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Representatives

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## CENSUS BUREAU

### Important Activities for Improving Management of Key 2010 Decennial Acquisitions Remain to be Done

Statement of David A. Powner, Director  
Information Technology Management Issues





Highlights of [GAO-06-444T](#), testimony before the Committee on Government Reform, Subcommittee on Federalism and the Census

### Why GAO Did This Study

The Census Bureau plans to increase its use of automation to conduct the 2010 Decennial Census. Two key acquisitions are the Decennial Response Integration System (DRIS) and the Field Data Collection Automation program (FDCA). DRIS is expected to standardize and integrate data from census forms and other response modes. FDCA is expected to provide automation support for field data collection activities. Last year, you asked GAO to assess the status, plans, and management capabilities of both of these projects. In January 2006, GAO briefed the subcommittee staff on the results of that work. At your request, this testimony summarizes key findings from that briefing, including the status and management capabilities of each project.

### What GAO Recommends

GAO recommends that the Census Director ensure that the bureau completes key activities needed to effectively manage its acquisitions. In commenting on a draft of GAO's briefing, bureau officials generally agreed with the recommendations and noted that time and budget constraints had driven the bureau to proceed with its acquisitions before all of the recommended activities had been completed. Officials stated that they plan to complete these activities as soon as possible.

[www.gao.gov/cgi-bin/getrpt?GAO-06-444T](http://www.gao.gov/cgi-bin/getrpt?GAO-06-444T).

To view the full product, including the scope and methodology, click on the link above. For more information, contact David A. Powner at (202) 512-9286 or [pownerd@gao.gov](mailto:pownerd@gao.gov).

## CENSUS BUREAU

# Important Activities for Improving Management of Key 2010 Decennial Acquisitions Remain to be Done

### What GAO Found

The Census Bureau has initiated efforts to acquire DRIS and FDCA, key systems it needs to perform the 2010 Decennial Census. It awarded a contract for DRIS in October 2005; the system is currently in a design and development phase. The bureau expects to award a contract for FDCA development in March 2006. While both projects' life cycle cost estimates are currently considered procurement sensitive, together they are expected to make up a large portion of the \$1.8 billion program to develop, test, and implement decennial census systems. Both acquisitions involve ambitious schedules in order to be able to deliver the needed functionality to support a planned 2008 census dress rehearsal and the eventual 2010 census activities.

While both project offices have implemented initial acquisition management activities, neither has the full set of capabilities they need to effectively manage the acquisitions (see table below). Specifically, the DRIS project completed its solicitation activities and the FDCA project has completed most of its solicitation activities. However, activities in other management areas have been initiated but not completed. For example, the DRIS project office has established baseline requirements for the acquisition, but the bureau has not yet validated them or implemented a process for managing the requirements. Also, while the FDCA project office has initiated efforts to oversee the contractor's performance, such as requiring earned value management reporting (a project management tool that integrates cost, schedule, and scope of work to aid project planning and control) and hiring staff with contracting experience, it has not yet determined which performance measures it will use to track the contractor and its own internal project office performance. Until these and other basic contract management activities are fully implemented, both projects face increased risks that the systems will experience cost overruns, schedule delays, and performance shortfalls.

**Status of Acquisition Management Activities for Key Decennial Systems**

Capability	DRIS	FDCA
Project and acquisition planning	○	○
Solicitation (the process leading up to selecting a contractor)	●	● <sup>1</sup>
Requirements development and management	○	○
Risk management	○	○
Contract tracking and oversight/project monitoring and control	○	○
Process and product quality assurance	○	○
Executive oversight/governance	○	○

● Key activities completed  
 ○ Initiated, but key activities remain to be completed

Source: GAO analysis.

<sup>1</sup>The contract is expected to be awarded in March 2006.

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Mr. Chairman and Members of the Subcommittee:

We appreciate the opportunity to participate in today's hearing to discuss our work on key acquisitions supporting the 2010 Decennial Census. As you know, the Census Bureau is currently planning the decennial census—the nation's oldest and most comprehensive source of population and housing data. While apportionment—the proportional distribution of the number of members of the U.S. House of Representatives in each state on the basis of the population of each state—is the most widely known use of census data, the data are also used for congressional redistricting, managing federal agencies, and allocating federal funds. These data are disseminated to state and local governments, academia, and the private sector for use in understanding this country's people and their social, demographic, and economic characteristics. The next decennial census is required to begin on April 1, 2010, and the Secretary of Commerce is required to report to the President the tabulation of total population by states within 9 months of that date.<sup>1</sup>

In June 2005, we reported on the Census Bureau's progress in five information technology (IT) management areas—investment management, systems development/management, enterprise architecture management, information security, and human capital.<sup>2</sup> These IT management areas are important because they have substantial influence on the effectiveness of organizational operations and—if applied effectively—can reduce the risk of cost and schedule overruns, and performance shortfalls. We reported that, while the bureau had many practices in place, much remained to be done to fully implement effective IT management capabilities. We also made several recommendations to improve the bureau's management. Given the weaknesses we noted in the five management areas and the importance of IT investments to the upcoming 2010 Decennial Census, you asked us to review two planned Census Bureau acquisitions: the Decennial Response Integration System (DRIS)—a system for integrating paper, Internet, and telephone responses; and the Field Data Collection Automation (FDCA) program—the systems, equipment, and infrastructure field staff will use to collect census data.

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<sup>1</sup>13 U.S.C. 141 (a) and (b).

<sup>2</sup>GAO, *Information Technology Management: Census Bureau Has Implemented Many Key Practices, but Additional Actions Are Needed*, [GAO-05-661](#) (Washington, D.C.: June 16, 2005).

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In January, we presented a detailed briefing to the committee and subcommittee staffs, which is provided in appendix I. At your request, I will discuss key findings from that briefing, specifically covering each project's status and management capabilities. An overview of the approach we used to perform this work—our objectives, scope, and methodology—is provided in appendix II.

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## Results in Brief

The Census Bureau has initiated efforts to acquire DRIS and FDCA, key systems it needs to perform the 2010 Decennial Census. It awarded a contract for DRIS in October 2005; the system is currently in a design and development phase. The bureau expects to award a contract for FDCA development in March 2006. While both projects' life cycle cost estimates are currently considered procurement sensitive, together they are expected to make up a large portion of the \$1.8 billion program to develop, test, and implement decennial census systems. Both acquisitions involve ambitious schedules in order to be able to deliver the needed functionality to support a planned 2008 census dress rehearsal and the eventual 2010 census activities.

While both project offices have implemented initial acquisition management activities, neither has the full set of capabilities they need to effectively manage the acquisitions. Specifically, the DRIS project completed its solicitation activities and the FDCA project has completed most of its solicitation activities. However, activities in other management areas have been initiated but not completed. For example, the DRIS project office has established baseline requirements for the acquisition, but the bureau has not yet validated them or implemented a process for managing the requirements. Also, the project office identified project risks, but has not yet developed written mitigation plans or established milestones for completing key risk mitigation activities. Regarding FDCA, the project office has developed baseline functional requirements for the acquisition, but the bureau has not yet validated them. Also, while the FDCA project office has initiated efforts to oversee the prospective contractor's performance, such as requiring earned value management<sup>3</sup> reporting and

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<sup>3</sup>Earned value management is a project management tool that integrates the investment scope of work with schedule and cost elements for investment planning and control. This method compares the value of work accomplished during a given period with that of the work expected in the period. Differences in expectations are measured in both cost and schedule variances.

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hiring staff with contracting experience, it has not yet determined which performance measures it will use to track the contractor and its own internal project office performance. Additionally, the project office identified risks, but it has not yet implemented a risk management process. Specifically, it has not yet assigned responsibilities, developed detailed mitigation plans for managing the risks, or established milestones for completing key mitigation activities.

Until these and other basic management activities are fully implemented, both projects face increased risks that the systems will experience cost overruns, schedule delays, and performance shortfalls. We are making recommendations to the Director of the Census Bureau to ensure that both project offices complete key activities needed to effectively manage acquisitions, including activities associated with effective project planning, requirements management, risk management, and performance measurement.

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## Background

The Census Bureau's mission is to serve as the leading source of quality data about the nation's people and economy. While apportionment is the most widely known use of census data, the data are also used for congressional redistricting, managing federal agencies, allocating federal funds, and they are disseminated to state and local governments, academia, and the private sector. Data from a decennial census provide official, uniform information gathered over the decades on the country's people and their social, demographic, and economic characteristics. They provide the baselines for countless other surveys and are used to develop sampling frames for a number of other federal data collections, such as the Current Population Survey, which is used to measure participation in the labor market and unemployment rates.<sup>4</sup>

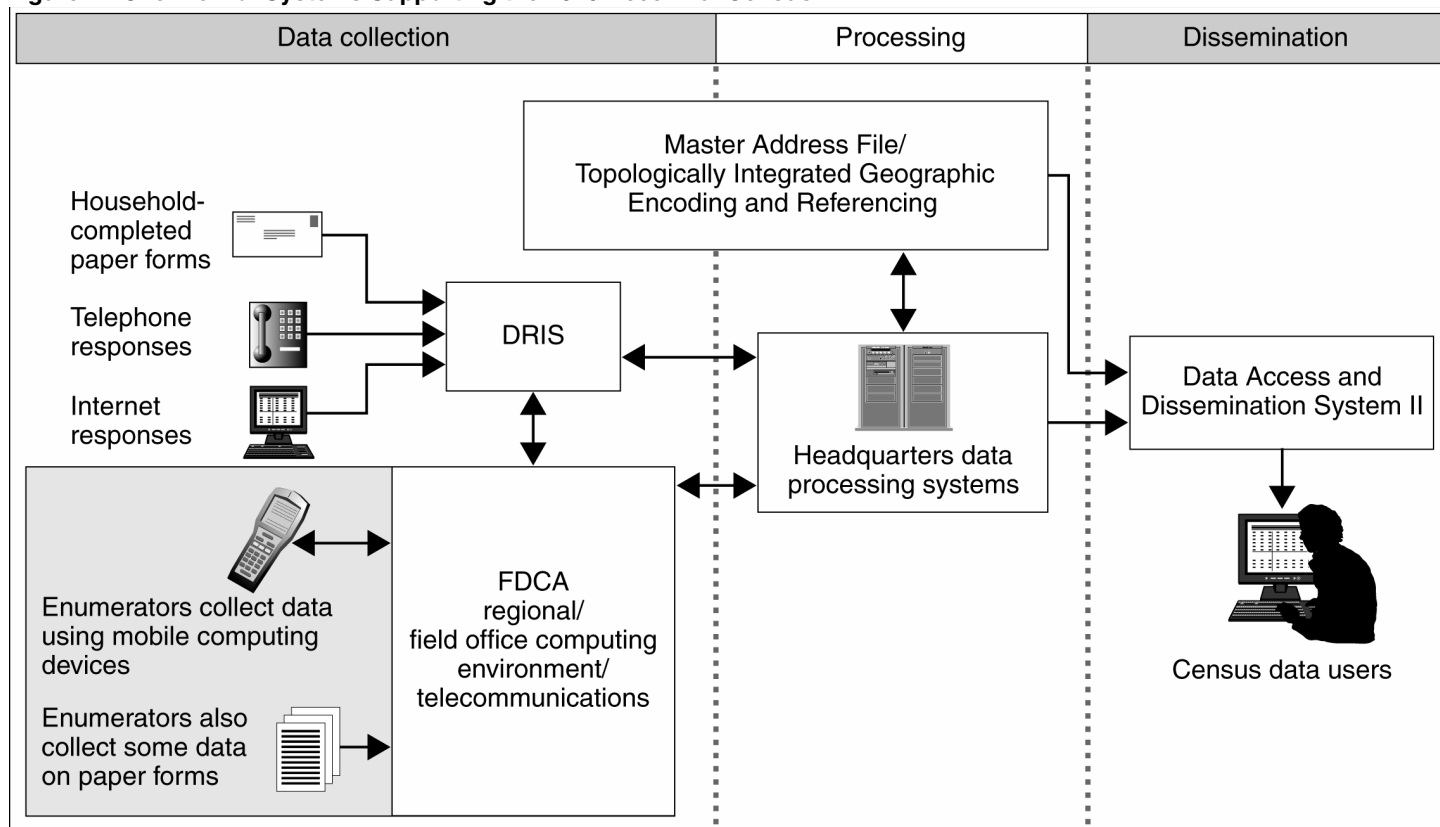
The bureau's decennial census organization, which is responsible for the decennial census program, is comprised of several divisions and offices. The Decennial Management Division is responsible for implementing the decennial census. The Decennial Systems and Contracts Management Office manages selected system contracts supporting the decennial census.

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<sup>4</sup>For more information see GAO, *Decennial Census: Overview of Historical Census Issues*, GAO/GGD-98-103 (Washington, D.C.: May 1, 1998).

To support the 2010 Decennial Census, the bureau manages a \$1.8 billion program called “2010 Testing, Evaluation, and Systems Design,” which calls for the acquisition and testing of systems and technologies. Two of the key acquisitions associated with this program are DRIS and FDCA. In addition, other key systems support the planned 2010 decennial census. Together, these and other systems are to support the collection, processing, and dissemination of census data. Figure 1 shows an overview of the key systems planned to support the 2010 Decennial Census.

**Figure 1: Overview of Systems Supporting the 2010 Decennial Census**



Source: GAO analysis of Census data.

To effectively manage major IT programs, organizations should use sound acquisition and management processes to minimize risks and thereby maximize chances for success. Such processes include project and acquisition planning, solicitation, requirements development and

management, risk management, contract tracking and oversight/project monitoring and control, quality assurance, and executive oversight (see table 1 for a description of each process). Such processes have been identified and endorsed by leading organizations such as the Software Engineering Institute and the Chief Information Officer’s Council, and in our prior work analyzing best practices in industry and government. Our work has shown that such processes are significant factors in successful systems acquisitions and development programs, and they improve the likelihood of meeting cost and schedule estimates as well as performance.

**Table 1: Selected Processes for Effectively Managing IT Programs**

Process area	Description
Project and acquisition planning	Effective project planning involves establishing and maintaining plans defining project scope and activities, including overall budget and schedule, key deliverables, and milestones for key deliverables. It also involves ensuring that the project team has the skills and knowledge needed to manage the project and obtaining stakeholder commitment to the project plan. Effective acquisition planning involves developing an acquisition strategy that includes objectives, projected costs and schedules, and risks.
Solicitation	This activity includes identifying the needs within a particular acquisition, developing and implementing a solicitation plan, preparing for the evaluation of responses, issuing a solicitation package, evaluating responses, conducting supporting negotiations, and making recommendations for award of the contract.
Requirements development and management	Requirements development involves eliciting, analyzing, and validating customer and stakeholder needs and expectations. Requirements management involves establishing an agreed-upon set of requirements, ensuring traceability between operational and product requirements, and managing any changes to the requirements in collaboration with stakeholders.
Risk management	An effective risk management process identifies potential problems before they occur, so that risk-handling activities may be planned and invoked as needed across the life of the product and project in order to mitigate adverse impacts on achieving objectives. Key activities include identifying and analyzing risks, assigning resources, developing risk mitigation plans and milestones for key mitigation deliverables, briefing senior-level managers on high-priority risks, and tracking risks to closure.
Contract tracking and oversight/project monitoring and control	These processes provide oversight of the contractor’s and the project office’s performance, in order to allow appropriate corrective actions if actual performance deviates significantly from the plan. Key activities in tracking both the contractor’s and the project office’s performance include the selection of performance measures, communicating status, taking corrective actions, and determining progress.
Process and product quality assurance	This process area provides staff and management with objective insight into processes and associated work products. This includes the objective evaluation of project processes and products against approved descriptions and standards. Key activities include developing a quality assurance plan, assigning resources to quality assurance activities, and implementing quality assurance activities. Through quality assurance, the project team is able to identify and document noncompliance issues and provide appropriate feedback to project staff.

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Process area	Description
Executive oversight and governance	Office of Management and Budget and GAO guidance call for agencies to establish IT investment management boards comprised of key executives to regularly track the progress of major systems acquisitions. These boards should have documented policies and procedures for management oversight of IT projects and systems, and should be able to adequately oversee the project's progress toward cost and schedule milestones and their risks. The board should also employ early warning systems that enable it to take corrective actions at the first sign of cost, schedule, and performance slippages.

Source: GAO summary of leading practices, including practices identified by the Software Engineering Institute, the Chief Information Officer's Council, and the Office of Management and Budget.

## DRIS Project Under Way but Key Management Activities Remain To Be Implemented

DRIS is intended to receive, capture, and standardize census data provided by respondents via census forms, telephone agents, and the Internet. DRIS is also intended to standardize data collected via mobile computing devices and perform other functions, such as provide assistance to the public via telephone and the Internet.

On October 5, 2005, the bureau awarded a cost-plus-award-fee contract for DRIS to Lockheed Martin Corporation and its seven subcontractors to design, develop, and implement a system for standardizing and integrating the data from all of the response modes. The contract has a 6-year performance period, which includes designing and developing the system, conducting the census dress rehearsal in 2008, conducting 2010 census operations, and archiving data and disposing of equipment after the census is completed. After the contract was awarded, the project got off to a slow start because of a bid protest that has since been withdrawn. The DRIS project office is currently reassessing the project schedule due to delays associated with the bid protest. The project office plans to complete this assessment and perform an integrated baseline review by March 2006.<sup>5</sup>

The DRIS project office has initiated activities supporting key project management processes, but does not yet have the full set of acquisition management capabilities it needs to effectively manage the acquisition. Table 2 provides a summary of the status of the DRIS project in each of the process areas we evaluated.

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<sup>5</sup>An integrated baseline review is a joint assessment by the contractor and the project team of the technical plans for a work segment as well as the adequacy of the budgets, resources, and schedules estimated to complete that work. This review results in a detailed plan for work activities, costs, and schedules that is used as the basis for tracking the earned value of the contractor's deliverables.



**Table 2: Summary of the Status of DRIS Acquisition Management Capabilities**

<b>Capability</b>	<b>Status</b>
Project and acquisition planning	Initiated, but key activities remain to be completed, such as finalizing the project management plan and identifying key deliverables beyond 2008.
Solicitation	Key activities completed and contract awarded ahead of schedule.
Requirements development and management	Initiated, but key activities remain to be completed, such as validating requirements and implementing a requirements management process.
Risk management	Initiated, but key activities remain to be performed such as preparing mitigation plans and holding senior-level briefings.
Contract tracking and oversight/project monitoring and control	Initiated, but project office performance measures have not yet been established.
Process and product quality assurance	Initiated, but a quality assurance process is not yet in place.
Executive oversight/governance	Initiated, but key governance activities remain to be completed.

Source: GAO analysis of Census Bureau data.

The DRIS project office has made progress in building management capabilities, but more remains to be done in key areas. For example, the project office completed its solicitation activities and awarded the contract ahead of schedule. In the area of requirements development and management, the project office established basic functional requirements for the acquisition and the Decennial Management Division has developed a detailed change control process for managing requirements for all 2010 Decennial Census systems, including DRIS. However, the division has not yet conducted a thorough validation of DRIS requirements, ensured traceability between DRIS and operational requirements, or approved the DRIS baseline requirements. Further, the division has not yet staffed the teams responsible for managing requirements or initiated any requirements management activities.

Until the bureau obtains validation and approval of DRIS requirements, it faces increased risk that new and changing requirements could be identified throughout the system's development. Changes identified late in the development cycle could be costly to implement and could increase the risk that the system will not be ready in time to support census activities. Further, until the bureau staffs and implements its planned requirements management process, it may not be able to effectively ensure that resulting products meet requirements.

In the area of risk management, the DRIS project office has developed a pre-award risk management plan that defines staff roles and responsibilities and includes procedures for identifying and tracking risks

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and risk mitigation actions. Since awarding the contract, the team has updated the pre-award risks. However, the project team has not written mitigation steps or dates associated with the team's plans for addressing high-impact risks, and the project team has not conducted senior-level briefings. Until the project team develops risk mitigation plans with milestones for key activities and regularly briefs senior-level managers on risks and risk mitigation plans, it faces increased probability that DRIS will not be delivered on schedule, within budget, or perform as expected.

In the area of contract and project monitoring, the DRIS project team plans to provide contract tracking and oversight through reports including earned value management and monthly status reports. However, the project office has not yet selected detailed performance measures for tracking the contractor or its own internal progress (such as progress against planned milestones, number of risks opened and closed, number and frequency of changes to requirements, and frequency of quality assurance reviews). As a result, the project team is not able to ensure that it will be able to identify and document any noncompliance issues and take appropriate corrective actions.

One of the root causes of the project's delay in completing key management activities is that the Census Bureau lacks the organizational policies for managing major acquisitions. As a result, the success of major acquisitions such as DRIS is highly dependent on the knowledge, skills, and qualifications of the project offices. Without a minimum set of required steps and processes, Census acquisitions are at increased risk of being run in an ad hoc and chaotic manner—potentially resulting in increased project costs, delayed schedules, and performance shortfalls. In commenting on a draft of our briefing, agency officials acknowledged that the bureau does not have an organizational acquisition management policy, but noted that, even if there were a policy, time and budget constraints have driven the bureau to proceed with its acquisitions before all of the recommended activities have been completed. Officials stated that they plan to complete these activities as soon as possible.

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## FDCA Program Has Been Initiated but Key Management Activities Remain To Be Performed

The FDCA program is expected to provide automation support for field data collection operations for the 2010 Census. The program is expected to provide office automation for regional and local census offices; the telecommunications infrastructure for headquarters, regional, and local offices; and mobile computing devices for field workers. The bureau plans to have field-based enumerators use nearly 500,000 mobile computing devices to support decennial census field operations. Our companion testimony provides details on mobile computing devices and concerns about the reliability observed during testing.<sup>6</sup> Enumerators from local census offices will use these mobile computing devices to complete activities including address canvassing (visiting households to update address lists and collect global positioning coordinates to update maps) and conducting non-response follow-up (visiting households to obtain information from households that do not provide responses via mail, Internet, or phone). The bureau plans to award the FDCA contract, which is expected to be a cost-reimbursement contract with multiple incentives, on March 31, 2006. The contract is expected to have four phases—one planning and three execution phases.

The FDCA project office has initiated many key processes to oversee and manage the contract, but has not yet implemented the full set of acquisition management capabilities it needs to fully manage the acquisition. Table 3 provides a summary of the status of the FDCA project in each of the process areas we evaluated.

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<sup>6</sup>GAO, *2010 Census: Planning and Testing Activities Are Making Progress*, [GAO-06-465T](#) (Washington, D.C.: March 1, 2006).

**Table 3: Summary of the Status of FDCA Acquisition Management Capabilities**

<b>Capability</b>	<b>Status</b>
Project and acquisition planning	Initiated, but key activities remain to be completed, such as identifying deliverables and milestones, and obtaining stakeholder buy-in on a project plan that includes the project's estimated costs, budget, and schedules.
Solicitation	Key activities completed; bureau officials said that they are on schedule to award the contract in March 2006.
Requirements development and management	Initiated, but key activities remain to be completed such as validating requirements.
Risk management	Initiated, but key activities remain to be performed such as assigning responsibilities for risks and preparing mitigation plans.
Contract tracking and oversight/project monitoring and control	Initiated, but key performance measures have not yet been established; bureau officials said that they expect to define these metrics after contract award.
Process and product quality assurance	Initiated; the quality assurance process is expected to be implemented after contract award.
Executive oversight/governance	Initiated, but key governance activities remain to be completed.

Source: GAO analysis of Census Bureau data.

The FDCA project office has made progress in building management capabilities, but more remains to be done in key areas. For example, the project office completed many key solicitation activities and plans to award a contract in March 2006. In the requirements development and management area, the project office and the Decennial Management Division developed FDCA-specific functional requirements with participation from stakeholders. The office has also drafted a requirements management plan. However, the division has not yet validated and approved a baseline set of operational requirements or ensured traceability between its operational requirements and the FDCA request for proposal. Until the bureau finalizes its operational requirements for the census and ensures that the FDCA request for proposal is consistent with the baseline requirements, the project will be at risk of having changes to the requirements, potentially affecting its ambitious development and implementation schedule.

In the risk management area, the project office has developed a draft risk management process and identified a number of high-level risks for the FDCA project. Also, to manage its schedule and technical risks, the project office has adopted an approach calling for pre-award prototype development. However, the FDCA project office has not yet revisited or analyzed the identified risks, begun prioritizing and tracking project risks, or documented risk mitigation plans. Until the team implements an

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effective risk management process, it will lack a mechanism to address known and unknown problems.

Additionally, in the contract and project monitoring area, the project office has initiated efforts to oversee the contractor's performance, such as requiring earned value management reporting and hiring staff with contract tracking and oversight experience. However, the project office has not yet selected detailed performance measures for tracking the contractor or its own internal progress (such as progress against planned milestones, number of risks opened and closed, number and frequency of changes to requirements, and frequency of quality assurance reviews). Without such practices in place, the project team is not able to ensure that it will be able to identify problems and take appropriate corrective actions in a timely manner.

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## Conclusions

While the DRIS and FDCA project offices have initiated important steps in establishing sound and capable project management, neither has completed all of the important activities needed to adequately manage the acquisitions. Incomplete management activities, including those for requirements management, risk management, and contract and project monitoring, increase the risk that these projects will encounter problems in meeting cost and schedule expectations. Given the immovable deadline for performing the 2010 Decennial Census, if unexpected problems or changes occur, it is more likely that the bureau will face cost overruns or be forced to accept a system with limited functionality. Since the DRIS contract was awarded in October 2005, and the FDCA contract is expected to be awarded in March, it is critical that the DRIS project office expeditiously put in place key elements of sound acquisition management capability. Bureau officials acknowledge the importance of implementing these acquisition management processes and state that they plan to do so as soon as possible.

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## Recommendations for Executive Action

To ensure that the bureau adequately manages the DRIS project, we recommend that the Director of the Census Bureau direct the project office to take the following six actions:

- Complete the DRIS project plan and obtain stakeholders' commitment to the plan before initiating further development work.

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- Obtain validation, management, and customer approval of DRIS requirements.
  - Staff teams and perform planned requirements management activities.
  - Develop mitigation plans with milestones for key activities, and regularly brief senior managers on important risks.
  - Establish performance measures and monitor results for contractor and project office activities.
  - Implement a quality assurance process by establishing responsibilities for assuring product quality and defining how inspections, reviews, and walkthroughs will be used to measure quality.

Further, to ensure that the bureau improves its ability to manage this and other acquisitions, we recommend that the Director of the Census Bureau immediately establish and enforce a system acquisition management policy that incorporates best practices in system and software acquisition management (including those highlighted in our briefing).

To ensure that the bureau adequately manages the FDCA project, we recommend that the Director of the Census Bureau direct the project office to take the following four actions:

- Obtain stakeholder commitment to a project plan that includes estimated project costs and schedules, including deliverables and milestones.
- Obtain validation and approval of baseline requirements.
- Identify, prioritize, and assign responsibilities for risks, and develop and implement risk mitigation plans and actions.
- Develop internal and contractor performance measures and prepare to track project cost, schedule, and performance.

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## Agency Comments and Our Evaluation

In providing oral and e-mail comments on a draft of our briefing, Census Bureau officials—including the Associate Director for the Decennial Census and the Assistant Director for Decennial Information Technology and Geographic Systems—generally agreed with our recommendations and

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stated that time constraints and budgets have driven the bureau to proceed with its acquisitions before all of the recommended activities have been completed. Officials stated that they plan to complete these activities as soon as possible.

Bureau officials also stated that they intend to rely on the DRIS and FDCA contractors to help refine requirements, project plans, and performance measures. However, our experience in reviewing major system acquisitions in recent years has shown that there are risks associated with relying too heavily on contractors to perform key management and oversight activities. For example, after a long history of significant cost increases and schedule delays on its Business System Modernization program, the Internal Revenue Service recently began transferring responsibility for key program management operations (including cost and schedule estimation and measurement, integration testing, and risk management) away from its contractor and back to the agency because of the contractor's poor performance in these areas.<sup>7</sup> Clearly, it is important for the government to exercise strong leadership in managing requirements, plans, risks, and performance measures. Bureau officials also offered technical corrections, which we incorporated in the briefing and in this statement as appropriate.

This concludes my statement. I would be pleased to respond to any questions that you or other members of the Subcommittee may have at this time.

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## Contacts and Acknowledgements

If you have any questions regarding this testimony, please contact David Powner at (202) 512-9286 or by e-mail at [pownerd@gao.gov](mailto:pownerd@gao.gov). Individuals making contributions to this testimony include Neil Doherty, Amanda Gill, Nancy Glover, Colleen Phillips, and Cynthia Scott.

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<sup>7</sup>GAO, *Internal Revenue Service: Assessment of Fiscal Year 2006 Budget Request and Interim Results of the 2005 Filing Season*, [GAO-05-416T](#) (Washington, D.C.: April 7, 2005); and GAO, *Business Systems Modernization: Internal Revenue Service's Fiscal Year 2005 Expenditure Plan*, [GAO-05-774](#) (Washington, D.C.: July 22, 2005).

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# Appendix I: GAO Briefing to Committee and Subcommittee Staffs on January 30, 2006

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## **Census Bureau Key Acquisitions Supporting the 2010 Decennial Census Face Challenges**

**Briefing for the  
Committee on Government Reform and its  
Subcommittee on Federalism and the Census  
House of Representatives**

**January 30, 2006**





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In June 2005, we reported on the Census Bureau’s progress in five information technology (IT) management areas—investment management, systems development/management, enterprise architecture management, information security, and human capital.<sup>1</sup> We reported that, while the bureau had many practices in place, much remained to be done to fully implement effective IT management capabilities. We made several recommendations intended to improve these capabilities across the bureau.

Given the weaknesses we noted in the five IT management areas and the importance of IT investments to the upcoming 2010 Decennial Census, the Chairman of the House Committee on Government Reform and the Chairman and Ranking Member of the Subcommittee on Federalism and the Census requested that we assess the bureau’s ability to manage important new acquisitions intended to support the decennial census.

<sup>1</sup>GAO, *Information Technology Management: Census Bureau Has Implemented Many Key Practices, but Additional Actions Are Needed*, GAO-05-661 (Washington, D.C.: June 16, 2005).

As part of the Census Bureau's plans to increase the use of automation and technology for the 2010 Decennial Census, the bureau will be undertaking several major acquisitions including the **Decennial Response Integration System (DRIS)**—a system for integrating paper, Internet, and telephone responses, and the **Field Data Collection Automation (FDCA)** program—the systems and support equipment for field office data collection activities.

Our objectives for each of these acquisitions are to:

- provide an overview, status, and plans (including costs, schedule, and deliverables) and
- determine if the bureau has capabilities in place to successfully manage and oversee the acquisitions.



## Scope and Methodology

To provide the project's overview, status, and plans, we analyzed current project documents including plans, acquisition documents, and deliverables, and we interviewed project officials.

To determine if the bureau has capabilities in place to successfully manage and oversee the acquisitions, we identified sound IT systems acquisition and management processes from industry standards, including those developed by the Software Engineering Institute, and compared them to the Census Bureau's practices for the selected acquisitions. We evaluated the following processes:

- project and acquisition planning
- solicitation
- requirements development and management
- risk management
- contract tracking and oversight/  
project monitoring and control
- process and product quality assurance
- executive oversight and governance

In each process area, we evaluated project documentation and interviewed project officials to determine the status of the bureau's efforts.

We conducted our review between July 2005 and January 2006 at Census Bureau headquarters in Suitland, Maryland, in accordance with generally accepted government auditing standards.

The Census Bureau has initiated efforts to acquire the major systems it needs to perform the 2010 Decennial Census, including the Decennial Response Integration System (DRIS), and the Field Data Collection Automation (FDCA) program. It awarded a contract for DRIS in October 2005 and the system is currently in a design and development phase. The bureau expects to award a contract for FDCA development in March 2006. While both projects' life cycle cost estimates are currently considered procurement sensitive, together they are expected to make up a large portion of the \$1.8 billion program to develop, test, and implement decennial census systems. Both acquisitions involve ambitious schedules in order to be able to deliver the needed functionality to support a planned 2008 census dress rehearsal and the eventual 2010 census activities.

While both projects have implemented initial project management activities, neither has the full set of acquisition management capabilities they need to fully manage the acquisitions. For example, the DRIS project office has a draft project plan that contains many of the needed elements, but it has not yet completed the plan or obtained written stakeholder buy-in on it. It established baseline requirements for the acquisition, but the bureau has not yet validated them or implemented a process for managing the requirements. Also, the project office identified risks, but has not yet implemented a risk management process. Specifically, the project office has not yet developed written mitigation plans or established milestones for completing key risk mitigation activities.

Regarding FDCA, its project office has initiated a project plan, but has not yet obtained written stakeholder buy-in on an overall plan that includes the project's estimated costs, budget, and schedules. It has identified requirements for the acquisition, but the bureau has not yet approved a validated set of requirements or ensured that the acquisition requirements are traceable to the broader set of operational requirements for the decennial census. Further, while the project office identified risks, it has not yet assigned responsibilities or developed detailed mitigation plans for managing the risks, or established milestones for completing key mitigation activities.

Until these and other basic management capabilities are fully implemented, both projects face increased risks that the systems will experience cost overruns, schedule delays, and performance shortfalls. We are making recommendations to both project offices and to the bureau to help improve acquisition management capabilities.

In commenting on a draft of this briefing, Census Bureau officials, including the Associate Director for the Decennial Census and the Assistant Director for Decennial Information Technology and Geographic Systems, generally agreed with our recommendations and stated that time constraints and budgets have driven the bureau to proceed with its acquisitions before all of the recommended activities have been completed. Officials noted that they plan to complete these activities as soon as possible. They also offered technical corrections, which we have incorporated as appropriate.



## Background Census Bureau Mission and Core Activities

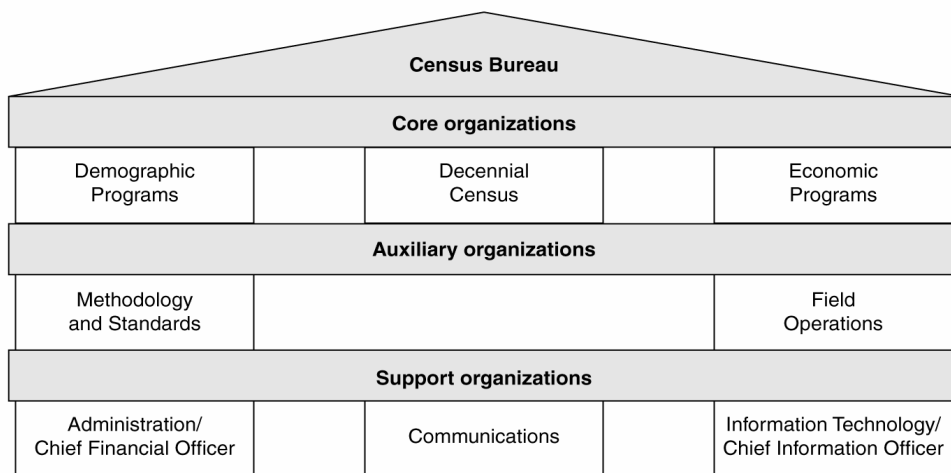
The Census bureau's mission is to serve as the leading source of quality data about the nation's people and economy. The bureau's core activities include:

- conducting decennial, economic, and government censuses,
- conducting demographic and economic surveys,
- managing international demographic and socioeconomic databases and providing technical advisory services to foreign governments, and
- performing other activities such as producing official population estimates and projections.

Public and private decision makers use census population and socioeconomic data for various purposes. For example:

- decennial census data are used to determine congressional and state legislative districts and to distribute hundreds of billions of dollars in federal funds each year,
- federal agencies use census data to evaluate the effectiveness of established programs, and
- businesses use census data to target new services and products and to tailor existing ones to demographic changes.

The bureau is a large and complex organization. A conceptual view of the agency includes three core organizations, two auxiliary organizations that provide guidance and operational support for the core organizations, and three support organizations that provide administrative and technical support for the entire bureau. Each of these organizations is headed by an associate director, who reports to the deputy director of the Census Bureau.



Source: U.S. Census Bureau, GAO.





## Background The Bureau's Decennial Census

The bureau's Decennial Census organization is responsible for the decennial census program, the nation's oldest and most comprehensive source of population and housing information.

Conducting a decennial census involves:

- identifying and correcting addresses for all known living quarters in the United States,
- sending questionnaires to housing units,
- following up with non-respondents through personal interviews,
- trying to identify people with non-traditional living arrangements,
- managing a voluminous workforce responsible for follow-up activities,
- collecting census data from questionnaires, calls, and personal interviews,
- summarizing and tabulating census data, and
- disseminating census analytical results to the public.

The Decennial Census organization is comprised of divisions and offices, including the Decennial Management Division (DMD), which is responsible for implementing the decennial census, and the Decennial Systems and Contracts Management Office, which manages selected system contracts supporting the decennial census.



## Background Plans for the 2010 Decennial Systems

To support the 2010 Decennial Census, the bureau manages a \$1.8 billion program called “2010 Testing, Evaluation, and Systems Design,” which calls for the acquisition and testing of systems and technologies. Two of the key acquisitions are the **Decennial Response Integration System (DRIS)** and the **Field Data Collection Automation (FDCA)** program.

DRIS is expected to be a system for collecting data and integrating census responses that come in through multiple routes, including census forms, telephone agents, the Internet, and from mobile computing devices used by field staff. DRIS is expected to standardize the response data and to provide it to other bureau systems for analysis and processing.

The FDCA program is expected to provide mobile computing devices, office automation, and an IT infrastructure to support collection of census data in local and regional offices. Mobile computing devices will be used to update the bureau's address list, to perform follow up at addresses for which no questionnaire was returned, and to perform activities to measure census coverage.



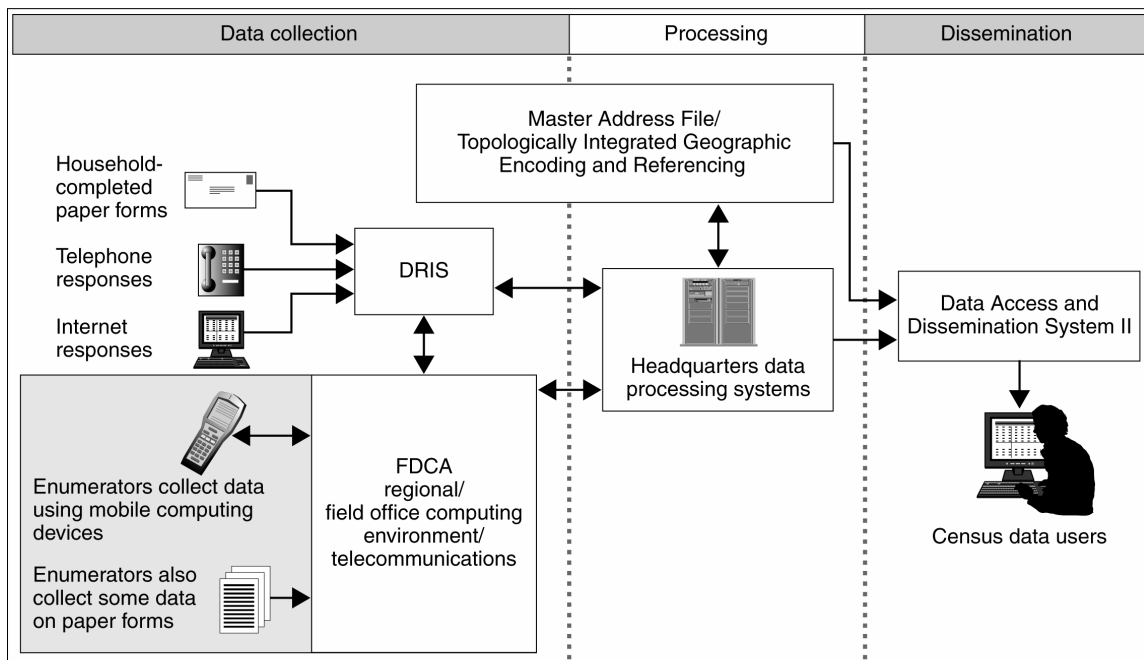
## Background Plans for the 2010 Decennial Systems

In addition to DRIS and FDCA, other key systems support the planned 2010 decennial census. These include:

- master address file/topologically integrated geographic encoding and referencing—this is an existing system that contains the master list of addresses for the census
- headquarters data processing systems—these are existing systems used to process census data as well as a management information system
- data access and dissemination system II—this is a planned upgrade to an existing system to disseminate 2010 census data to the public

Together, these systems are to support the collection, processing, and dissemination of census data, as illustrated on the next page.

## Overview of systems supporting the 2010 Decennial Census



Source: GAO analysis of Census data.



## Background Plans for the 2010 Decennial Systems

The bureau plans a series of tests in the years leading up to the decennial census.

- 2004:** The bureau tested critical field operations using systems under conditions similar to those to be used during the decennial census. In particular, the agency studied the feasibility of using hand-held mobile computing devices equipped with Global Positioning System capability to conduct non-response follow-up operations. We recently reported on lessons learned during this test.<sup>2</sup>
- 2006:** The bureau plans to test the methodology and functions of the integration of systems needed to carry out the census, focusing on efforts to automate non-response follow-up activities and the initiatives to update the address list.
- 2008:** The bureau plans to conduct a final operational test of the entire complement of methodological, procedural, and systems innovations for the 2010 Decennial Census. This test is known as the Dress Rehearsal.

<sup>2</sup>GAO, *2010 CENSUS: Basic Design Has Potential, but Remaining Challenges Need Prompt Resolution*, GAO-05-9 (Washington, D.C.: Jan. 12, 2005).



## DRIS Overview, Status, and Plans

During the prior decennial census, called Census 2000, responsibilities for designing and developing a system for capturing census data and related functions were shared by the bureau and several contractors. The bureau designed and developed a system for collecting data from the Internet, while one contractor developed a system for providing telephone assistance to the public, and another contractor developed a system for capturing data from responses returned by mail and from the field operations targeting non-responders. Another contractor provided the staffing and facilities for operating the data capture system while the census was underway. The bureau then integrated all of the data. Subsequently, the bureau found that this diversified approach resulted in data that was not standardized and added to the cost of processing census data.

For the 2010 Decennial Census, the bureau plans to have a single contractor design, develop, and implement a system (DRIS) for standardizing and integrating the data from all of the response modes (paper, telephone, Internet, and from field operations).<sup>3</sup> DRIS is intended to:

- receive, capture, and standardize census data provided by respondents via census forms, telephone agents, and the Internet,
- standardize data collected via mobile computing devices,
- provide the data to the headquarters data processing system,
- provide assistance to the public via telephone and the Internet, and
- monitor the quality and status of data capture operations.

<sup>3</sup>While the DRIS contractor is expected to standardize and organize response data from the hand-held computers, the scope of the DRIS contract does not include providing the systems or staff used for field enumeration operations.



DRIS is expected to process an estimated 90 million mailed paper responses, 40 million field responses, 9 million telephone calls, and 9 million Internet visits.

According to the bureau, qualitative improvements expected from DRIS include:

- integrating paper, Internet, and telephone responses within a workflow control system that will provide more timely information than existed in previous censuses and reduce the number of cases of non-response follow-up,
- providing near real-time data that will support the planned second mailing to non-responding addresses, and
- reducing redundant efforts for the Census Bureau and contractors that existed for different contracts during Census 2000 by integrating key functions under one contract. In particular, efforts in the areas of security, data integration, change control, and contractor administration are expected to be reduced.

The bureau began acquisition planning for DRIS in 2003. Between 2003 and September 2005, the bureau spent about \$7.5 million on researching data capture technologies, conducting web-based vendor briefings, obtaining comments from prospective vendors, and developing DRIS planning documents, strategies, and analyses. During this time, the bureau also established the DRIS project office within the Decennial Systems and Contracts Management Office (DSCMO).

Further, between February and August 2005, the bureau completed solicitation activities as follows:

- In February 2005, the bureau issued a request for proposal (RFP) for DRIS.
- From March 2005 through August 2005, the bureau solicitation team reviewed and evaluated proposals and obtained oral presentations from vendors.
- In August 2005, the solicitation team made a presentation to the Source Selection Evaluation Board and recommended a vendor for contract award.





On October 5, 2005 the bureau awarded the contract for DRIS to Lockheed Martin Corporation and its 7 subcontractors. The DRIS performance contract is a cost-plus-award-fee contract. The contract has a 6-year performance period divided into 3 primary phases as follows:

**Phase I: October 2005 through December 2008**

Includes delivering detailed design documentation, developing and testing DRIS, conducting the 2008 dress rehearsal, and identifying data centers for the 2010 Census.

**Phase II: August 2008 through the end of January 2011**

Includes opening data center sites, completing operational testing, conducting 2010 Census operations, and closing down the DRIS 2010 operations facilities once the census is complete.

**Phase III: July 2010 through end of contract**

Includes archiving DRIS data and images in accordance with National Archives and Records Administration guidelines and disposing of DRIS equipment once it is no longer needed.

Phases I and II of this contract are valued up to \$553 million. The total life cycle cost of the project is considered procurement sensitive pending the pricing of phase III.

Phase I of the contract involves the following key activities

Activity	Due Date
Perform integrated baseline review <sup>4</sup>	March 2006
Deliver DRIS acquisition planning documents	February–October 2006
Certify DRIS as ready for use at all 2008 dress rehearsal facilities	December 2007
Deliver proposal for phase II—system operations and facilities	September 2008
Complete dress rehearsal and production activities	December 2008

The DRIS project team is currently reassessing these phase I dates due to delays associated with a bid protest that has since been withdrawn. It expects to identify new dates by March 2006. These new dates will likely result in the first modification to the contract.

Also, the team expects to work with the contractor during phase I to develop the milestones and deliverables for phases II and III.

<sup>4</sup>An integrated baseline review is a joint assessment by the contractor and the project team of the technical plans for a work segment as well as the adequacy of the budgets, resources, and schedules estimated to complete that work. This review results in a detailed plan for work activities, costs, and schedules that is used as the basis for tracking the earned value of the contractor's deliverables.

To effectively manage major IT programs, organizations use sound acquisition and management processes to minimize risks and thereby maximize chances for success. Such processes have been identified by leading organizations such as the Software Engineering Institute, the Chief Information Officer's Council, and in our prior work analyzing best practices in industry and government. Key areas include:

- project and acquisition planning
- solicitation
- requirements development and management
- risk management
- contract tracking and oversight/project monitoring and control
- process and product quality assurance
- executive oversight and governance

Our work has shown that such processes are significant factors in successful systems acquisitions and development programs and that they improve the likelihood of meeting cost and schedule estimates as well as performance requirements.

Summary of the status of DRIS acquisition management capabilities.

Capability	Status
Project and acquisition planning	Initiated, but key activities remain to be completed, such as finalizing the project management plan and identifying key deliverables beyond 2008.
Solicitation	Key activities completed and contract awarded ahead of schedule.
Requirements development and management	Initiated, but key activities remain to be completed, such as validating requirements and implementing a requirements management process.
Risk management	Initiated, but key activities remain to be performed such as preparing mitigation plans and holding senior-level briefings.
Contract tracking and oversight/project monitoring and control	Initiated, but project office performance measures have not yet been established.
Process and product quality assurance	Initiated, but a quality assurance process is not yet in place.
Executive oversight/governance	Initiated, but key governance activities remain to be completed.

**Project and acquisition planning**

Effective project planning involves establishing and maintaining plans defining project scope and activities, including overall budget and schedule, key deliverables, and milestones for key deliverables. It also involves ensuring that the project team has the skills and knowledge needed to manage the project and obtaining stakeholder commitment to the project plan. Effective acquisition planning involves developing an acquisition strategy that includes objectives, projected costs and schedules, and risks.

The DRIS project team has

- defined the overall project scope, budget, and schedule,
- developed a draft project management plan that identifies key deliverables and milestones for these deliverables through the 2008 dress rehearsal,
- assigned an experienced and certified project manager and project team, and
- developed an acquisition strategy that outlines the acquisition objectives, scope, costs, schedules, and risks.

However, the project team has not yet finalized its project plan, identified key deliverables beyond 2008, or obtained stakeholder commitment to the plan. The project team has not yet completed these activities in part because there is no Census Bureau policy requiring them to do so prior to contract award.

Until a project plan is completed and approved, the project lacks assurance that it is moving in the right direction. Without this assurance, it is more likely to encounter unanticipated changes in direction—which could affect system cost, schedule, and deliverables.

**Solicitation**

This activity includes identifying the needs within a particular acquisition, developing and implementing a solicitation plan, preparing for the evaluation of responses, issuing a solicitation package, evaluating responses, conducting supporting negotiations, and making recommendations for award of the contract.

The DRIS project team has:

- identified the needs for the DRIS acquisition including telephone, Internet, and paper data capture modes,
- developed source selection procedures,
- developed the evaluation criteria for evaluating vendors' proposals (including criteria for the technical and program management approaches),
- conducted training on the evaluation process and on using an automated tool, and
- submitted a recommendation for contract award to the source selection officer in August 2005.

The contract was awarded in October 2005.

**Requirements development and management**

Requirements development involves eliciting, analyzing, and validating customer and stakeholder needs and expectations. Requirements management involves establishing an agreed-upon set of requirements, ensuring traceability between operational and product requirements, and managing any changes to the requirements in collaboration with stakeholders.

To develop and manage DRIS requirements:

- DMD, the organization that oversees the project as well as the overall decennial census, developed draft operational requirements for the overall decennial census,
- the project team established basic functional requirements for the DRIS acquisition based on the data capture activities used during Census 2000 and assumptions for the 2010 Census data capture needs,
- stakeholders reviewed the DRIS requirements and made suggestions for clarifying them, and
- DMD developed a detailed process for managing requirements for all 2010 decennial systems, including DRIS; these are to be executed by DMD implementation teams.



### Requirements development and management (continued)

However, DMD has not yet conducted a thorough validation of DRIS requirements, ensured traceability between DRIS and operational requirements, or approved the DRIS baseline requirements. Part of the reason that these activities have not been completed is that there is no Census Bureau policy requiring them to do so prior to contract award. Further, DMD has not yet staffed the teams responsible for managing requirements or initiated any requirements management activities.

Until the project team obtains validation and approval of DRIS requirements and ensures these requirements are traceable to the operational requirements, it faces increased risk that new and changing requirements could be identified throughout the system's development.<sup>5</sup> Changes identified late in the development cycle could be costly to implement and could increase the risk that the system will not be ready in time to support census activities.

Further, until the bureau staffs and implements its planned requirements change management process, it may not be able to effectively ensure that resulting products meet requirements. As a result, DRIS may not provide the functionality needed or the bureau may experience cost increases and schedule delays.

<sup>5</sup>While there have not been any contract modifications to date, the project team expects to modify the contract to reflect the revised schedule.



### **Risk Management**

An effective risk management process identifies potential problems before they occur, so that risk-handling activities may be planned and invoked as needed across the life of the product and project in order to mitigate adverse impacts on achieving objectives. Key activities include identifying and analyzing risks, assigning resources, developing risk mitigation plans and milestones for key mitigation deliverables, briefing senior-level managers on high priority risks, and tracking risks to closure.

The DRIS project team has:

- developed a pre-award risk management plan that defines staff roles and responsibilities and includes procedures for identifying and tracking risks and risk mitigation actions,
- identified pre-award risks including
  - insufficient project office or contracting office resources
  - a bid protest
  - inadequate funding
  - failure to obtain agreement on quality control operations
  - failure to mitigate privacy risks
  - inadequate system sizing and related testing
  - design not flexible enough to accommodate changes in technology related to security
  - failure to document and test external interfaces
- assigned responsibilities for managing the risks and discussed mitigating actions, and
- participated in monthly meetings to analyze and discuss the status of certain pre-award risks.

## **Risk Management (continued)**

Since contract award in October 2005, the project team has:

- assigned a risk manager to provide oversight for the risk program,
- implemented a tool for tracking risks and actions taken, and
- reviewed risks and updated the risk database.

Also, the project team plans to:

- conduct monthly internal reviews of DRIS risks and refer high risks to higher-level officials for input and approval of actions,
- participate in the contractor's risk reviews and monitor the contractor's risk management plans as part of the contract's surveillance process, and
- implement a process to assess risks based on the probability of occurrence and the impact on business drivers.

### **Risk Management (continued)**

However, in the months since the contract was awarded, the project team has not developed written risk mitigation plans, identified milestones for key mitigation activities, or briefed senior management on its risks and risk mitigation plans. Specifically, there are no written mitigation steps or dates associated with the agencies' plans for addressing high-impact risks, and senior-level briefings on these risks have not been held. Part of the reason that these activities have not been completed is that there is no organizational policy requiring completion of these activities.

Until the project team develops risk mitigation plans with milestones for key activities, and regularly briefs senior-level managers on risks and risk mitigation plans, it faces increased probability that DRIS will not be delivered on schedule, within budget, or perform as expected.

**Contract tracking and oversight/project monitoring and control**

These processes provide oversight of the contractor's and the project office's performance, in order to allow appropriate corrective actions if actual performance deviates significantly from the plan. Key activities in tracking both the contractor's and the project office's performance include the selection of performance measures, communicating status, taking corrective actions, and determining progress.

The project team is responsible for ensuring that the contractor's performance stays within cost and schedule thresholds for each phase of the DRIS contract. Therefore, the project team plans to provide contract tracking and oversight through:

- earned value management reports
- contractor performance reports
- program management reviews
- monthly status reports

During Phase 1, the project team plans to determine the detailed requirements for these activities.

**Contract and Project Monitoring and Control (continued)**

However, the project office has not yet selected detailed performance measures for tracking the contractor or its own internal progress (such as progress against planned milestones, number of risks opened and closed, number and frequency of changes to requirements, and frequency of quality assurance reviews), in part because there is no Census policy requiring that these measures be implemented. Without such performance measures, the team cannot perform the other key activities of communicating status, taking corrective actions, and determining progress.

As a result, the project office's view into when performance deviates from plans or when key activities are showing troubling trends is limited. This can lead to unexpected cost increases, schedule delays, and performance shortfalls.

**Process and Product Quality Assurance**

This process area provides staff and management with objective insight into processes and associated work products. This includes the objective evaluation of project processes and products against approved descriptions and standards. Key activities include developing a quality assurance plan, assigning resources to quality assurance activities, and implementing quality assurance activities. Through quality assurance, the project team is able to identify and document noncompliance issues and provide appropriate feedback to project staff.

The DRIS project team has identified several approaches that it plans to use to oversee the quality of deliverables and services produced by the contractor. These include:

- requirements traceability and walkthroughs
- design walkthroughs
- peer reviews
- random inspections
- formal software quality assurance audits conducted by independent staff in the contractors' company

The project team plans to assign technical monitors to monitor, assess, document, and report on the contractor's performance. The team also expects the contractor to perform its own quality control methods to ensure that DRIS meets the government's requirements. The contractor's quality assurance plan is due in June 2006.



**Process and Product Quality Assurance (continued)**

However, the project team has not yet established a quality assurance plan, assigned resources, or implemented a quality assurance process. Specifically, the team has not yet determined how they will use the planned inspections, reviews, and walkthroughs to evaluate product quality. The delay in implementing this process is due in part to a lack of Census policy requiring these processes be in place prior to or soon after contract award. As a result, the project team is not able to ensure that it will be able to identify and document any noncompliance issues and take appropriate corrective actions.

**Executive Oversight and Governance**

Office of Management and Budget and GAO guidance call for agencies to establish IT investment management boards comprised of key executives to regularly track the progress of major systems acquisitions. These boards should have documented policies and procedures for management oversight of IT projects and systems, and should be able to adequately oversee the project's progress toward cost and schedule milestones and their risks. The board should also employ early warning systems that enable it to take corrective actions at the first sign of cost, schedule, and performance slippages.

The DRIS project received executive level oversight during early project planning:

- the project was presented to key executives from the Department of Commerce IT Review Board and the Census Information Technology Governing Board (these boards include executive level managers from all bureau directorates, including the chief information officer and the chief financial officer),
- the project team established an acquisition review team consisting of key information technology, acquisition, legal and program managers from the Census Bureau and the Department of Commerce to review and approve acquisition documents,
- the project manager participated in meetings with Commerce and Census Bureau executives, and
- the project team worked with senior acquisition officials to develop acquisition planning and solicitation documents.





Executive-level oversight for DRIS is to continue as follows:

- The DRIS project manager is reporting progress directly to the chief of the Decennial Systems and Contracts Management Office.
- The DRIS Program Office is reporting weekly on the status of the DRIS project to Decennial Management Division officials.
- The DRIS Program Office is expected to participate in quarterly reviews with the Commerce Information Technology Review Board, Census Bureau managers, and the Associate Director for Decennial Census Leadership Team.
- Commerce and Census executive-level IT governing boards expect to review the DRIS project as part of its annual preparation for meeting OMB requirements, under the 2010 Testing, Evaluation, and System Design program.



However, in June 2005, we reported that the Census Bureau's executive oversight of IT projects was incomplete.<sup>6</sup> Specifically, we noted that the bureau lacked

- written procedures outlining the IT investment board's operations and ensuring consistent investment management and decision making practices and
- written policies and procedures for monitoring the progress of its IT projects and systems.

As a result, we reported that the bureau lacks assurance that investment oversight and decision making is being performed in a consistent and repeatable manner, and that consistent and appropriate actions will be taken when cost, schedule, and performance expectations are not met. We recommended that the bureau develop and implement these policies and procedures. The bureau agreed to implement these recommendations, and expects to do so by the end of July 2006.

Until these efforts are completed, the bureau cannot ensure that it is providing effective and consistent oversight for the DRIS project.

<sup>6</sup>GAO-05-661.

While the DRIS project team has initiated important steps in establishing a sound and capable project management office, it has not yet completed important activities it needs to adequately manage this acquisition. Incomplete project plans, requirements, and risk management activities increase the risks that this project will encounter problems in meeting cost and schedule expectations. Given that the contract was awarded in October and is currently under way, it is critical that the DRIS project office expeditiously put in place key elements of a sound acquisition management capability.

One of the root causes of the project's delay in completing key management activities is that the Census Bureau lacks organizational policies for managing major acquisitions. As a result, the success of major acquisitions such as DRIS and FDCA are extremely dependent on the knowledge, skills, and qualifications of the project teams. Without a minimum set of required steps and processes, Census acquisitions are at increased risk of being run in an ad hoc and chaotic manner—potentially resulting in increased project costs, delayed schedules, and performance shortfalls.

To ensure that the bureau adequately manages the DRIS project, we recommend that the project office take the following six actions:

- complete the DRIS project plan and obtain stakeholders' commitment to the plan before initiating further development work,
- obtain validation and management and customer approval of DRIS requirements,
- staff teams and perform planned requirements management activities,
- develop mitigation plans with milestones for key activities, and regularly brief senior managers on important risks,
- establish performance measures and monitor results for contractor and project office activities, and
- implement a quality assurance process by establishing responsibilities for assuring product quality, and defining how inspections, reviews, and walkthroughs will be used to measure quality.

Further, to ensure that the bureau improves its ability to manage this and other acquisitions, we recommend that the Director of the Census Bureau immediately establish and enforce a system acquisition management policy that incorporates best practices in system and software acquisition management (including those highlighted in this briefing).

The Field Data Collection Automation (FDCA) program is expected to provide automation support for field data collection operations for the 2010 Census. Specific requirements include:

- office automation for the twelve regional census centers, the Puerto Rico area office, and more than 450 local census offices,
- the telecommunications infrastructure for headquarters, regional, and local offices,
- mobile computing devices for field workers,
- integration with other 2010 Census systems (e.g., DRIS and headquarters processing systems), and
- development, deployment, technical support, de-installation, and disposal services.

Automating field data collection activities is expected to help reduce overall 2010 Census costs as well as improve data quality and operational efficiency.

Mobile computing devices are a key technology component of FDCA. Census plans to have field-based enumerators use nearly 500,000 mobile computing devices to support the following decennial census functions:

- case management and automated payroll for enumerators,
- address canvassing (visiting households to update address lists and collect global positioning system coordinates to update maps),
- non-response follow-up (visiting households to obtain information from those that did not provide responses via mail, Internet, or phone),
- assignment updating to avoid unnecessary follow-up on late responses,
- data transmission, and
- conducting additional interviews at a sample of households in order to help measure census undercounts or overcounts.



## FDCA Overview, Status, and Plans

In fiscal year 2002, the bureau conducted market research on purchasing mobile computing devices and then purchased and tested these devices during the 2004 census test. After encountering technical problems and realizing that they lacked resources and expertise to manage the project in-house, bureau officials decided to use an integration contractor to help develop and manage the FDCA project.

The bureau has:

- established a FDCA project office in January 2005
- held an industry symposium in February 2005
- issued a draft RFP and a pre-solicitation notice in April 2005, requesting that vendors submit examples of previous experience with projects similar to FDCA and describe the challenges facing the FDCA project. (Based on these proposals, the bureau then invited five vendors to develop and test prototypes for address canvassing. Of the five, three vendors chose to do so.)
- released the final RFP in June 2005, and
- conducted a technical exchange period from October to December 2005, during which the three vendors developed prototypes and the FDCA project team evaluated draft proposals.



Project officials acknowledge that the FDCA schedule is ambitious. Key near-term activities include:

Final proposals and prototypes due	January 20, 2006
Final evaluation	Feb. 6–Mar. 17, 2006
Source evaluation board review/decision	March 20–30, 2006
Contract award	March 31, 2006
Integrated baseline review	March 31–May 31, 2006
Dress rehearsal offices open (FDCA office automation ready)	January 2007
Dress rehearsal address canvassing (using FDCA mobile computing devices)	April–May 2007



The FDCA contract is expected to be a cost-reimbursement contract with multiple incentives. Cost estimates for FDCA are considered procurement sensitive.

The FDCA RFP calls for a baseline planning period and three execution periods as follows:

- **Baseline planning period:** March 2006—May 2006
  - involves the project team and contractor reaching agreement on schedule, cost, quality, scope, and technical performance measurement for the first contract execution period.
- **Execution period 1:** June 2006—December 2008
  - includes activities leading up to and during the 2008 dress rehearsal
- **Execution period 2:** January 2009—September 2011
  - includes activities leading up to and during the 2010 Census
- **Execution period 3:** August 2010—December 2011
  - includes activities to wrap up operations after the completion of the 2010 Census

Summary of the status of FDCA acquisition management capabilities.

Capability	Status
Project and acquisition planning	Initiated, but key activities remain to be completed, such as identifying deliverables and milestones, and obtaining stakeholder buy-in on a project plan that includes the project's estimated costs, budget, and schedules.
Solicitation	Key activities completed; the contract is expected to be awarded in March 2006.
Requirements development and management	Initiated, but key activities remain to be completed, such as validating requirements.
Risk management	Initiated, but key activities remain to be performed such as assigning responsibilities for risks and preparing mitigation plans.
Contract tracking and oversight/project monitoring and control	Initiated, but key performance measures have yet not been established.
Process and product quality assurance	Initiated; the quality assurance process is expected to be implemented after contract award.
Executive oversight/governance	Initiated, but key governance activities remain to be completed.

**Project and acquisition planning**

Effective project planning involves establishing and maintaining plans defining project scope and activities, including overall budget and schedule, key deliverables, and milestones for key deliverables. Project planning also involves ensuring that the project team has the skills and knowledge needed to manage the project and obtaining stakeholder commitment to the project plan. Effective acquisition planning involves developing an acquisition strategy that includes objectives, projected costs and schedules, and risks.

Regarding project and acquisition planning, the FDCA project office has:

- defined the overall project scope and obtained an independent government cost estimate,
- developed a project management plan that documents objectives and high-level plans for managing the acquisition,
- established a project team with experience and certification in project management;
- involved stakeholders in planning, and
- developed a high-level acquisition strategy that includes objectives, projected costs, and schedules.

### **Project and acquisition planning (continued)**

However, the office has not yet:

- established an overall project schedule (including deliverables and milestones) for the project team and for the contractor for each contract execution period, or
- obtained stakeholder commitment to a comprehensive project management plan that includes the project's estimated costs, budget, and schedules.

Bureau officials expect the project's costs and many management processes to be finalized shortly after the contract is awarded in early 2006, and they plan to work with the contractor to complete a master product schedule and integrated baseline review during the initial baseline planning period. By that time, Decennial Management Division (DMD) officials also plan to have the schedule for key dress rehearsal activities complete so that it can be considered during the integrated baseline review.

### Project and acquisition planning (continued)

In commenting on a draft of this briefing, bureau officials reiterated that they have an independent government cost estimate, an overall budget that they did not share with us due to its sensitivity, and an overall schedule for census activities. Officials also noted that they do not believe they can finalize cost, budget, deliverables, and milestones until after the contract is awarded because they are contracting for a solution—not a set of services or specific products.

While we acknowledge the various activities that the bureau has undertaken to begin planning the FDCA project and the fact that a project plan will continue to evolve as the program proceeds, the FDCA project management plan does not provide stakeholders and other reviewers a comprehensive overview of the project's estimates of costs, schedules, and deliverables. Such a plan is often used to form a baseline for the program and to obtain buy in from stakeholders.

Until the bureau completes key activities, including establishing budgets and schedules and documenting stakeholder commitment to its plans, it lacks assurance that reasonable plans for the project have been developed, and faces increased risk that the project may not achieve expected cost, schedule, and technical performance goals.

**Solicitation**

This activity includes identifying the needs within a particular acquisition, developing and implementing a solicitation plan, preparing for the evaluation of responses, issuing a solicitation package, evaluating responses, conducting supporting negotiations, and making recommendations for award of the contract.

The project office has

- identified needs for the FDCA acquisition,
- developed criteria for evaluating vendor proposals,
- generated the solicitation package,
- developed a source selection plan, and
- conducted training on the evaluation process.

In addition, the project office has begun evaluating proposals, has completed a technical exchange process, and plans to obtain recommendations from the Source Selection Board for the award of the contract in March 2006.

### **Requirements Development and Management**

Requirements development involves eliciting, analyzing, and validating customer and stakeholder needs and expectations. Requirements management involves establishing an agreed-upon set of requirements, ensuring traceability between operational and product requirements, and managing any changes to the requirements in collaboration with stakeholders.

To develop and manage requirements,

- DMD developed draft operational requirements for the 2010 Decennial Census,
- the project office and DMD developed FDCA-specific functional requirements (listed in the RFP) with participation from stakeholders,
- the project office selected automated tools for tracking requirements in the RFP and proposed changes to those requirements,
- the project office drafted a requirements management plan, and
- DMD developed a detailed change control process for managing requirements for all 2010 decennial systems, including FDCA.

Further, DMD plans to staff the implementation planning teams responsible for managing changes to requirements, and initiate requirements management activities after the FDCA contract is awarded.

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### Requirements development and management (continued)

However, DMD has not yet

- validated and approved a baseline set of operational requirements, or
- ensured traceability between its operational requirements and the FDCA RFP.

DMD officials attribute the delay in finalizing operational requirements primarily to the challenge of managing the magnitude and scope of the census and its unique environment. Until the bureau finalizes its operational requirements for the census and ensures that the FDCA RFP is consistent with the baseline requirements, the project will be at risk of later changes to the requirements, potentially affecting its ambitious development and implementation schedule. This is especially important given the acknowledged programmatic risk that there could be late changes in census scope.



### **Risk Management**

An effective risk management process identifies potential problems before they occur, so that risk-handling activities may be planned and invoked as needed across the life of the product and project in order to mitigate adverse impacts on achieving objectives. Key activities include identifying and analyzing risks, assigning resources, developing risk mitigation plans and milestones for key mitigation deliverables, briefing senior-level managers on high-priority risks, and tracking risks to closure.

The project office has

- developed a draft risk management process and
- identified a number of high-level risks for the FDCA project, including:
  - an ambitious schedule
  - late changes in project scope
  - maturity of FDCA contract management
  - system design faults
  - GPS signal not available
  - continuity of funding

To manage selected schedule and technical risks, the project office has

- adopted an approach calling for pre-award prototype development to address widely acknowledged schedule and technical risks,
- incorporated an assessment of risk in its evaluation of vendor proposals, evaluated vendors' approaches to risk management in their responses to scenarios provided by the FDCA project team, and
- briefed senior management on these risks.

**Risk management (continued)**

However, the team has not yet implemented its risk management process. Specifically, the project team has not yet

- revisited or analyzed the identified risks,
- begun prioritizing and tracking project risks,
- assigned resources to manage risks, or
- documented risk mitigation plans.

Bureau officials reiterated that they have managed FDCA risks throughout the pre-award process and plan to continue to do so after the contract is awarded, though not in the more formal manner outlined in our study of best practices.

While we acknowledge that the program office continues to work to address key risks, ad hoc risk management activities are not a substitute for a more formal process where risks are routinely identified, prioritized, and mitigated. Until the project team implements an effective risk management process, it will lack a mechanism to address known and unknown problems. Without such a process, potential problems are more likely to become actual problems and have adverse effects on objectives—including FDCA cost, schedule, and performance.

**Contract Tracking and Oversight/Project Monitoring and Control**

These processes provide oversight of the contractor's and the project office's performance, in order to allow appropriate corrective actions if actual performance deviates significantly from the plan. Key activities in tracking both the contractor's and the project office's performance include the selection of performance measures, communicating status, taking corrective actions, and determining progress.

The project team has

- incorporated requirements in the RFP for earned value management and other status reporting by the contractor,
- hired staff with contract surveillance experience,
- provided training on contract surveillance to selected project staff, and
- planned to oversee the contractor using checklists, reports, site visits, vendor deficit tracking, and risk assessment.

However, the project team has not yet

- developed detailed procedures and metrics for contract monitoring, or
- developed a full set of performance measures for internal project office performance, or begun tracking this performance.

**Contract tracking and oversight/project monitoring and control (continued)**

Project officials acknowledged the need for additional planning for these processes and activities, but do not plan to fully implement many aspects of these processes until after contract award. In commenting on a draft of this briefing, bureau officials stated that there would be little value in establishing metrics in advance of having a FDCA solution and that they plan to work with the winning vendor to establish meaningful metrics. Officials also stated that they have already begun tracking internal office performance and noted that they have already submitted earned value management metrics for the program office to the Department of Commerce.

Given the importance of monitoring program office and contractor performance, best practices show that it is not too soon to begin identifying performance measures and developing a process for monitoring and managing both the program office and contractor's performance. Further, earned value management metrics are valuable, but do not comprise a comprehensive set of metrics for monitoring a program. The program office may identify and track other performance measures, including metrics for changes in risks and requirements. Moving forward, it will be important for the project team to establish strong project monitoring and control over internal performance as well as solid processes for tracking and overseeing the FDCA contractor's progress. Until it does so, the project faces increased risk of delays in identifying problems and taking appropriate corrective actions.

### **Process and Product Quality Assurance**

This process area provides staff and management with objective insight into processes and associated work products. This includes the objective evaluation of project processes and products against approved descriptions and standards. Key activities include developing a quality assurance plan, assigning resources to quality assurance activities, and implementing quality assurance activities. Through quality assurance, the project team is able to identify and document noncompliance issues and provide appropriate feedback to project staff.

The project team has

- drafted plans for quality assurance, contract surveillance, and award fee determination that call for inspections, random sampling, periodic surveillance, customer feedback, and monitoring
- provided selected staff with training on quality assurance and surveillance planning,
- begun planning to prepare staff for their roles in quality assurance,
- assigned a quality assurance manager, and
- developed plans for a principal technical monitor and 12-15 technical monitors to evaluate contractor work products and processes.

The project team plans to implement these quality assurance practices after contract award.

### **Executive Oversight and Governance**

The Office of Management and Budget and GAO guidance call for agencies to establish IT investment management boards comprised of key executives to regularly track the progress of major systems acquisitions. These boards should have documented policies and procedures for management oversight of IT projects and systems, and should be able to adequately oversee the project's progress toward cost and schedule milestones and their risks. The board should also employ early warning systems that enable it to take corrective actions at the first sign of cost, schedule, and performance slippages.

The FDCA project received executive-level oversight during early project planning.

- The project was presented to key executives from the Department of Commerce's IT Review Board and the Census Information Technology Governing Board.
- The project manager participated in meetings with Commerce and Census Bureau executives.
- The project reported to a FDCA steering committee comprised of executives from key bureau directorates.
- The project team worked closely with senior acquisition officials to develop acquisition planning and solicitation documents.

Executive-level oversight of FDCA is expected to continue:

- the FDCA Program Office is expected to report weekly on the status of the FDCA project to Decennial Management Division officials,
- the FDCA Program Office is expected to participate in quarterly reviews with the Commerce Information Technology Review Board and bureau managers, and
- Commerce and Census executive-level IT governing boards expect to review the FDCA project as part of its annual budgetary planning, under the 2010 Testing, Evaluation, and System Design program.

As previously noted, we reported in June 2005 on weaknesses in the bureau's executive oversight of IT projects. Specifically, we reported that, because the bureau did not have written procedures on how executive oversight was to be performed, it had less assurance that investment oversight and decision making was performed in a consistent and reasonable manner. Without clear, documented, and consistent governance procedures, the bureau cannot ensure that it is effectively and consistently overseeing these investments.

While the FDCA project team has initiated important steps in establishing a capable project management office, it has not yet completed important activities it needs to adequately manage this acquisition. For example, the bureau has not yet implemented needed processes for managing risks or measuring project performance. Without these processes in place, the bureau remains at increased risk of not developing and delivering FDCA on time and within budget. The project may also be at risk of falling short of promised functionality. Given the immovable deadline for performing the decennial census, the bureau faces greater risk of cost overruns or limited system functionality.

To ensure that the bureau adequately manages the FDCA project, we recommend that the FDCA program office take the following four actions:

- obtain stakeholder commitment to a project plan that includes estimated project costs and schedules, including deliverables and milestones,
- obtain validation and approval of baseline requirements,
- identify, prioritize, and assign responsibilities for risks, and develop and implement risk mitigation plans and actions, and
- develop internal and contractor performance measures and prepare to track project cost, schedule, and performance.





## Agency Comments and Our Evaluation

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In providing oral and email comments on a draft of this briefing, Census Bureau officials, including the Associate Director for the Decennial Census and the Assistant Director for Decennial Information Technology and Geographic Systems, generally agreed with our recommendations and stated that time constraints and budgets have driven the bureau to proceed with its acquisitions before all of the recommended activities have been completed. Officials stated that they plan to complete these activities as soon as possible.

Bureau officials also stated that they intend to rely on the DRIS and FDCA contractors to help refine requirements, project plans, and performance measures. However, our experience in reviewing major system acquisitions over the last several years has shown that it is important for the government to exercise strong leadership in managing requirements, plans, and measures.

Bureau officials also offered technical corrections which we have incorporated as appropriate.

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# Appendix II: Objectives, Scope, and Methodology

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For both the Decennial Response Integration System and Field Data Collection Automation program acquisitions, our objectives were to (1) provide an overview, status, and plans (including costs, schedule, and deliverables) and (2) determine if the bureau has capabilities in place to successfully manage and oversee the acquisitions.

To provide each project's overview, status, and plans, we analyzed current project documents, including plans, acquisition documents, and deliverables; we also interviewed project officials.

To determine if the bureau had capabilities in place to successfully manage and oversee the acquisitions, we identified sound IT systems acquisition and management processes from industry standards, including those developed by the Software Engineering Institute, and compared them to the Census Bureau's practices for the selected acquisitions. We evaluated the following processes:

- project and acquisition planning;
- solicitation;
- requirements development and management;
- risk management;
- contract tracking and oversight/project monitoring and control;
- process and product quality assurance; and
- executive oversight and governance.

In each of the process areas listed above, we evaluated project documentation and interviewed project officials to determine the status of the bureau's efforts. We obtained comments from bureau officials, including the Associate Director for the Decennial Census and the Assistant Director for Decennial Information Technology and Geographic Systems, on a draft of the briefing in attachment I. We conducted our review between July 2005 and January 2006 at Census Bureau headquarters in Suitland, Maryland, in accordance with generally accepted government auditing standards.

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