



Joint Planning and Development Office

Work Plan FY10



Next Generation Air Transportation System
Joint Planning and Development Office

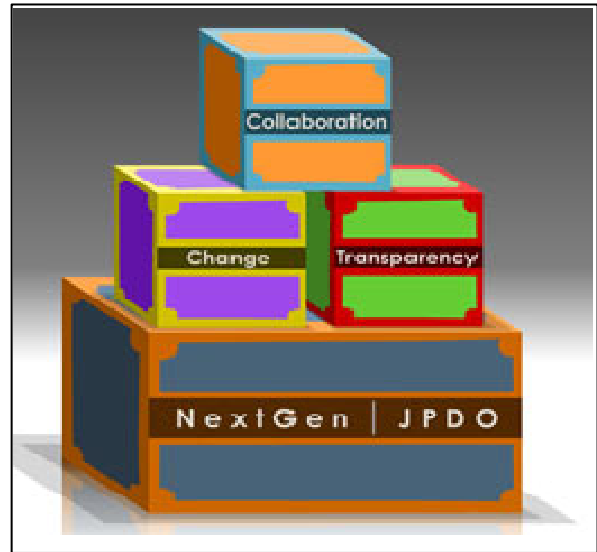
NextGen

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1.0 Mission

The mission of the Joint Planning and Development Office (JPDO) is to ensure that the Next Generation Air Transportation System (NextGen) is realized by the year 2025. As the JPDO continues to execute the NextGen Integrated Plan described in Vision 100 – Century of Aviation Reauthorization Act (P.L. 108-176) the office will identify, facilitate, and integrate activities, commitments, and contributions of government partners, industry, and other key stakeholders as a way to achieve the goals of NextGen.

The mission of the JPDO is one of change management and will be performed collaboratively and with transparency.



JPDO Broad Mission Activities

The JPDO will:

- Maintain the NextGen enterprise vision
- Maintain the NextGen Integrated Plan, which encompasses the Concept of Operations (ConOps), Enterprise Architecture (EA), Integrated Work Plan (IWP), and Portfolio Analysis
- Provide enterprise-level, multi-organization decision support and risk management
- Facilitate the transfer of technology from research programs to the Federal agencies with operational responsibilities and to the private sector
- Coordinate aviation and aeronautics research programs to achieve more effective and focused programs that will result in applicable research

2.0 Objectives

In fiscal year (FY) 2010, the JPDO will work to advance its mission and ensure that significant milestones are planned and completed in a collaborative and integrated environment.

Past Progress

The JPDO has made substantial progress in its mission to facilitate the transformation of the U.S air transportation system. Most recently, the JPDO has established a comprehensive multi-agency NextGen Integrated Plan by combining and synthesizing inputs from JPDO Working Groups. The web-accessible application known as the Joint Planning Environment (JPE) creates a flexible interface to the NextGen Integrated Plan (see Figure 1). It enables users to search, organize, and analyze NextGen planning information. The JPE also allows the JPDO to communicate NextGen planning information in a clear, concise, and consistent way to government partners and stakeholders.

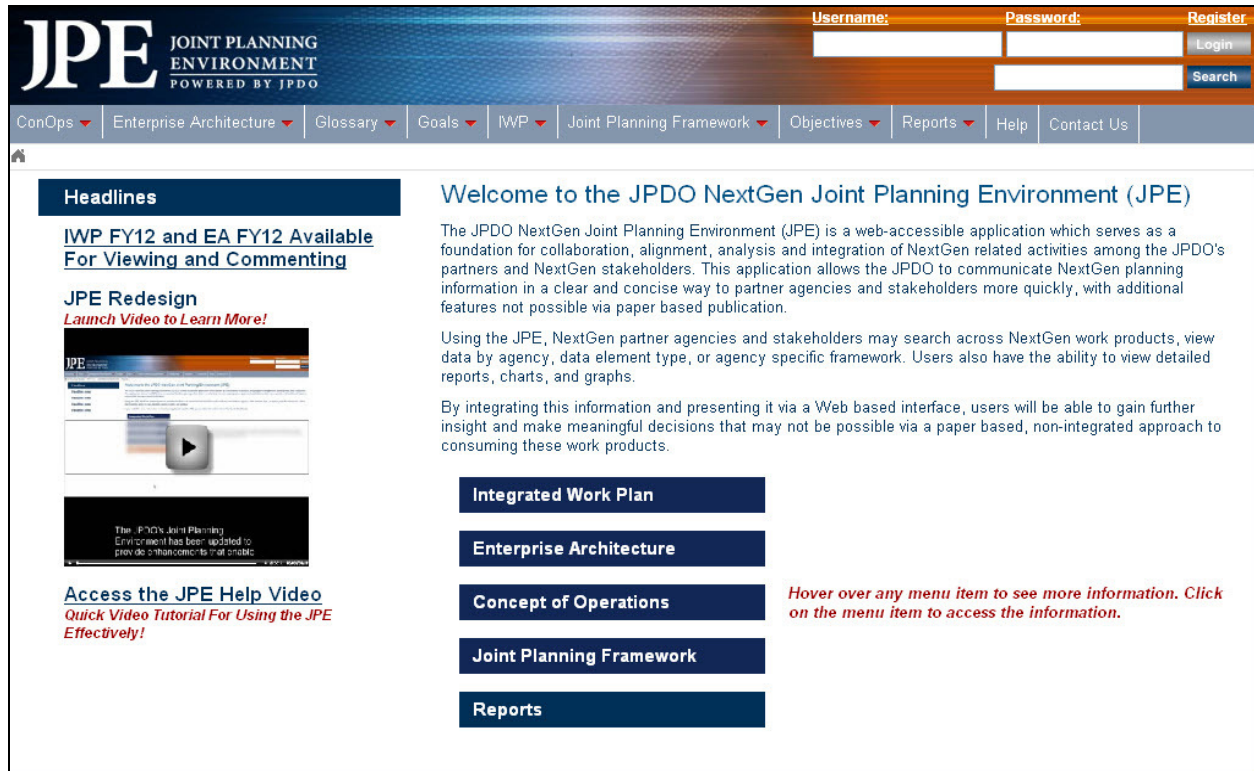


Figure 1: Web Interface for the JPE

In addition, the JPDO has established an integrated suite of modeling and simulation tools to assist in development of the Portfolio Analysis. The JPDO prototyped and exercised the integrated portfolio analysis process using specific test cases that demonstrated the ability to provide useful benefit, cost, and risk information. This information is an integral part of the NextGen Integrated Plan and is planned to be added to the JPE.

The JPDO has used the NextGen Integrated Plan and portfolio analysis information to facilitate interagency actions and initiatives. Over a dozen interagency focus areas have been defined, including Integrated Surveillance, Network Centric Information-Sharing, Validation and Verification (V&V) of Complex Systems, and Allocation of Functions between pilots, controllers, and airborne or ground automation systems. These areas are tracked at the JPDO Board or Senior Policy Committee (SPC) levels.

Progress in 2009 and 2010

Continuously Improve the Joint Planning Environment (JPE)

In 2009, the JPDO transitioned to the Joint Planning Environment as the primary multi-agency planning tool for NextGen. The structure and organization of the JPE was improved by the adoption of a capability-based Joint Planning Framework (see Figure 2).

Other JPE update activities in 2009 included:

- Progress toward validation of NextGen planning elements with partner agency plans
- Integration of Working Group products, such as the NextGen Avionics Roadmap
- Integration of a Maturity/Quality/Timing Assessment model into the JPE, to be used as a tool to capture data on progress toward policy decisions
- Formal updates to the JPE, including ConOps 3.0, and the FY12 EA and IWP

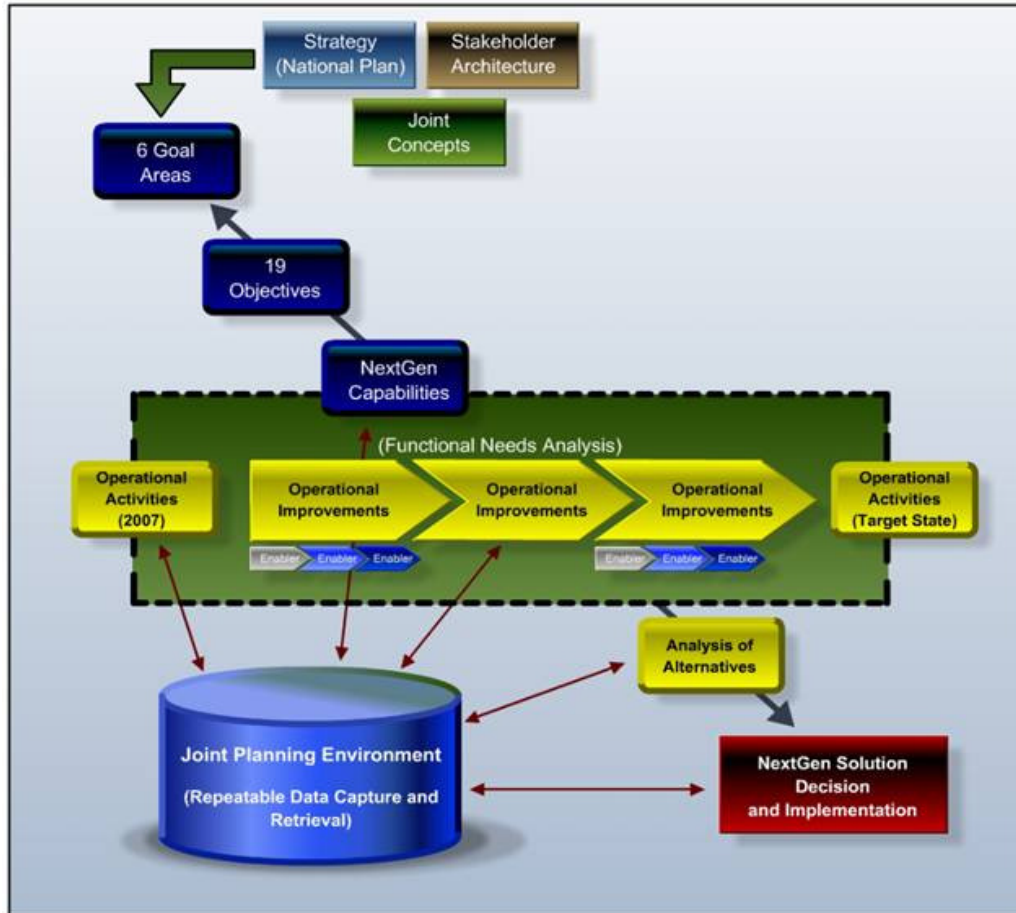


Figure 2: The Joint Planning Framework

In addition, in 2009, the utility of the JPE was further demonstrated through the execution of the integrated Communications, Navigation and Surveillance (iCNS) Strategic Study facilitated by the NextGen Institute. Use case analysis techniques enabled operational scenarios to be mapped to the NextGen planning elements in the JPE. This allowed for an efficient analysis of iCNS architecture needs and initial assessment of architecture alternatives.

In 2009, the JPDO's Strategic Interagency Initiatives Division (SII) developed a process for formal review and acceptance of all Policy Issues (PIs). In the fourth quarter of 2009, SII initiated the process to complete a PI gap analysis. The analysis focused on review and ownership of PIs by suggested government partners, identification of specific responsible offices, and negotiation of associated PI descriptions and initial decision dates. The analysis and negotiation resulted in formal acceptance as office of primary responsibility (OPR) for 90% of all PIs, with some description changes pending change management process adjudication. The remaining 10% (seven PIs) are currently under further review and negotiation.

SII will populate the JPE with all updated data elements, for submission to IAED early in the second quarter of 2010. By the third quarter of 2010, SII will contact the identified owner of each PI for an initial assessment of progress. Thereafter, SII will conduct an annual progress assessment to obtain the latest data on PI maturity. Following each assessment, the status of each PI will be submitted to IAED for the annual IWP update.

In 2010, work will commence on segments for Trajectory-Based Operations, Unmanned Aircraft Systems, and Airports, along with the integration of Global Harmonization analysis results that will be published in the NextGen Enterprise Architecture in 2011. In addition, the Concept of Operations will be reviewed and revised as needed, and the IWP will be updated with specific decision points. Furthermore, the IAED was unable to complete the validation of IWP elements in FY09; however, in FY10, the remaining elements will be validated and aligned, as appropriate, with JPDO government partner plans.

Mature NextGen Portfolio Analysis

In 2009, the JPDO made substantial progress in portfolio analysis, completing for the first time an integrated benefit, cost, and risk analysis for NextGen. The analysis focused on examining a high performance/high risk version of NextGen. In addition, the JPDO structured the overall NextGen trade space in support of future, more complete portfolio assessments and trade-off analyses. A complete set of system and stakeholder metrics were described as a part of this accomplishment.

During the initial portfolio analysis, several alternatives were uncovered in the NextGen Enterprise Architecture. These alternatives have key strategic decisions that must be addressed in the near-term to enable NextGen by 2025. Therefore, a strategic decision tree will be developed during 2010 to support those required decisions (i.e., equipage levels, capability levels, initial operating capability (IOC) dates, policy mandates, risk exposure, research and development (R&D) maturity). This analysis will result in defined key decision points that will be integrated into the IWP.

In FY10, the JPDO's Interagency Portfolio and System Analysis (IPSA) Division will make refinements to the NextGen Portfolio Analysis. In addition, IPSA will work with the Department of Defense (DoD) to define and baseline their portfolio analysis criteria, identify and quantify strategic NextGen risks and mitigations, evaluate additional EA alternatives, and expand future National Airspace System (NAS) and NextGen scenarios, incorporating RTCA Task Force 5 results into the portfolio assessment.

Facilitate Interagency Actions and Initiatives

In 2009, the JPDO expanded their outreach activities to stay better connected with the JPDO Community. Specifically, the JPDO facilitated multiple JPDO Quarterly “All Hands” Meetings; launched new Web resources, including social networking tools such as Facebook, Twitter, and a JPDO blog; and enhanced graphical and video products for educational purposes. FY10 will see a continuation of these successful and diverse outreach efforts.

In 2010, the JPDO will continue to coordinate and facilitate interagency planning, development, and implementation of NextGen. Multi-agency key initiatives, such as Interagency Focus Areas, Research Transition Teams (RTTs), and SPC interagency initiatives, remain high priorities. As NextGen progresses, the JPDO will track these key interagency initiatives with the JPDO Board and SPC members, and identify new ones.

As part of the FY10 effort, the Net-Centric Operations Division (NCOD) will complete an NCO Concept of Operations (NCO ConOps), which will outline future activities for JPDO government and industry partners. The NCO ConOps will ultimately help to achieve efficient and effective information sharing among the participants in the NAS. NCOD, in conjunction with SII, will also develop a Net-Centric Operations Governance Charter and Guidance process to ensure efficient adjudication of issues which may emerge among government partners with respect to development of a net-centric NextGen environment. Furthermore, development will continue with Communities of Interest (COIs), maturing the Integrated Surveillance COI and achieving an IOC with the Weather COI.

In FY10, the JPDO NCOD will continue to work closely with government partners to identify opportunities for interagency testing which supplement the government partners own internal testing programs. These demonstrations, experiments, and tests are essential to proving the interoperability of the data and the compatibility of the infrastructure to deliver information exchange services in a Service-Oriented Architecture (SOA). Additionally, as the Four-Dimensional (4-D) Weather Cube evolves, the evaluation of the Cube will be coordinated to assist the FAA’s NextGen Network-Enabled Weather (NNEW) Program with the FY10 demonstration.

Participation by government partners will be coordinated by NCOD to assist in defining the planning of the Command and Control (C2) Gap Filler Joint Capability Technology Demonstration (JCTD). NCOD will work with DoD and the Department of Homeland Security (DHS) to coordinate an initial experiment in the early summer of FY10. Moreover, NCOD will continue to support interagency coordination with the FAA’s Network Enabled Operations (NEO) Spiral-2 Demonstration.

In 2010, the JPDO will expand its risk management process to include government partners. This effort will result in moving towards a federated risk management repository. The repository will be populated with risk data provided by each government partner as it is received. Ultimately, the federated repository will assist in discovering, documenting, and mitigating interagency risk.

Subject matter expertise representing Federal and industry perspectives will be facilitated by the JPDO through the efforts of Working Groups members. In addition, JPDO Working Group Work Plans will contribute to the Technical Priorities set forth for FY10.

3.0 Technical Priorities

Over the past few years, the JPDO has developed a set of technical priorities based on the analysis and input of subject matter experts. Some of these priorities have matured into JPDO Board- and SPC-level multi-agency actions. Others are collaborative efforts which include input from Divisions, Working Groups, JPDO government partners, and industry. These priorities represent the technical focus of JPDO work for FY10 and beyond (i.e., many are multi-year priorities).

The table below identifies JPDO priorities addressed in FY09, FY10, and beyond.

Initiative (Priority Area)	Goal	Progress and Plans
Develop a Multi-Agency Net-Enabled Weather Plan	Develop the concepts and plans necessary to achieve an early implementation of net-centric, single authoritative source of weather information and the decision-support tools to integrate the information into aviation operations	(FY09) Develop an Interagency NextGen Weather Plan (FY10) Incorporate NextGen Weather Plan, ATM-Weather Integration Plan, Weather Demonstration, and Policy Team sections into a synthesized NextGen Weather Plan
Transition to National Aviation Safety Management	Develop the governance, documentation, and tools required to coordinate consistent safety management, data sharing, and analysis across government and private-sector organizations	(FY09) Finalization of a National Aviation Safety Strategic Plan, Development of an Aviation Safety Information Analysis and Sharing Concept of Operations (FY10) Beta-test a Safety Assessment Prototype to integrate safety assessments into NextGen planning
Develop a Multi-Agency Net-Centric Operations Plan	Further develop multi-agency activities, strategic initiatives, guidance documents, architectural alignment, and sequencing planning to transition to a multi-agency, net-centric information-sharing environment	(FY10) Develop a Net-Centric Operations Governance Process
Transition to a National Integrated Surveillance Capability	Develop the governance, concept of operations, and enterprise architecture documentation required to manage the transition to a national integrated surveillance system	(FY09) Development of an Interagency Concept of Operations for Integrated Surveillance (FY10) Formal coordination of an Integrated Surveillance Enterprise Architecture and Governance document with government partners

FISCAL YEAR 2010 WORK PLAN

Initiative (Priority Area)	Goal	Progress and Plans
Develop a Multi-Agency, Integrated Approach to Security Risk Management	Develop a comprehensive, integrated aviation security risk management concept, including metrics to reflect risk and benefit categories associated with aviation security	(FY10) Develop a multi-agency integrated framework to reflect aviation security risk assessment, mitigation methods, and associated operational benefits for specific threat vectors (e.g., people, cargo, airports, airspace, etc.)
Define the Environmental Requirements for NextGen	Develop a detailed definition of the environmental goals, metrics, and targets for NextGen, and align strategies and investments to achieve the goals	(FY10) Identify the impact of environmental targets on capacity goals and NextGen costs
Develop the Capability to Perform Complex Systems Verification and Validation (V&V) for NextGen	Develop a research plan with the goal of meeting NextGen V&V needs (long-term transformation of a human-centered, complex system)	(FY09) NASA development of a V&V of Complex Systems research plan (FY10) Analyze the IWP enablers to determine segments which require a safety certification via a V&V process
Increase Clarity of the Air/Ground Functional Allocation	Develop a decision roadmap for the evolution of roles for the flight deck, air traffic controller, and automation, including associated operational changes	(FY09) Development of FAA/NASA RTT Plans (FY10) RTT plans will assist with future development of a decision roadmap for Air/Ground Functional Allocation
Develop a far-term definition of Communications Navigation Surveillance (CNS)/Avionics	Develop far-term target concepts, operational improvements/enablers, and roadmaps for NextGen CNS infrastructure and avionics (as well as expand user classes)	(FY09) Delivery of integrated Communication, Navigation and Surveillance (iCNS) Strategic Study (FY10) Communicate and disseminate iCNS Study results, produce the next iteration of the Study, and initiate development of Avionics Roadmap V2.0 to develop and refine concepts and functional allocation for far-term (2019+) avionics capabilities

FISCAL YEAR 2010 WORK PLAN

Initiative (Priority Area)	Goal	Progress and Plans
Increased definition of Gate-to-Gate (G2G) Trajectory-Based Operations (TBO)	Develop the G2G TBO concept to an adequate level where it can be modeled and guide related concepts and enabling functions/systems (e.g., avionics); in addition, G2G TBO should ensure consistency between near-term agency actions and the far-term target	(FY10) TBO Study Team will develop a far-term vision of the concept; in addition, a Flight Prioritization Study will be conducted
Define Airline Operation Center (AOC)/Flight Operations Center (FOC) Integration with NextGen	Develop detailed concept for how the Airline Operations Centers (AOC)/ Flight Operations Centers (FOC) will interoperate with NextGen in the far-term or target state	(FY10) Initiate activity on development of a detailed concept for how the AOC/ FOC will interface with Air Navigation Service Providers (ANSP) and aircraft in the NextGen end-state as well as initiate a study task to determine FOC functionality and interface with ANSP and aircraft/avionics systems
Global Harmonization Efforts	Develop next steps on coordination with the Single European Sky ATM Research (SESAR) Joint Undertaking (JU); expand harmonization strategy to multi-agency framework	(FY09) NextGen International Strategy Document (FY10) Create Harmonization Roadmap by comparing harmonization timelines with international partners to identify and prioritize specific activities in near-, mid- and long-term to achieve strategic principles and goals
Define Airport Infrastructure Standards and Operations Integration in support of NextGen	Develop a roadmap to guide airports in the incorporation of NextGen-driven planning factors into long-term infrastructure planning; in addition, develop the concepts for integration of airport operational functions in NextGen	(FY10) Develop an Airport Operations ConOps to describe the integration of airport operational functions into the NextGen environment, using NCO capabilities to improve airport situational awareness

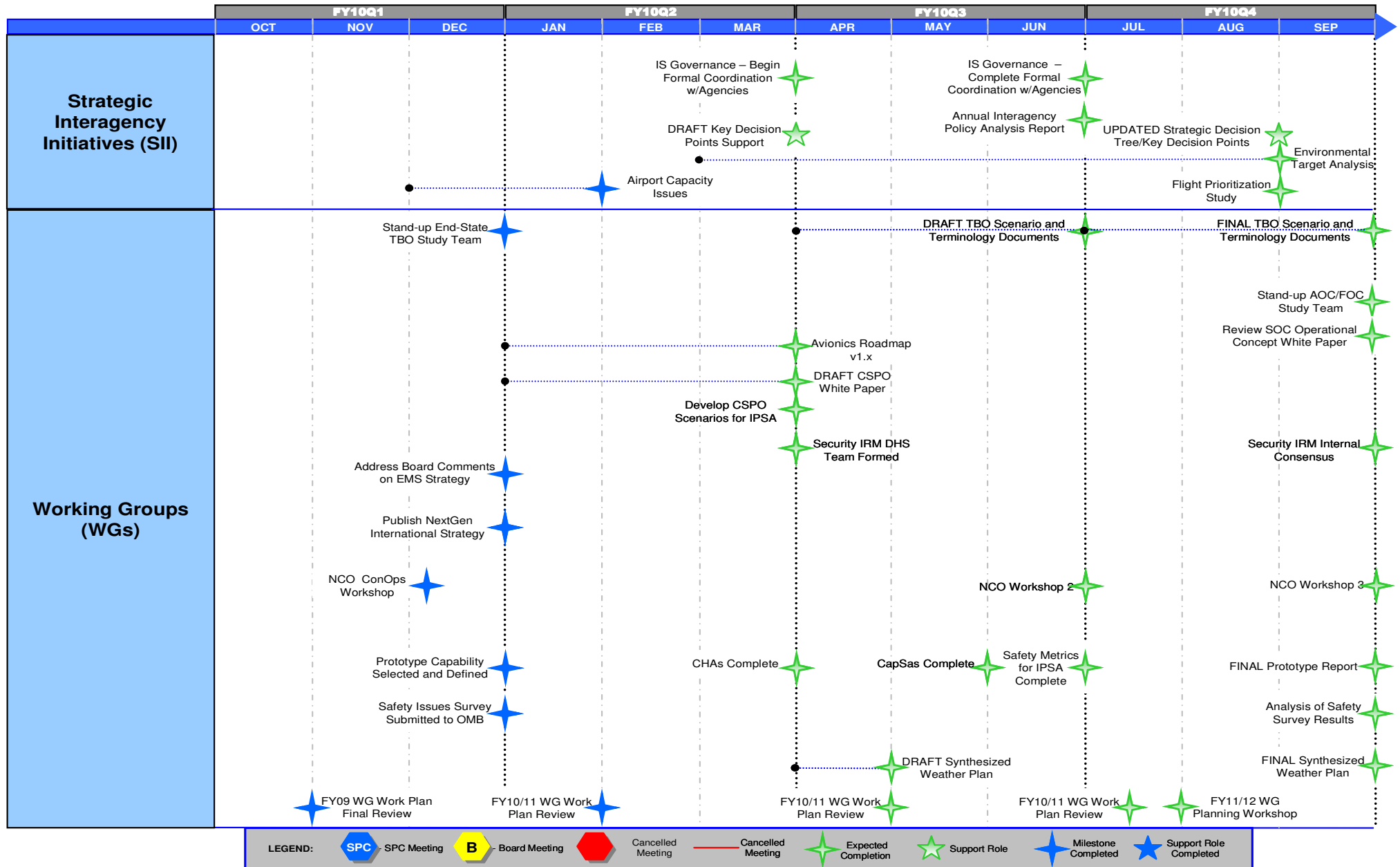
Table 1: Initiatives and Activities

FY10/11 JPDO Integrated Management Roadmap (1 of 4)



FISCAL YEAR 2010 WORK PLAN

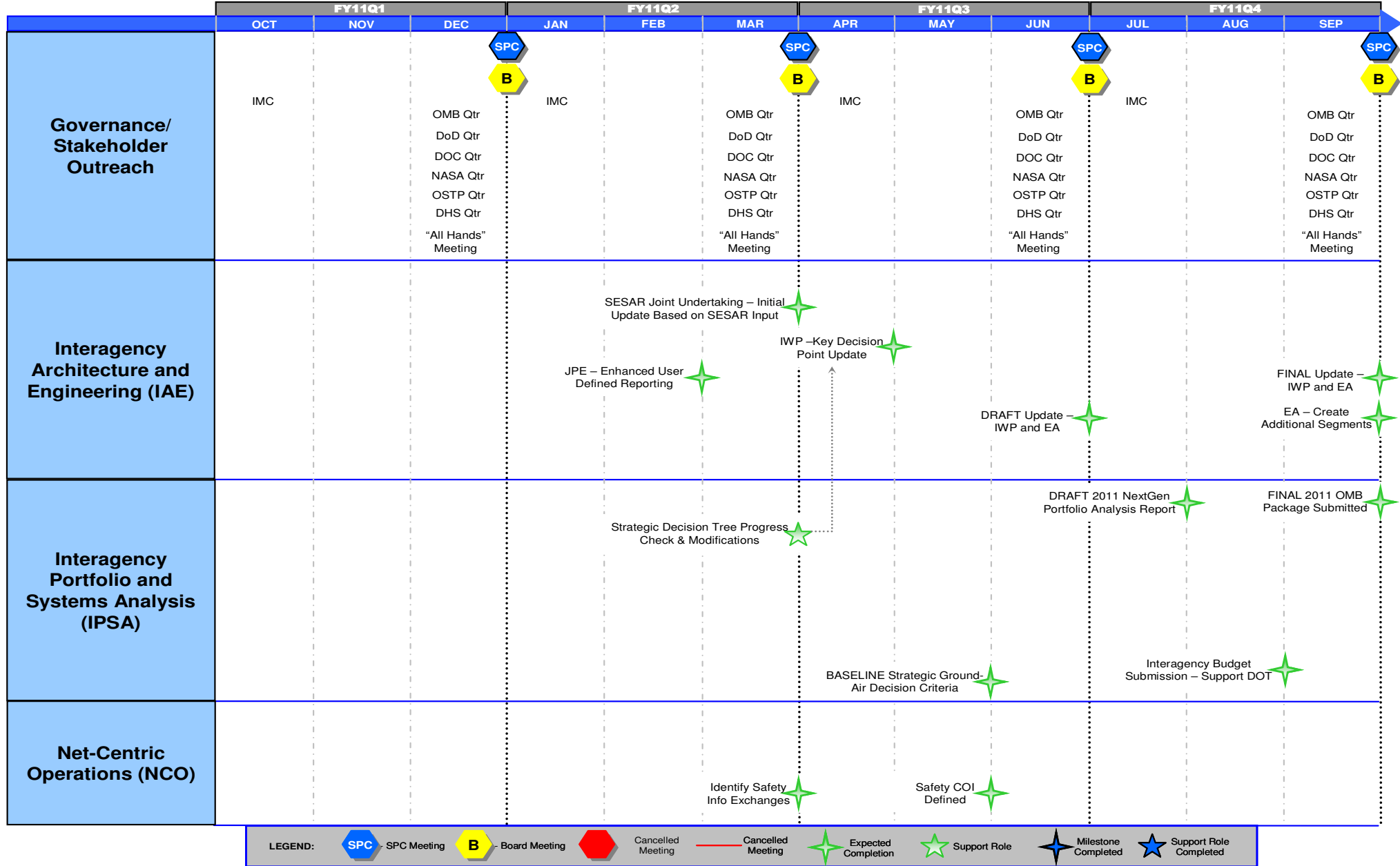
FY10/11 JPDO Integrated Management Roadmap (2 of 4)



Joint Planning and Development Office

FISCAL YEAR 2010 WORK PLAN

FY10/11 JPDO Integrated Management Roadmap (3 of 4)



FY10/11 JPDO Integrated Management Roadmap (4 of 4)



Document Revision History

VERSION	DATE	DESCRIPTION
Draft Version 0.1	October 7, 2009	Draft submitted to JPDO Division Directors
Draft Version 0.2	October 23, 2009	Comments incorporated and document finalized
Version 1.0	November 4, 2009	Published on JPDO Web Site
Version 1.1	December 2, 2009	The following revisions were made to the FY10 JPDO Integrated Road Map: <u>Governance/Stakeholder Outreach:</u> The “DoD Quarterly” and the “NASA Quarterly” took place in October and deemed completed on the Road Map. The “OSTP Quarterly” was added to the Road Map was to be completed in November. The “All Hands Meeting (Q1)” and “IMC Meeting” was deemed complete. The “OMB Quarterly” has been scheduled for January 2010. The “All Hands Meeting (Q2)” has been scheduled for February 2010. <u>Net-Centric Operations:</u> The “Weather Info Exchange Demo” is deemed completed and is reflected blue on the Road Map. <u>Working Groups:</u> The “FY09 Work Plan Final Review” is deemed completed and reflected blue on the Road Map.
Version 1.2	January 6, 2010	The following revisions were made to the FY10 JPDO Integrated Road Map: <u>Governance/Stakeholder Outreach:</u> The “IMC” occurred in December 2009 and has moved forward from the January 2010 date. The “OMB Quarterly” has been scheduled for January 2010, which is reflected on the Road Map. The “All Hands (Q2)” has been scheduled for February 2010 and reflected on the Road Map. <u>Strategic Interagency Initiatives (SII):</u> The “Airport Capacity Issues/Mitigation” has been moved from end of November 2009 to end of January 2010. The task is dependent on IPSA modeling results factoring reduced separation standards and will then be incorporated to final report recommendations. Furthermore, SII will determine the best approach to engage the Airports Working Group in review of the final report. The “Environmental Target Analysis” has been moved from end of February 2010 to end of May 2010. The task is dependent on IPSA modeling results factoring multiple NextGen operational improvements with significant potential environmental impact and will then be incorporated into analysis. <u>Working Groups:</u> The Net-Centric Working Group redefined Workshop #1 (from COI development of NCO ConOps) and was completed

FISCAL YEAR 2010 WORK PLAN

		in December 2009.
Version 1.3	February 22, 2010	The following revisions were made to the FY10 JPDO Integrated Road Map: <u>Governance/Stakeholder Outreach:</u> “The NASA Quarterly” took place in January 2010. The “DOC Quarterly” was scheduled in February 2010. The “All Hands Meeting” was cancelled for February 2010. <u>Interagency Architecture Enterprise Division (IAED):</u> The “Integrated Surveillance EA Final Report” was changed to the “Integrated Surveillance EA Report v0.7. It was then moved and completed in February 2010. <u>Net-Centric Operations Division (NCO):</u> “Integrated Surveillance COI Defined” was deleted, but could be readdressed in FY11. <u>Strategic Interagency Initiatives Division (SIID):</u> The “Airport Capacity Issues” paper was completed. <u>Working Groups:</u> The “Stand-up End-State TBO Study Team” took place in December 2009, while two other milestones were moved one quarter. The “Avionics Roadmap v1.x” milestone (Aircraft WG) moved one quarter. The “Draft CSPO White Paper” milestone (Airports WG) moved one quarter. The Security WG is currently re-scoping the Multi-Agency, Integrated Approach to Aviation Security Risk Management Work Plan. As it relates to the “Security IRM DHS Team Formed,” the goal is to have a Security Integrated Risk Management Team formed by the end of the second quarter. The Environment WG completed the task of “Address Board comments on the EMS Strategy.” The Environment WG also completed the milestone to “Develop environmental policy measures and targets.” The Global Harmonization WG completed the milestone to “Publish NextGen International Strategy.” The Safety WG completed the milestone to “Prototype Capability Selected and Defined.” The aforementioned milestone relates to the “Safety Assessment Prototype” work plan. This work plan called for Concept Hazard Assessment (CHAs) and Capability Safety Assessment (CapSas) that will be completed in the second quarter, but this milestone has been separated. CapSas will now be completed in May 2010, but will have no impact on the final deliverable. The Safety WG also completed the milestone of “Safety Issues Submitted to OMB.” To conclude the revisions for Version 1.3, the “FY10/11 Work Plan Review” occurred in January 2010.

FISCAL YEAR 2010 WORK PLAN

Version 1.4	March 23, 2010	The following revisions were made to the FY10 JPDO Integrated Road Map: <u>Governance/Stakeholder Outreach:</u> The “DOC Quarterly” was canceled for February 11, 2010 due to inclement weather. Both “DoD and DHS Quarterlies” were not scheduled for second quarter. The “AFCEA-JPDO Conference” was rescheduled to take place on March 18, 2010 due to inclement weather. The “OSTP Quarterly” was canceled for March 17, 2010. <u>Net-Centric Operations (NCO) Division:</u> The “NCO Governance IOC” milestone was moved to June 2010. <u>Strategic Interagency Initiatives Division (SII):</u> The “ <i>Environment Target Analysis</i> ” is awaiting modeling results from Interagency Portfolio and System Analysis (IPSA) Division and the milestone has moved to the end of August. <u>Working Groups:</u> The “Draft Synthesized Weather Plan” milestone moved to April 2010.