ($)		$-13.8	$-13.7	
Total change from prior year final President’s Budget (%)		-37.24%	-53.31%	

2. If the funding levels have changed from the FY 2012 President's Budget request for PY or CY, briefly explain those changes:

FY12 funding reduced due to FY12 appropriation adjustment as well as removal of DOT infrastructure adjustment.

Section D: Acquisition/Contract Strategy (All Capital Assets)

Table I.D.1 Contracts and Acquisition Strategy

Contract Type	EVM Required	Contracting Agency ID	Procurement Instrument Identifier (PIID)	Indefinite Delivery Vehicle (IDV) Reference ID	IDV Agency ID	Solicitation ID	Ultimate Contract Value ($M)	Type	PBSA ?	Effective Date	Actual or Expected End Date
Awarded		DTFA01-01-C-00001 (MITRE CAASD) Vehicle Not Task/Del. Order Specific									
Awarded		DTFAWA-10-D-00030 (BAH)									
Awarded		JMA (DTFAWA-11-C -00017)									

2. If earned value is not required or will not be a contract requirement for any of the contracts or task orders above, explain why:

FAA's AMS includes policy and guidance on the utilization of EVM, and EVM is applied to NextGen investments in accordance with this policy. Once programs are approved and baselined, EVM is conducted in accordance with FAA and DOT policy. Investments described in this Exhibit are managed in the NextGen Portfolio Management Framework which requires project level agreements (PLAs) that document project scope, purpose, planned cost, major milestones and relationships to other programs and the NAS EA. This information is maintained in an automated tool where project managers provide monthly status on activities. The data maintained in the tool provides an annual master milestone list and current status information. For each activity a project plan and a supporting project schedule are developed to document major milestones, decisions and deliverable.

Exhibit 300B: Performance Measurement Report

Section A: General Information

Date of Last Change to Activities: 2012-08-23

Section B: Project Execution Data

Table II.B.1 Projects					
Project ID	Project Name	Project Description	Project Start Date	Project Completion Date	Project Lifecycle Cost ($M)
G02A0101	Trajectory Management - Surface Tactical Flow	This project is focused on the development of trajectory-based surface operations in support of the NextGen initiative. It leverages the development efforts of the NASA Surface Management System (SMS) and provides guidelines for the development of a collaborative Surface Traffic Management (STM) system with the tools necessary to achieve a fully collaborative surface environment. This is required to safely improve the use of airport capacity which is necessary to enable trajectory-based operations on the airport surface. This project will demonstrate and document requirements for a series of capabilities that build to the NextGen vision for surface trajectory-based operations. The Surface Tactical Flow project will require changes to procedures in the flight operator and Air Traffic Control Tower (ATCT)			

Table II.B.1 Projects

Project ID	Project Name	Project Description	Project Start Date	Project Completion Date	Project Lifecycle Cost ($M)
		environments. The concept and requirements development and acquisition process is designed to allow incremental steps toward the complete concept, providing benefits at each step of the way and remaining aligned with the introduction of other NextGen technologies.			
G02A0102	Trajectory Management - Surface Conformance Monitoring	The Taxi Conformance Monitoring (TCM) effort is designed to show the potential safety and workload benefits that can be achieved through a comprehensive taxi route management and conformance monitoring capability. The end state would allow a precise, unambiguous taxi clearance to be generated by the Air Traffic Controller, communicated to the aircraft via data link and conformance to the clearance monitored by automation in the Air Traffic Control Tower (ATCT). An important consideration is the development and demonstration of user-friendly, minimal-workload methods for the controller to specify the taxi route. Conformance monitoring can be limited to route adherence only, or both route and timing through the incorporation of timed check points. By using a proactive approach to separation on the airport surface, taxiing aircraft can be "de-conflicted" with other aircraft in the taxi, landing, and takeoff phases of flight, resulting in safer ground operations.			
G02A0105	Trajectory Management - Surface Traffic Data Sharing	Surface Traffic Data Sharing will establish a longer term			

Table II.B.1 Projects					
Project ID	Project Name	Project Description	Project Start Date	Project Completion Date	Project Lifecycle Cost ($M)
		Service-Oriented Approach to procuring, sharing, and storing select surface data for use by both the Air Navigation Service Provider (ANSP) and external stakeholders, such as National Airspace System (NAS) users, airport authorities, or other governmental organizations (e.g., Department of Homeland Security). This more robust capability will replace an initial infrastructure established in 2010. The data sharing of aircraft movement data between the ANSP and NAS stakeholders at selected airports will enable improved collaborative decision-making, enhanced efficiency, and increased common situational awareness. Additionally, this capability will enable the sharing of surface data with ANSP Decision Support Tools (DST), enabling improvements in DST performance, surface capacity management, and collaborative decision making.			
G02A0106	Trajectory Management - Time-Based Flow Management (TBFM) Work Package III	The Time-Based Flow Management (TBFM) Work Package III effort will build upon the previous two segments to develop new NextGen capabilities and integrate these capabilities into an enterprise-oriented solution. Traffic Management Advisor (TMA), which TBFM builds upon, is a vital part of the National Airspace System (NAS) and enhances air traffic operations by reducing delays and increasing			

Table II.B.1 Projects					
Project ID	Project Name	Project Description	Project Start Date	Project Completion Date	Project Lifecycle Cost ($M)
		efficiency of air traffic operations. It is the only NAS-deployed decision support tool currently available for implementation of time-based metering. TMA has been field-tested over the past 10 years and is already installed in the twenty Air Route Traffic Control Centers (ARTCCs) and adapted for most of the major airports served by those ARTCCs. The Time Based Flow Management Program is divided into three segments. Segment I, Initial TMA platform of capabilities, was completed in April 2009. Segment II, Current TBFM program, is a continuation of TMA that will fulfill operational user needs and NextGen goals. The TBFM program will incorporate NextGen concepts such as extended metering, weather integration, and metering with Area Navigation (RNAV)/Required Navigation Performance (RNP), while expanding the TMA core capabilities to additional locations in the NAS. Segment III, also known as TBFM Work Package III, will develop and implement additional NextGen capabilities and integrate the TBFM capabilities into an enterprise-wide solution.			

Activity Summary

Roll-up of Information Provided in Lowest Level Child Activities

Project ID	Name	Total Cost of Project Activities ($M)	End Point Schedule Variance (in days)	End Point Schedule Variance (%)	Cost Variance ($M)	Cost Variance (%)	Total Planned Cost ($M)	Count of Activities

Activity Summary

Roll-up of Information Provided in Lowest Level Child Activities

Project ID	Name	Total Cost of Project Activities ($M)	End Point Schedule Variance (in days)	End Point Schedule Variance (%)	Cost Variance ($M)	Cost Variance (%)	Total Planned Cost ($M)	Count of Activities
G02A0101	Trajectory Management - Surface Tactical Flow							
G02A0102	Trajectory Management - Surface Conformance Monitoring							
G02A0105	Trajectory Management - Surface Traffic Data Sharing							
G02A0106	Trajectory Management - Time-Based Flow Management (TBFM) Work Package III							

Key Deliverables

Project Name	Activity Name	Description	Planned Completion Date	Projected Completion Date	Actual Completion Date	Duration (in days)	Schedule Variance (in days)	Schedule Variance (%)

NONE

Section C: Operational Data

Table II.C.1 Performance Metrics

Metric Description	Unit of Measure	FEA Performance Measurement Category Mapping	Measurement Condition	Baseline	Target for PY	Actual for PY	Target for CY	Reporting Frequency

NONE