

19. INFORMATION TECHNOLOGY

Twenty years ago, people working for the Federal Government had access to the world's best technology. Today, many Government employees have better technology at home than at work. The Federal Government spends tens of billions of dollars annually on information technology (IT). However, fragmentation, poor project execution, and the drag of legacy technology have prevented the Government from realizing the productivity and performance gains that are found when IT is deployed effectively in the private sector. Under the leadership of the Federal Chief Information Officer, the Administration will continue its efforts to close the gap in effective technology use between the private and public sectors. The Administration will continue to streamline operations, transform customer service, and maximize the return on investment from information technology.

In its first year in office, the Obama Administration leveraged the power of information technology to transform the Federal Government. Starting on his first full day in office, the President led this effort by issuing a directive to make the Government more open and transparent. The Administration engaged the American people in new ways such as virtual town hall meetings and improved the quality of the services delivered to the public. Key initiatives demonstrate the commitment to changing the way Government works:

- In May 2009, Data.gov was launched to enhance access to Federal data. Since then, the site has grown to contain over 167,000 data sets and tools for using the data. After the Environmental Protection Agency toxic release data was featured on Data.gov, the frequency of downloads of that data increased over tenfold.
- In June 2009, the IT Dashboard was implemented to provide unprecedented transparency into \$78 billion in annual Federal spending on IT investments.

Agency Chief Information Officers now review the IT Dashboard monthly to provide updated status information on major IT investments more frequently than ever before.

- In September 2009, Apps.gov was launched to provide Federal agencies easy access to new cloud computing and social media technologies. This enabled agencies to transform their computing services quickly and avoid months of delay and redundant effort.
- In October 2009, a new platform, Cyberscope, was launched to streamline the annual security reporting workload and improved the ability to analyze and report on IT security across the Federal Government.
- In December 2009, OMB issued the Open Government Directive instructing all agencies to implement the principles of transparency, participation and collaboration set forth by the President.
- In January 2010, the Federal CIO held the first "TechStat" session with the Environmental Protection Agency, using the IT Dashboard to identify and correct IT investment problems. TechStat sessions will be a regular practice going forward to detect IT investment problems early, reduce waste, and increase the rate of successful project completion.

These efforts demonstrate that the Federal Government can implement new technology to solve old problems quickly and cost-effectively. In 2011, the Administration will build on these efforts to leverage the power of technology to transform the Government and meet its responsibilities to manage IT resources with a bold new strategy to guide the Federal enterprise.

**Table 19-1. FEDERAL IT SPENDING, BUDGETS OF 2009-2011
INCLUDING MAJOR FEDERAL IT INVESTMENT**
(Investment counts, spending in millions of dollars)

	2009	2010	2011
Number of Major IT Investments	807	781	809
All IT Investments	6,575	7,409	7,463
Major IT Investment Spending (\$ M)	37,250	40,328	40,409
All IT Investment Spending (\$ M)	71,227	78,440	79,375

Notes: The table compares the Budgets of three years, not final actuals or enacted levels for 2009 or 2010. Values for 2011 are based on the best available agency estimates

MANAGING THE FEDERAL IT PORTFOLIO

Federal Spending on Information Technology—

The total planned spending on information technology in 2011 is \$79.4 billion, a 1.2% increase from the 2010 Budget level of \$78.4 billion. Table 19.1 above displays the spending estimates presented in the last three budgets. Data displayed in Charts 19.1 and 19.2 reflect actual levels through 2009 and the enacted 2010 level, highlighting the 1.6% decrease from the 2010 enacted level of \$80.6 billion.

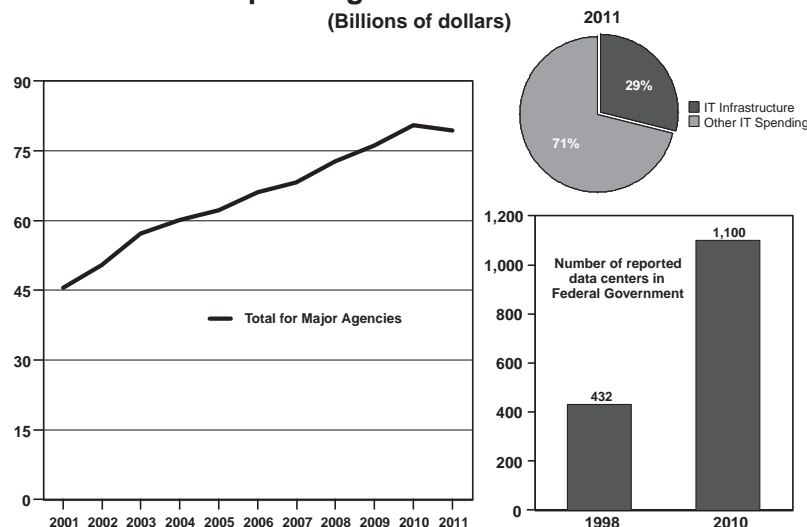
Identifying ways to achieve greater efficiencies in the areas of most rapid cost growth in the past, like development of new mission-oriented systems and infrastructure, is an important part of the Administration’s IT strategy. The strategy to control IT spending will also focus on reversing the growth in the number of agency data centers which increased over 150 percent from 432 in 1998 to 1,100 in 2009.

Federal IT spending of nearly \$80 billion a year demands continuous improvements in oversight. Responding to the need, the Administration launched a publicly accessible IT Dashboard, located at <http://it.usaspending.gov>, to increase the visibility of agencies’ IT spending, promote accountability, and help managers identify and eliminate redundancies. Here American taxpayers can see whether major IT investments are well managed by viewing costs, schedule, performance, and CIO ratings of IT investments. The Dashboard’s capabilities will continue to improve oversight of the main drivers behind increased IT spending, including mission-related spending (up approximately 90 percent since 2001), shown in Chart 19–2, and investments for internal management.

Federal Enterprise Architecture—Early engagement in strategic planning processes and development of robust system architectures is central to the Administration’s approach to effective IT. Stronger interventions early in project planning are needed to give the Federal enterprise a modern, interconnected, responsive information technology environment, which will support improved business processes and program performance. The history of many past failures in Federal IT investments is rife with examples where proper planning, consultation with business owners, and the development of a sound architecture could have saved many millions of dollars from being wasted, rather than waiting until burgeoning costs and repeated non-deliveries on required capabilities forced managers to abandon the project. For example, use of the National Information Exchange Model, a Federal, State, local and tribal interagency initiative that enables seamless information exchange, has improved information sharing and reduced redundant investments.

Starting in 2009 with initiatives such as Data.gov and the expanded USASpending.gov, the Federal CIO began to transform the face of Federal IT investment management. This new approach will redesign IT in key business areas from the ground up, based on the concept of central Federal platforms designed to streamline processes and modernize information technology services. This will provide an interoperable, secure, and cost-effective Federal IT enterprise.

Chart 19-1. Totals for Federal IT Spending, Infrastructure Share of Spending and Data Center Growth



**MODERNIZING FEDERAL AND NATIONAL IT INFRASTRUCTURE
TO BE EFFICIENT AND EFFECTIVE**

Centralized Provision of Information Technology Services for Non-Military Agencies—As technology and IT management practices continue to evolve at a rapid pace, we need to identify and adopt creative and innovative means to achieve greater efficiency and effectiveness. Following examples set by the Department of Defense, several State governments, and best practices in private industry, the Administration will establish one or more efficient, centralized service providers for non-military agencies for key strategic IT services. Centralizing key Federal IT services through this approach will reduce duplicative and wasteful spending, reduce facility space usage and energy consumption, increase security, and improve service delivery. Centralized provision of key IT services could prevent billions of dollars in increased costs across the Federal Government.

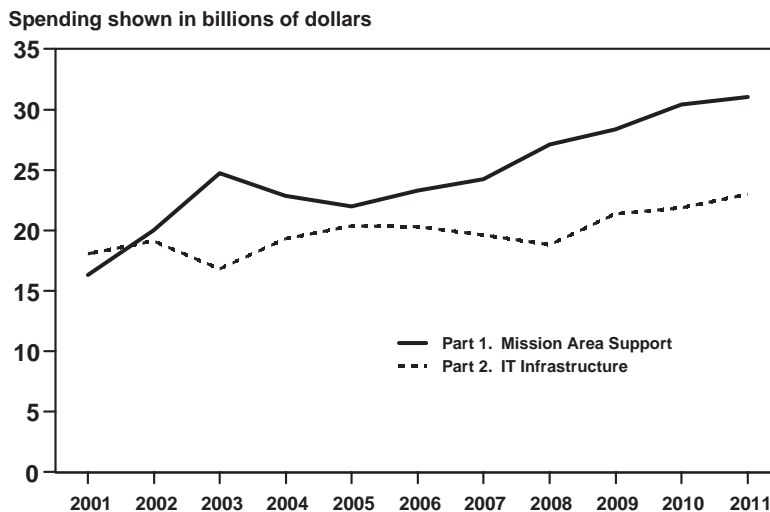
Several IT services have been identified as potential candidates for delivery through new platforms hosted by central service providers. Central service providers will leverage planning and analysis conducted in 2010 to deliver shared IT services more efficiently and effectively. Governance, funding, performance metrics and service models will be created, communicated and implemented. In 2011, previous pilot efforts will migrate into production. The Office of Management and Budget (OMB) will provide guidance addressing the provision of services by central providers and their role in supporting the efficient and effective use of IT in the Federal Government in delivering benefits to the public.

Cloud Computing—Adoption of a cloud computing model is a major part of the strategy to achieve efficient

and effective IT. After evaluation in 2010, agencies will deploy cloud computing solutions across the Government to improve the delivery of IT services. There will be an on-line storefront to enable subscribers to access lightweight collaboration tools, software, and platform and infrastructure service offerings in a cloud environment. Cloud computing will be implemented in a secure manner.

Data Center Consolidation—Data center consolidation is another key element of the new Federal IT strategy. It is clear that agencies are not implementing technological solutions as effectively and efficiently as possible. A 1998 survey of Federal agencies identified 432 agency data centers. In September 2009, agencies reported that the number of Federal data centers grew to 1,100. This growth trend conflicts with the proven best practice of consolidating and reducing the number of data centers to reduce costs, energy consumption, and environmental impacts, and improve service and performance. Consolidating Federal data centers will play an important role in meeting the goals of Executive Order 13423 “Strengthening Federal Environmental, Energy and Transportation Management,” Executive Order 13514 “Federal Leadership in Environmental, Energy, and Economic Performance,” and the Energy Security and Independence Act of 2007. OMB will work with agencies to develop a Government-wide strategy and agency plans to reduce the number and cost of Federal data centers. This will reduce energy consumption, space usage and environmental impacts, while increasing the utilization and efficiency of IT assets, in concert with the transition to cloud computing. OMB will monitor agency implementa-

Chart 19-2. Components of Federal IT Spending – Mission Support and Infrastructure



tions of data center consolidation plans, identifying and addressing any problems that arise.

Leveraging the Federal Government's Buying Power and the Federal eMall—The Federal Government often buys information technology through numerous, fragmented suboptimal purchases. Existing programs such as Smart Buy, run by the General Services Administration, enable the government to pool its purchasing, but they are limited in scope and much more can be done. In 2009, Apps.gov was established to provide a modern online storefront to streamline agencies' acquisition of software at low cost or no cost. OMB will work with the acquisition community to identify additional opportunities to consolidate purchases, reduce administrative costs, and leverage Federal buying power to get the greatest value for the taxpayers' dollars.

Federal agencies are spending upwards of \$20 billion annually using purchase cards. In many instances, staff within the same agency purchase identical goods through separate orders. Some of these orders are placed through existing on-line ordering portals (e.g., GSA Advantage, Navy eMall); others are placed over the phone or by fax; and many are made by staff walking into stores. Currently, there is no effective way for agencies to collect the data on all of their purchase card activity so that they can identify savings opportunities, such as taking advantage of bulk discounts or soliciting more strategic sourcing opportunities.

Moving the majority of routine Federal purchase card transactions to one or more of the existing online Federal eMalls has the potential for significant annual savings. Specifically, an on-line Federal eMall will provide visibility into Government-wide purchase card transactions, including the ability to view and analyze purchase data across the Government to more effectively develop strategic sourcing policies. At the same time, internal controls related to Federal purchase cards will be improved through the use of electronic approval of purchases, records of purchases, and documentation of purchases maintained electronically. OMB will work with agencies to expand the use of on-line eMalls for Federal purchases in 2010 and monitor these efforts for further expansion in 2011 and beyond based on lessons learned.

Building a Strong Federal IT Workforce—Rapid advances in IT are driving strong demand for highly skilled employees to manage IT projects and systems needed to improve program performance. Qualified personnel with the necessary competencies are required to help ensure agency IT systems are well planned, managed, operated and maintained. The need for skilled IT professionals, including experienced managers for major IT investment projects, has steadily increased. According to the Office of Personnel Management, there were about 70,000 IT professionals (GS-2210 Federal job series) in the Federal workforce as of March 2009. Increasing demands will conflict with anticipated retirements of current IT professionals projected by the Center for Workforce Information at OPM to continue at a rate of over 2,500 annually (or about 4% of the workforce) for the next seven years. In 2010, the Federal CIO Council will conduct a government-wide IT workforce survey to enable agency

managers to identify future workforce needs. Streamlined hiring processes will help agencies to attract and retain the best talent in the future.

An Efficient Federal Workforce—With rapid advances in IT, agencies must adopt the best in 21st century technology to attract and retain the best and brightest future employees and enable all Federal employees to work at their peak performance. Much of the work within the Government could be improved with a technology platform that enables effective collaboration across agencies, across distances, and across governmental boundaries. The rise in social media and web 2.0 technologies has proven that no single organization has a monopoly on good ideas. Today, in the Federal Government, it is difficult just to locate a person in another agency, much less find people with common interests and problems and leverage IT to work collaboratively. A collaboration platform would integrate social media technology with the ability to collaborate across Government boundaries. This platform would enable employees to locate other Government employees with common challenges, needed skills, and ideas to solve common problems, communicate and share information, and generate better solutions to problems more efficiently. In 2010, we will evaluate alternatives, determine the best solutions, develop an implementation plan, and initiate implementation. In 2011, these capabilities will be deployed across the Federal Government.

Health Information Technology (HIT)—As the Federal Government implements the requirements of the HITECH Act of 2009, the Administration will continue to leverage Federal information technology to support goals for population health, encourage care coordination through the development of interoperability standards, and assist the development and integration of privacy and security protections into the HIT framework.

Smart Grid—Our electricity transmission grid must be expanded and modernized to improve reliability, efficiency, and security, while enabling increased generation from clean energy sources. In 2011, the Administration will continue to advance the development of advanced grid technologies such as smart metering and communications, cybersecurity systems, and large-scale energy storage. These technologies will promote energy savings for consumers, increase energy efficiency, and foster the growth of renewable energy sources like wind and solar power.

Focus on Customer Service—In 2010 and 2011, the Federal CIO will continue to collaborate with agencies to harness the power of IT to make Government work better for the American people. Examples of successful initiatives already undertaken include:

- Simplifying the student loan application process to reduce time and complexity in the Department of Education and the Internal Revenue Service.
- Streamlining veterans benefits processing and reducing the backlog in the Department of Veterans Affairs.
- Enabling immigration applicants to get updates on the status of their applications in the U.S. Citizenship and Immigration Services.

TRANSPARENCY AND PARTICIPATION

USASpending—The public deserves to see how the Government spends their taxpayer dollars. Because of the scope and complexity of that spending, considerable effort is required to identify, collect and make sense of all that data. Upon launch in 2007, the focus was solely on meeting congressionally mandated deadlines. Consequently, the site was not designed for scalability or real-time data reporting, and does not provide a capability for sub-award reporting.

In early 2010, the USASpending.gov platform is being re-engineered to create a scalable platform flexible enough to accommodate future growth and speedy assimilation of new and diverse datasets; however, without additional resources included in the 2011 budget, the site will still not be fully compliant with the Federal Funding Accountability and Transparency Act (FFATA). In 2010 and 2011, USASpending.gov will leverage the efforts of FederalReporting.gov to provide for recipient/sub-recipient reporting, making the site FFATA compliant.

Data.gov—Data.gov allows the public to easily find, download, and use datasets and data tools that are generated and managed by the Federal Government. As a priority Administration initiative, the vision for Data.gov was encapsulated in the President's January 21, 2009 Open Government and Transparency memorandum where he states that information should be disclosed "rapidly in forms that the public can readily find and use."

Following the example of Data.gov, States and cities in the United States and other countries are creating their own sites to make their data more publicly accessible. As a result of making more data available on Data.gov, new software applications providing useful services to the citizens have been rapidly developed for the public by the private sector.

Geospatial Platform — In 2010 and 2011, Federal data managers for geospatial data will move to a portfolio management approach, creating a Geospatial Platform to support GeoOneStop, place-based initiatives, and other potential future programs. This transformation will be facilitated by improving the governance framework to address the requirements of State, local and tribal agencies, Administration policy, and agency mission objectives. Investments will be prioritized based on business needs. The Geospatial Platform will explore opportunities for increased collaboration with Data.gov, with an emphasis on reuse of architectural standards and technology, ultimately increasing access to geospatial data.

Citizen Services Dashboard — In 2010 and 2011, the Administration will develop and implement a Citizens' Services Dashboard to provide transparency into the quality of service the Government delivers to the public by highlighting the top service delivery touch points for each major Federal department and agency.

Challenge Platform — In 2010 and 2011, the Administration will develop and implement web-based platforms to facilitate innovation through challenges and prizes. A challenge is exactly what the name suggests: it is a challenge by one party (a "seeker") to a third party

or parties (a "solver") to identify a solution to a particular problem. Challenge platforms are tools that provide a forum for the seeker to post the problem and invite a community of solvers to suggest, collaborate on, and judge solutions. Challenge platforms can also be used to run incentive prizes which reward contestants for accomplishing a particular future goal. Challenges are an important tool for achieving the President's goals for Government to be more transparent, participatory and collaborative.

Transparency of Research and Development Information—In order to fulfill requirements in the E-Government Act regarding the maintenance of a repository of information on research and development (R&D), in a manner harmonized with the Administration's efforts to improve the transparency and usability of Federal data, the Administration is committed to exploring with stakeholders a fundamental change in how data on R&D should be made available to the public. As in other areas included in the push for greater transparency, the emphasis will be on testing models for making R&D related data from contributing agencies available in ways that are secure, interoperable, and usable by a wide array of potential users. Efforts in this area will be coordinated with plans in closely related areas such as USASpending and Data.gov.

Broadband Access for Americans—Greater citizen engagement and participation in Federal, State and local civic processes is aided by reliable, cost effective access to broadband internet services. In the near term, the Departments of Agriculture and Commerce are awarding more than \$7 billion in grants and loans under the Recovery Act, designed to expand broadband infrastructure capacity and improve subscribership. Broadband is a foundation for economic innovation and technological advances, and the Administration will continue to work toward universal, affordable access. Increased access to broadband capabilities will be enhanced over the long term by a national plan which will be submitted to Congress in 2010, aiming to advance the objective of ready access to broadband services for all Americans.

SECURITY AND PRIVACY

Securing Government Systems — Our Nation's security and economic prosperity depend on the stability and integrity of our Federal communications and information infrastructure. As stated in the Cyberspace Policy Review, the 60-day clean-slate evaluation of cyber activities ordered by the President, threats to cyberspace pose some of the most serious economic and national security challenges of the 21st century for the United States. The group of state and non-state actors who target U.S. citizens, businesses, and Federal agencies is growing. US-CERT, the computer response center for civilian agencies, sees millions of attempts daily to access open ports and vulnerable applications on Federal networks.

Historically, the Federal Government has not been as effective as necessary in its cyber defense. An inadequate cybersecurity workforce, a focus on compliance rather than outcomes, and a cumbersome and time-consuming pro-

cess for collecting information regarding agency security postures have hindered our cyber security management capabilities. OMB will work with agencies, Inspectors General, Chief Information Officers, senior agency officials for Privacy, as well as GAO and the Congress, to strengthen the Federal Government's IT security and privacy programs. As part of those activities, OMB will:

- *Utilize a Modern Platform for Federal Information Security Management Act (FISMA) Reporting.* On October 19, 2009, OMB launched an interactive data collection tool—CyberScope—enabling agencies to fulfill their FISMA reporting requirements through a modern digital platform. The broad range of meaningful information collected, the use of secure two-factor authentication, and the online access to data provides for a more efficient and effective reporting process. In the spring of 2010, OMB will unveil a cybersecurity dashboard, unlocking the value of agency FISMA reporting by presenting the information gathered to agencies' IT professionals and management in a timely, comprehensive, and secure manner.
- *Collect More Specific Cost/Budget Information.* Beginning with the 2009 FISMA report, OMB is collecting cost estimates and actual amounts spent on IT security. Collection of this information, especially when combined with performance-based metrics, will allow both OMB and agency management to make informed, risk-based decisions on where to allocate scarce resources.
- *Implement New Security Metrics.* In September 2009, OMB established a task force which has developed new, outcome-focused metrics for information security performance for Federal agencies rather than merely demonstrating compliance. These metrics will be used in agencies 2010 FISMA reports to OMB and the Congress. Additionally, OMB and the task force will release a roadmap for future reporting under FISMA, which will incorporate real-time metrics and enhance Government-wide situational awareness in 2010.
- *Move towards Situational Awareness across the Government.* More frequent reporting, near or at real-time, is imperative for developing situational awareness across the Federal enterprise. The use of Security Information Management or Security Information Event Management tools will assist in progressing towards real time security awareness and management in the Government.
- *Cybersecurity Workforce.* On October 1, 2009, as a result of OMB collaboration with the Office of Personnel Management, DHS Secretary Janet Napolitano announced that DHS has the authority to hire up to 1,000 new cyber security professionals over the next three years to fill staffing gaps at various DHS agencies. This new hiring authority will enable DHS to recruit skilled cyber analysts, developers and engineers to serve their country by helping to secure the Nation against cyber threat.

Identity Management—The Cyberspace Policy Review outlined a number of cybersecurity recommendations. To support this effort, the Federal Chief Information Officers' Council developed the "Identity, Credential and Access Management (ICAM) Roadmap and Implementation Guidance" document to provide implementation guidance for program managers, leadership, and stakeholders as they plan and upgrade their architectures. One of the major outcomes of this effort is to enable agencies to create and maintain information systems that deliver more convenience, appropriate security, and privacy protection, with less effort and at a lower cost. The ICAM roadmap, issued in November 2009, outlines a number of transition activities for agencies to complete. It also serves as an important tool for providing awareness to external mission partners and driving the development and implementation of interoperable solutions. ICAM solutions will leverage the existing investments in the Federal Government while promoting efficient use of tax dollars when designing, deploying, and operating ICAM systems.

As part of this effort, OMB will continue to oversee the implementation of the strong Federal identity management scheme outlined in Homeland Security Presidential Directive 12 (HSPD-12). This directive, "Policy for a Common Identification Standard for Federal Employees and Contractors," addressed the September 11th Commission recommendation to improve the security of Federal facilities and information systems. Agencies are required to follow specific, technical standards and business processes for the issuance of Federal credentials including a standardized background investigation to verify employees' and contractors' identities. HSPD-12 credentials facilitate physical access control and provide for digital signature, encryption, archiving of documents, multi-factor authentication, and single sign-on to improve security and facilitate information sharing. They also provide for a very high level of trust in identity credentials during disaster response, disaster recovery, and reconstitution of Government scenarios.

As of September 1, 2009, more than 4.1 million credentials (71 percent of those needed) were issued to the Federal workforce and 3.3 million background investigations (57 percent of those needed) were completed. Additionally, 20 credential issuance infrastructures are in operation nationwide and 55 system integrators and 449 products are on the Approved Products and Services list maintained by GSA. Agencies are currently focusing on completing the issuance of credentials to their remaining employees and contractors and leveraging the electronic capabilities of the credentials.

Protecting Privacy— Federal agencies will continue to implement breach notification plans, eliminate unnecessary collection and use of Social Security numbers in agency programs, reduce unnecessary holdings of personally identifiable information, and develop policies outlining rules of behavior and identifying consequences and corrective actions to address non-compliance. Agencies are expected to demonstrate progress in all aspects of privacy protection. The Federal Government will continue to improve information security for Federal systems and the

information sector overall. This focus, along with a commitment to ensuring privacy as investments are made in the widespread implementation of electronic health records, will maintain the privacy of personal information for all Americans as a top priority.

CONCLUSION

The Obama Administration is committed to making the Government work better for the American people and be more responsive to their needs. The Government will get rid of waste and inefficiency that bloats our deficits and squanders the taxpayers' hard earned dollars. The Administration will accomplish this by revamping outdated information technology that undermines our efficiency, threatens our security, and fails to serve the public's interests.

The Administration's announcement in June 2009, of a shorter, simpler, and more user friendly Free Application for Federal Student Aid (FAFSA) is one example of serving Americans better through information technology. FAFSA will make it easier for all Americans to apply for college financial aid. Streamlining the application process will increase postsecondary enrollment, particularly among low- and middle-income students, as part of the Administration's initiative to meet the President's challenge to the Nation to once again have the highest percentage of college graduates in the world. Making the path to a college education easier will send a clear message to young people as well as adults that college is within their reach.

Streamlining the higher education aid process is just one example where innovations in Federal information technology have created value for American taxpayers. The Obama Administration moved in 2009 to open the Government and make it more transparent; engage the American public in collaborative ways through new media technologies; and drive innovation, efficiency, and effectiveness through transformative approaches like

cloud computing. The new IT Dashboard was used by the Department of Veterans Affairs to identify 45 IT projects at risk that were put on hold until they could be reevaluated and corrected. The General Services Administration demonstrated the potential for cost savings from cloud computing by moving USA.gov onto a cloud computing platform and saving \$1.7 million annually. Data.gov proved the value of making more data available when programmers outside the Federal Government built "Fly on Time," a useful tool for travelers to predict travel times, leveraging ease of access to Federal data sources to provide all Americans with a valuable innovation. Catalyzed by greater data availability, such innovations can benefit the public with greater speed and at less cost than direct investment of tax dollars.

This innovative use of technology will continue in 2010. The Administration will enhance Data.gov and USASpending.gov to improve transparency and openness of the Government, acquire and deploy new social media technologies to improve citizen engagement, explore using innovative tools to improve the collaboration and effectiveness of the Federal workforce, and initiate pilot projects in cloud computing to transform how the Government provides computing services while taking steps to improve the security of Federal information and systems.

In 2011, the Administration will build upon this foundation and further increase transparency by providing more data of greater detail and quality, institutionalizing the use of social media and other tools for citizen engagement and Federal workforce collaboration, migrating successful cloud computing pilots to mainstream production services, consolidating data centers to reduce costs and environmental impacts, and increasing the security profile of all Federal information and systems.

Through these efforts, we will realize the potential of information technology to transform the Government and improve its services to all Americans.