Response to Written Questions Submitted by the Hon. Jerry Moran to the Hon. Anthony Foxx

Federal I.T. Reform

Question 1. Describe the role of your Department of Transportation's Chief Information Officer (CIO) in the development and oversight of the IT budget for your department/agency. How is the CIO involved in the decision to make an IT investment, determine its scope, oversee its contract, and oversee continued operation and maintenance?

Answer. The DOT Office of the CIO currently participates on three boards involving IT investments. First, the DOT CIO co-chairs the Department's Investment Review Board (IRB) with the Deputy Secretary. This board is responsible for the approval of the DOT $3.2 billion IT Portfolio. The Deputy Chief Information Officer is also a voting member of the Investment Working Group to support enterprise investment management. In addition, the Deputy Chief Information Officer chairs the Acquisition Strategy Review Board (ASRB) with the Senior Procurement Executive and the Deputy Chief Financial Officer to ensure Departmental review of significant procurements.

Over the past three months, the DOT CIO has been working closely with the Chief Financial Officer (CFO) and the Departmental Budget Officer to ready our Federal Information Technology Acquisition Reform Act (FITARA) implementation plan. The budget authority in FITARA will strengthen the DOT budget process relating to IT.

Question 2. Describe the existing authorities, organizational structure, and reporting relationship of the Chief Information Officer. Note and explain any variance from that prescribed in the newly-enacted Federal Information Technology and Acquisition Reform Act of 2014 (FITARA, PL 113-291) for the above.

Answer. The DOT CIO reports to the Secretary of Transportation and is the principle advisor to the Secretary on all matters relating to IT. The DOT CIO sits on the Secretary's cabinet and is involved in all business decisions. The DOT CIO coordinates Departmental IT through the Investment Review Board (IRB) and the DOT CIO Council. The DOT CIO also manages enterprise IT shared services via the Common Operating Environment (COE).

With regards to FITARA, the DOT CIO will take a more operational role in the execution of Operating Administration IT budgets and acquisition through the implementation of these authorities. DOT will implement CIO authorities throughout DOT, and in close coordination with the Office of General Counsel, FITARA will be implemented at FAA consistent with the restrictions and authorities contained in 49 U.S.C. 106, 40110, 40121.

Question 3. What formal or informal mechanisms exist in your department to ensure coordination and alignment within the CXO community (i.e., the Chief Information Officer, the Chief Acquisition Officer, the Chief Finance Officer, the Chief Human Capital Officer, and so on)?

Answer. In addition to consistent informal coordination and collaboration across the DOT CXO community, DOT has formed the following formal bodies:

- The DOT Investment Review Board (IRB) consists of the Deputy Secretary of Transportation, DOT Chief Information Officer (CIO), DOT Chief Financial Officer (CFO), Senior Procurement Executive (SPE), Under Secretary for Policy, and Operating Administrators as voting members. The board ensures data-driven, enterprise-focused IT governance across the Department by providing strategic direction and leadership for budget and acquisition alignment.

- The CIO Council ensures that the Department realizes optimal value from its IT investments, by taking advantage of enterprise IT systems and infrastructure opportunities and delivering capabilities at an affordable cost and acceptable level of risk. CIOs from across the Department participate on this council.

- The Investment Working Group provides overarching strategic and tactical leadership and direction in support of the DOT investment management and capital planning process. The DOT Deputy Assistant Secretary for Budget and Programs, DOT Deputy CIO, DOT SPE and the Director of the Departmental Office of HR Management are voting members.

- The Acquisition Strategy Review Board (ASRB) is chaired by the DOT SPE, DOT Deputy CFO, and the Deputy CIO and ensures coordination across the Department on strategic acquisition decisions.

DOT believes, and it has been the experience to-date, that implementing FITARA will to strengthen the already close relationship between the CIO, CFO, CAO, and CHCO. This strengthening will greatly benefit the Department as DOT moves through IT challenges and issues.

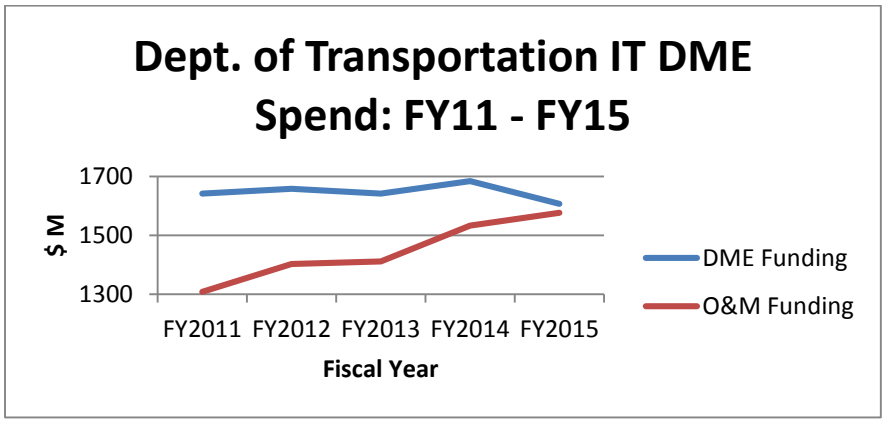
Question 4. According to the Office of Personnel Management, 46 percent of the more than 80,000 Federal IT workers are 50 years of age or older, and more than 10 percent are 60 or older. Just four percent of the Federal IT workforce is under 30 years of age. Does your department have such demographic imbalances? How is it addressing them?

Answer. DOT's IT force is comparably imbalanced with a slightly larger percentage, 55.5%, of IT employees over age 50.

To promote efficiency and effectiveness of the Information Technology (IT) Workforce, the DOT Chief Information Officer (CIO) is leading an effort to analyze and evaluate the current alignment of resources supporting the Department's IT efforts. Based on this review, the Office of the DOT CIO proposed a multi-year IT workforce initiative to reduce reliance on contractors and concomitantly increase the number of Federal positions. The realignment will provide two main benefits. First, DOT will realize cost savings and efficiencies due to higher contractor costs as compared to the full-cost of Federal employees. Second, DOT will realign Federal and contractor roles to improve efficiency, develop succession capability, and improve demographic imbalances. Many IT functions currently performed by contractors should be performed by government employees.

Question 5. How much of the department's budget goes to Demonstration, Modernization, and Enhancement of IT systems as opposed to supporting existing and ongoing programs and infrastructure? How has this changed in the last five years?

Answer. In 2015, the Department's IT portfolio will total $3.3 billion. Of this amount, $1.61 billion is expected to be committed to Development, Modernization and Enhancement efforts (DME), which equates to approximately 50% of the DOT IT budget. Over the past five years, the DME spend has shown a modest decline from approximately 56% to the current 50% of the DOT IT budget primarily due to major investments, for example, ERAM and Delphi transitioning to the operations and sustainment lifecycle phase.



Question 6. GAO recently reported that 65 percent of DOT's IT investments are not taking an "agile" or incremental development approach and delivering functionality within 12 months. Clearly this is a best practice and required by OMB. What are the 10 highest priority IT investment projects that are under development in your department? Of these, which ones are being developed using an "agile" or incremental approach, such as delivering working functionality in smaller increments and completing initial deployment to end-users in short, six-month time frames?

Answer. DOT recognizes the importance of moving to an agile development methodology where it is appropriate. FAA investments accounted for 87% of the DOT IT portfolio, and the requirements for developing and maintaining 24/7 operational mission essential and safety critical systems are very stringent and not necessarily candidates for agile development. GAO 14-361 (3112890) GAO also concurred on this assessment. Examples of these safety critical investments, which require reliability, availability and maintainability standards at or above 99.9999%, include:

i. En Route Automation Modernization (ERAM)
ii. Telecommunications Infrastructure (FTI)
iii. Data Communications (DataComm)
iv. Terminal Automation Modernization and Replacement (TAMR) phase 1
v. Terminal Automation Modernization and Replacement (TAMR) phase 3

While these systems may not follow strict "agile development" guidelines, they do follow waterfall national deployment schedules that are built around minimizing deployment risks.

As part of the GAO report analysis, DOT and other surveyed agencies identified "three types of investments for which it may not always be practical or necessary to expect functionality to be delivered in 6-month cycles: (1) investments in life-cycle phases other than acquisition (2) investments intended to develop IT infrastructure; and (3) research and development investments."[1] As part of the final report, GAO did acknowledge the merit of these concerns.

When appropriate, DOT has leveraged the agile development methodology with success:

vi. FHWA is leveraging incremental development where appropriate for the FMIS 5 upgrade. FHWA has employed a modular approach for development and delivery to the FHWA Division Offices and State DOTs into the User Acceptance Testing environment, with the first set of modules delivered in April 2014 and the last modules being delivered through March 2015. FHWA determined that it would be too cost prohibitive and time intensive to roll out the FMIS 5 upgrade incrementally in the Production environment due to impacts to the three FHWA systems that are being modernized, as well as the external systems that FMIS 5 interfaces with, including DOT Delphi accounting system and the State DOTs' systems. This approach was discussed with OMB during a project review in July 2014.

vii. FRA supports the DOT safety mission through management of the Railroad Safety Information System (RSIS) to provide government agencies, railroad labor and management, and the general public with information on railroad safety. The system captures data on railroad accidents, injuries, highway-rail crossing collisions, railroad operation data, FRA-conducted railroad inspections, and maintenance of the highway-rail crossing site inventory. FRA's current contract to manage RSIS is nearing completion and is expected to be re-competed. System requirements are in development and it is anticipated that development work within that contract will be required to use the agile methodology. Agile is one of the recommendations expected out of FRA's current IT and Data Modernization initiative.

viii. Web and mobile development across the Department has moved to the agile methodology. For example, FRA used the agile methodology to develop data visualization suite, Corporate Express, which was transitioned to the Department in 2014. In addition, the Departmental DOT.gov platform was deployed utilizing agile development, as are improvements to the platform.

ix. The NHTSA306 Crash Data Acquisition Network (CDAN) is a new system that supports NHTSA's Data Modernization Program. Agile stories are categorized, prioritized and packaged for sprint releases. NHTSA has developed the "PowerCenter" tool to support the agile methodology.

[1] http://www.gao.gov/assets/670/662922.pdf

x. NHTSA's Corporate Average Fuel Economy (CAFÉ) Management Suite is an IT solution to support NHTSA's rulemaking and enforcement for this program. CAFÉ is utilizing the agile methodology for development and implementation. A sprint release has been developed and is tracked for CAFÉ Public Information Center deployment.

Implementing a DOT Digital Services Team will result in more effective and reliable service through the development of forward thinking agile applications.

Question 7. To ensure that steady state investments continue to meet agency needs, OMB has a longstanding policy for agencies to annually review, evaluate, and report on their legacy IT infrastructure through Operational Assessments. What Operational Assessments have you conducted and what were the results?

Answer. The Common Operating Environment (COE) provides shared services for many DOT users, consisting of end user support, telecommunication, network, server and cyber security operations. The COE recently completed an Operational Assessment to examine, measure, and track the current operational status against an established set of cost, schedule, and performance parameters. The Operational Assessment concluded that the COE is providing a valuable service to its customers. As part of the FITARA implementation, the DOT CIO will work with Operating Administrations to fold commodity IT that is currently managed at the component level into the COE to reduce duplication and gain efficiency through an expanded enterprise shared services model.

FAA also has an approved shared services model that leverages access to centralized expertise and infrastructure and enables the economies-of-scale within each IT function.

Question 8. What are the 10 oldest IT systems or infrastructures in your department? How old are they? Would it be cost-effective to replace them with newer IT investments?

Answer.

i. The National Transportation Atlas (NTA) is a web mapping application that presents transportation networks, features and statistics about our nation's transportation system. The NTA has not been widely advertised, because it is running on 10 year old hardware with an operating system and application that is nearing end-of-support-life. The NTA is moving to a cloud platform that will support expanded data storage and computing capacity, and additional functionality including web feature services, and scaling.

ii. The Bureau of Transportation Statistics established TranStats in 2001 as an intermodal transportation database. This database was created in response to a Congressional mandate. TranStats comprises the collection, processing and dissemination of airline data such as finances, performance and traffic for transportation statistical analysis and reporting functions. Initially TranStats focused on delivery of data from the Airline Reporting Data Information System and but functionality was extended in 2010 to include online data collection from all airlines. The system is undergoing a thorough planning and alternative analysis for modernization and consolidation of its architecture. The modernization is

expected to be complete by the end of fiscal year 2017.

iii. As part of the Common Operating Environment (COE), the DOT CIO's office currently provides a telecommunication system for DOT employees. The existing system was purchased in FY 2007 when DOT relocated into the Navy Yard headquarters building. The legacy system does not provide modern features and is not scalable based on the changing telecommunications needs of the DOT workforce. A COE Communications Workgroup, consisting of representatives from across the Department, has been formed to examine current requirements and conduct market research as part of a recommended approach to modernize the legacy telephone system.

iv. The Saint Lawrence Seaway Development Corporation (SLSDC) is decommissioning its 30-year-old in-house financial management system as of 2014 and migrating to the Department of Interior's Federal Shared Service Provider (FSSP) solution. It is expected that the new system will be operational in late FY 2015.

v. While FHWA has operated systems for up to 25 years, infrastructure is replaced and upgraded as needed. FHWA regularly evaluates IT investments via the Application Portfolio Rationalization (APR) process, with the most recent report approved in February 2015.

vi. The Hazardous Materials Information System (HMIS) has been an integral tool used PHMSA's Office of Hazmat Safety for daily activities since the 1970s. Over the years, it has been modified and updated as business needs and technologies have evolved. Currently, the technology and processes used by HMIS have become outdated and costly to maintain. PHMSA is in the process of modernizing the functions performed by HMIS under its IT modernization effort. The old system is expected to sunset in 2018. These modernized functions will provide process improvement efficiencies, as well as cost savings.

vii. The NHTSA Grants Tracking System (GTS) was initiated in 2000 and is slated to be replaced with the Grants Management Solution (GMSS) in 2025. GMSS is a modernization initiative that will automate the full grants management life cycle and enhance financial tracking.

viii. The NHTSA Artemis system was in initiated in 2002 and consists of complaints from vehicle owners, early warning reporting data submitted by manufacturers, and recall and investigation information. Modernization of this system is necessary to adjust a high volume analysis of data. It is slated to end in 2024.

ix. The Transit Electronic Award Management System (TEAM) is FTA's primary grants management tool. TEAM runs on an older infrastructure that is at the end of its technical and functional life. As a result, FTA is replacing TEAM using a modern architectural solution which will modernize IT capabilities across the component, with a focus on grant management support. The modernization will leverage a Business Process Management (BPM) software platform, delivered as

a commercial Cloud service. TEAM is expected to be decommissioned in 2016.

x. The FAA operates over 20 investments that are 10 years or older. All investments are monitored and assessed annually for technology refresh or replacement. Legacy systems in the process of replacement include the Automated Radar Terminal System (ARTS) and the Instrument Landing System (ILS).

Creating a Digital Services Team will allow DOT to review existing applications and solutions and begin a holistic modernization to ensure systems are functioning properly. The Digital Services Team will provide the experts needed to fundamentally shift the approach of IT in the Department to forward looking and agile solutions.

Question 9. How does your department's IT governance process allow for your department to terminate or "off ramp" IT investments that are critically over budget, over schedule, or failing to meet performance goals? Similarly, how does your department's IT governance process allow for your department/agency to replace or "on-ramp" new solutions after terminating a failing IT investment?

Answer. Under the DOT IT governance model, investments are tracked by Operating Administrations (OA) as well as the DOT OCIO Investment Analysis Team (IAT). The IAT works with the OA Capital Planning and Investment Control (CPIC) coordinators and other OA representatives to conduct analytical reviews of IT investments. The IAT uses cost and schedule baseline data, as well as performance metrics and risk assessments provided by the OAs, to generate investment analysis. As our process grows more robust, preliminary findings will be shared with applicable OAs via Issue Papers to help resolve or clarify perceived discrepancies prior to submission to the Investment Review Board (IRB) supporting boards. As the DOT IT governance process continues to mature, any unresolved issues will be presented to the IRB and applicable supporting boards. With the implementation of FITARA, the DOT CIO will continue to strengthen these reviews and recommendations.

In FY 2013, FAA began a cost-beneficial migration from their legacy Lotus Notes email system to Microsoft 365 in the cloud. As part of the procurement, DOT initially anticipated a move from the on premise Microsoft Exchange environment managed by the Common Operating Environment (COE) to the Microsoft 365 cloud. DOT worked closely with the FAA team throughout the FAA migration, and subsequently completed an analysis to understand the potential benefits of the move. This project was discontinued by the DOT CIO when it became clear that the cost benefit analysis did not support the migration for the other DOT modes. This decision was unanimously supported by the DOT CIO Council.

In accordance with the FAA Acquisition Management System (AMS), the Joint Resources Council (JRC) is the FAA's investment decision making body charged with the responsibility of approving and overseeing the management of investments regardless of the type of funding appropriation, allocating resources and establishing program offices chartered with the responsibility of managing approved investments. The JRC manages investments by conducting Acquisition Quarterly Program Reviews and reviewing the results of Post Implementation Reviews. Based on the data presented to the JRC during the aforementioned reviews, the JRC may require changes to the investment strategy or the approved program baseline.

Question 10. What IT projects has your department decommissioned in the last year? What are your department's plans to decommission IT projects this year?

Answer. Operating Administrations at DOT have had success decommissioning legacy infrastructure in adoption of the Common Operating Environment (COE) shared services solution. For example, the Railroad Safety Information System (RSIS) was migrated from aging servers hosted at a commercial data center into the DOT COE in a modern, virtualized environment beginning in October, 2013. The previous commercial hosting environment was decommissioned in January, 2014. Additionally, FTA is planning to decommission two older systems after their replacements are deployed to the modernized FTA IT platform. Both the National Transit Database (NTD) and Transit Electronic Award Management System (TEAM) are scheduled to be decommissioned beginning in Q1 FY2016.

DOT has also seen success in the migration from duplicative platforms into enterprise solutions. For example, the creation of a Departmental web platform resulted in the migration and decommissioning of legacy hardware for several modal websites. Modes have also had success leveraging the Departmental SharePoint collaboration environment. DOT is in the process of finalizing the decommissioning of the 2007 internal SharePoint site. The 2010 internal SharePoint site has replaced the legacy 2007 environment.

The Department of Transportation's Departmental Procurement Platform (DP2) modernization initiative consolidates eight (8) disparate Performance and Registration Information Systems Management (PRISM) procurement systems onto a common platform that is integrated with the Department's financial system, Delphi. In November 2014, NHTSA and FRA migrated from their legacy PRISM systems to the integrated DP2 solution as part of Phase 1. Consolidation of the remaining PRISM instances will be completed in Phase 2 and Phase 3 of the DP2 program. PHMSA has also demonstrated success reviewing existing requirements to determine what investments should be decommissioned. For example, prior to FY2013, PHMSA managed over 90 physical mission system servers and had the third largest data center foot print in DOT. In FY2013, PHMSA reduced the physical server footprint by 62%. DOT believes the increased investment review authority under FITARA will give the Department greater visibility into all IT projects. Decommissioning based on consolidation into enterprise shared services will be a major focus in the review of IT spending.

Question 11. The newly-enacted Federal Information Technology and Acquisition Reform Act of 2014 (FITARA, PL 113-291) directs CIOs to conduct annual reviews of their department's IT portfolio. Please describe your department's efforts to identify and reduce wasteful, low-value or duplicative information technology (IT) investments as part of these portfolio reviews.

Answer. In 2013, DOT fundamentally revamped and reinvigorated the Departmental Investment Review Board (IRB) based on a portfolio review process. The IRB is the DOT's senior executive body charged with ensuring that the Department's IT investments align with DOT's strategic priorities, objectives, and OA operational missions. The DOT CIO recently implemented Interim Investment Guidance to further develop the investment process. The guidance centers on a data-driven, portfolio-based approach that will allow for an expansive and thorough look across the enterprise of DOT IT portfolios. This will allow the Department to make evidence-based decisions on pre-selection, selection, control, and evaluation of new and ongoing IT investments. It will also enable the elimination of legacy systems that are no longer required, enhance interoperability, eradicate redundancy, and leverage enterprise opportunities.

Question 12. In 2011, the Office of Management and Budget (OMB) issued a "Cloud First" policy that required agency Chief Information Officers to implement a cloud-based service whenever there was a secure, reliable, and cost-effective option. How many of the department's IT investments are cloud-based services (Infrastructure as a Service, Platform as a Service, Software as a Service, etc.)? What percentage of the department's overall IT investments are cloud-based services? How has this changed since 2011?

Answer. OCIO is developing a Cloud Strategy for the Department that will include an integrated framework to promote an iterative and incremental approach for moving to the cloud, an integrated governance structure for acquisition and risk management, and cloud-specific, well-aligned information security practices. The FAA is also working to finalize an enterprise-wide contract vehicle for a commercially outsourced cloud solution. This solution will be available to all of DOT.

DOT has successfully leveraged the cloud to manage enterprise systems. For example, the Department's Enterprise Notification System (ENS) provides an enterprise-wide capability for notification in emergency situations for DOT at headquarters and in modal field sites. It has the capability for mass notification to alert groups of employees, or locales, simultaneously. The ENS has the capability to send a message via email, cell phone, and landline phone. The platform also allows users to respond to questions or inquiries from the system to account for personnel during emergencies.

In addition, DOT has deployed an enterprise Content Management System in the cloud to support web development across the Department. The DOT.gov website was completely redesigned during the migration to the cloud service and was deployed as the first cabinet-level website built in responsive design, a feature that supports mobile users. DOT has successfully migrated several legacy modal websites to the enterprise cloud service in an effort to reduce the duplication of web platforms.

Question 13. Provide short summaries of three recent IT program successes – projects that were delivered on time, within budget, and delivered the promised functionality and benefits to the end user. How does your department/agency define "success" in IT program management? What "best practices" have emerged and been adopted from these recent IT program successes? What have proven to be the most significant barriers encountered to more common or frequent IT program successes?

Answer.

i. The Department of Transportation's Departmental Procurement Platform (DP2) modernization initiative supports the Organizational Excellence strategic goal by standardizing and integrating procurement and financial processes and systems to better meet the dynamic mission of the Department. DP2 recently achieved the first major deployment milestone on time and within budget. In November 2014, NHTSA and FRA migrated from their legacy PRISM systems to the integrated DP2 solution. The DP2 deployment schedule is divided into three distinct waves to reduce program risk and allow for analysis of lessons learned. Lessons learned from first Wave were analyzed to benefit the Wave 2 (FY16) and Wave 3 (FY17) deployments.

ii. The Electronic National Environmental Policy Act System (eNEPA) tool expedites the National Environmental Policy Act (NEPA) development process by facilitating concurrent Agency reviews, allowing for quick, clear, and transparent issue resolution, and promoting trust and consensus among project partners. The results are efficient environmental reviews, improved results, and reduced project development time and cost. FHWA delivered this project in March 2014, ahead of schedule and under budget.

iii. The FAA Shared Services model is aligned with OMB's Shared Services Concept, mapping the initial FAA IT Portfolio of Services and supporting IT functions to the AOA Strategic Initiatives. In FY 2013, the FAA IT Shared Services Office (ITSSO) achieved an aggressive $36 million cost reduction in IT spending. The FAA Office of Information & Technology (AIT) is on course to achieve significant improvements in the effectiveness and efficiency of service delivery, cost savings, and rapid deployment of new services.

Question 14. The Department of Transportation (DOT) has an estimated IT budget of $3.3 billion for FY2015. FAA makes up almost 70% of DOT or $2.3 billion of this amount. Unfortunately, DOT has gaps in its policies and processes for managing its software licenses. According to industry averages, agencies that do not proactively implement software license management and optimization best practices are likely overspending on software by as much as 25 percent. The GAO offered six recommendations to improve effective management of software licenses. Has the Department of Transportation adopted any of these recommendations? Please describe what efforts the Department of Treasury has made to improve the software license management practices.

Answer. DOT regularly tracks and maintains a comprehensive inventory of software licenses. In response to the GAO audit on software licenses, DOT committed to develop an Information Technology Shared Services (ITSS) Software License Management Plan. This plan will describe software related roles, responsibilities and methodologies for managing software licenses within the DOT. In addition, DOT identified existing capabilities for software license management, including automated tools.

Question 15. Every two years, the GAO releases its High Risk List to call attention to agencies and program areas that are high risk due to their vulnerabilities to fraud, waste, abuse, and mismanagement, or are most in need of transformation. In February, GAO released its latest high risk report and added IT acquisitions as an area that needs better tracking and oversight. In this year's report, GAO specifically identified the Department of Transportation Next Generation Air Transportation System (NextGen) as a high risk project. The GAO recommended NextGen receive significant management attention given its complexity, delays, and cost of $15-22 billion. To improve cost estimates and schedules for NextGen and other major air traffic control acquisition programs, GAO recommended that FAA, among other things, require cost and schedule risk analysis, independent cost estimates, and integrated master schedules, which the agency is working to implement. What improvements are being made to address GAO's concerns?

Answer. A) One lesson learned in the early deployment of our enroute automation modernization program was that testing of such a complex system cannot be done strictly in a lab. Workforce engagement is critical to success of any complex IT system. A system designed to enhance the capability of safety personnel must be scrutinized and wrung out during actual operations under carefully controlled conditions.

To ensure such lessons and other best acquisition practices are followed on all major programs, the FAA established the program management organization. Further, the PMO resides in the air traffic organization to ensure operational management ownership of any problems that arise. The PMO tracks the programmatic risks each program carries and the mitigation tactics associated with each one. As a result, the FAA has established a robust process to elevate risk to ensure problems and concerns associated with any NextGen program get the highest levels of visibility so they can be properly managed.

By engaging collaboratively with labor, and reorganizing program management to emphasize the professional discipline of cost, schedule and technical risk management, the FAA has been able to maintain cost and schedule variances of its ERAM program within acceptable limits since its rebaselining in 2011. We are applying this lesson learned to our current and future programs. From 2004-2014, the FAA's baselined programs have had a combined net cost growth of only 1.6% and schedule delay of 4.0%. In 2014 there was no net schedule delay for these programs, and only a 1.2% cost growth.

B) The FAA develops cost estimates for its programs through a 3 stage process. First, preliminary costs are developed by the NextGen sponsoring office during its concept and requirements definition process. Second, for programs that successfully move beyond this stage, the program office then provides refined cost estimates during initial investment analysis. These estimates are independently reviewed by the finance organization's investment planning and analysis function. Finally, once approved by the Joint Resource Council, the program office engages industry through its competitive acquisition management process. This process calls for program office development of a detailed government cost estimate, which is again independently reviewed by the finance organization. This stage completes with evaluation of competitive bids for cost realism and reasonableness against the approved and vetted requirements of the program. The selected winning vendor bid is then used to update the system cost estimates that are then used to baseline the investment. So, while the FAA does not build an entirely separate set of independent cost estimates, a very expensive process due to need to maintain an entire organization dedicated to cost estimating, it does provide multiple reviews of its program office cost estimates prior to a final investment decision by its JRC.

C) The NextGen Integrated Master Schedule (IMS) is a tool designed to capture and track the progress of key NextGen portfolio-level activities and milestones, including NextGen dependencies on the six transformational programs and the impacts to the overall NextGen implementation timeline. The IMS is updated monthly for near-term milestones and quarterly for milestones more than a year away. The IMS captures program activities associated with NextGen implementation to 2020.