SECTION 4
MANAGEMENT CONTROLS AND PROCESSES
MANAGEMENT CONTROLS AND PROCESSES

SECTION 4 MANAGEMENT CONTROL & PROCESSES

4.1 Information Management Framework .................................................................1
4.2 Strategic Planning Process ..................................................................................8
4.3 Architectural Planning and Execution .................................................................10
4.4 System Development Life Cycle Standards (SDLCS) .........................................12
4.5 Project/Portfolio Management Office (PMO) ....................................................13
SECTION 4 MANAGEMENT CONTROL & PROCESSES

4.1 Information Technology Management Framework

BACKGROUND

In FY 1994 the Fairfax County Board of Supervisors created a citizen Information Technology Advisory Group (ITAG) to study the use and management of Information Technology (IT) by the County government. The ITAG was composed of eight private sector executives from Fairfax County based companies. Two committees supported the ITAG, one made up of staff from their own corporate organizations and the other comprised of County staff. The work of the ITAG resulted in the creation of the Department of Information Technology (DIT).

Several independent County organizations already involved with application programming, systems infrastructure, data center operations, telecommunications, mapping and technical training were merged to the new IT Department. Centralized resources for system security, architecture and standards, e-government, technology planning and administration were added resulting in a full function centralized County government IT organization. ITAG also recognized that larger County departments would still need to retain some IT staff in addition to utilizing central DIT resources, and that agency business specific projects such as technology based industrial systems or small scale point solutions would be better handled by the agency rather than the central IT agency. DIT assists these agencies with consultation, mentoring, technical project support, infrastructure provisioning, security, licensing, and policy and standards compliance. All departments must adhere to County IT standards, planning and budgeting and continue to follow the direction set by the County to ensure consistency, cost efficiencies and aggregate technology investment value.

ITAG made further recommendations for IT governance and funding, including:

- The County create a Chief Information Officer (CIO) position to oversee DIT and technology County wide.
- The CIO should report directly to the County Executive as a Deputy County Executive level position.
- IT be treated as an investment and given consistent funding annually.
- The CIO be responsible for IT planning County wide and the expenditure of major IT project funds.
- The County create a funding mechanism to ensure IT employees are trained properly and their skills are kept up to date.
- An annual IT plan is written to detail IT direction, projects and project portfolio budgets.

At the time of ITAG recommendation for establishment of a technology modernization fund, it also recommended that the County provide funding of approximately $20 million per year for investment in technology in order to sustain the Board of Supervisor’s goal for service efficiencies and effectiveness at optimal cost. This fund provides money for new technology solutions and services required successful
project delivery. The modernization fund represents the County’s enterprise wide and key departmental projects, which are closely tied to business process improvement and strategic goals.

Based on the initial ITAG recommendations, the following have been implemented in on-going development and improvements in the County’s IT organization, governance, and support structure:

- Centralization of the major IT functions for the County (FY 1995)
- Creation of a CIO function (FY 1995)
- Standardization of technology investments across the County (FY 1995)
- Annual technology project review incorporated in the County wide budget process (FY 1995)
- Creation of a technology modernization fund (FY 1996)
- Established funding for technology training (FY 1996)
- Project steering committees, formal project reporting and governance framework established. (FY 1996)
- Creation of a permanent private sector advisory group: Information Technology Policy Advisory Committee (ITPAC) (FY 1998)
- Established Senior Executive IT Steering Committee(FY 1999)
- Launch of an internal project management certification program (FY 1999)
- Established enterprise technology architecture committee (FY 2001)
- Creation of an IT Investment Portfolio Management position in DIT (FY 2002)
- Established an enterprise technology architecture function in DIT (FY 2002)
- Development of strategic planning alignment process (FY 2003)
- Merger of information architecture, web services and document management functions (FY 2004)
- Establishment of Architectural Review Board in DIT (FY 2005)
- Reorganization to establish resource capability for regional Homeland Security interoperability requirements (FY 2005)
- Creation of a position dedicated to integrated Public Safety and Emergency Management strategy (FY 2005)
- Designated Director of DIT as Chief Technology Officer (FY 2006)
- Established e-Gov Executive Committee (FY 2007)
- Established Services-Oriented Architecture Team (FY 2007)
- Adopted ITIL Framework for Service Support (FY 2007)
- Established Deputy Director to enhance executive capacity on IT service delivery and operational efficiency, and manage emergency support initiatives (FY 2007)
- Established Court Technology Office and Governance (Courtroom Technology Governance Board (FY 2007)
- Established Leadership for National Capital Region Interoperability Initiative (FY 2007)
Executive Governance

The overall governance structure is described in Section 1 of this Plan. The Director of the Department of Technology is also the County’s Chief Technology Officer (CTO). The CTO develops strategy, policy, and processes for technology County-wide. The CTO creates the agenda for IT and communications technologies, and directs the activities in the Department of Information Technology.

The Senior IT Steering Committee is the County’s executive technology oversight body, providing policy, asset and resource authorization and guidance for the County’s IT program. This group includes the County Executive, Deputy County Executives, Director of the Department of Information Technology/CTO, and Chief Financial Officer. The committee receives additional input on a variety of issues from the County’s Senior Management Team made up of all agency heads. The committee meets routinely to look at specific IT initiatives, opportunities and issues, sets the County’s IT strategy based on the Board of Supervisor’s direction, and approves the annual IT investment plan which is delivered by the CTO to the ITPAC for its endorsement. The ITPAC (described in Section 1) is a group of technology savvy citizen leaders appointed by the Board of Supervisors to advise the CTO on strategy, the industry, and best practices. The annual ITPAC agendas provide information about both existing portfolio initiatives as well as planned initiative and opportunities, most of which require IT investment support in either upcoming or future budget planning cycles. ITPAC writes an annual letter to the Board of Supervisors with its
Recommendations and advice on technology priorities as part of the annual County budget process. Members also advise their respective Board members on IT matters.

The e-Government Steering Committee provides guidance and direction for new capabilities provided via the Web and other public access channels. The committee includes the CTO, E-Government Director, Directors of the Department of Cable Services, Libraries, and the Office of Public Affairs, and is also supported by the County's IT Security Director and the County Attorney. The committee considers the impact of emerging trends such as the public's adoption of social networking and other information mechanisms in forming the County's strategy for enablement of and governance over related e-Government initiatives.

Finally, major projects such as the Planning and Land Use System Project (PLUS), Public Safety Information Systems project, Courtroom Technology, Health and Humans Services Integrated Services Initiative have governance committees, typically chaired by the sponsoring Deputy County Executive with membership including the stakeholder business departments and the CTO or DIT management. These boards/committees oversee, provide guidance and resolve related policy issues to their agencies project manager(s) and teams to ensure scope and delivery.

**Project Investment Prioritization and Execution**

The Senior IT Steering Committee established funding priorities for technology projects. Based on changes in social and economic paradigms, and state mandates that must be fulfilled, the following priorities are adopted as guidelines for project funding decisions:

- Mandated Requirements
- Leveraging of Prior Investments
- Enhancing County Security
- Improving Service Quality and Efficiency
- Ensuring a Current and Supportable Technology Infrastructure

The process is managed by the IT Project Portfolio Management Office (PMO) in the Department of Information Technology. For each fiscal planning cycle in alignment with annual budget guidelines, initial project proposals are submitted by County departments as part of the annual budget process. A two-phase approach was implemented to assist in the preparation and evaluation of technology project proposals submitted for funding. Proposals must meet the following requirements:

- Submission of viable projects: minimize project requests that may be beneficial to County business conceptually, however lack substantive information in critical project areas such as staffing plans, technical architecture, project deliverables and benefits;
- Proposed project time frames, areas of responsibility and funding accurately reflect County procurement, budget and existing IT project commitments, as well as clearly identify the impact of the project on agency business and technical staff, and agency operations;
Identify potential savings by using exiting County-owned technologies or by jointly reviewing similar individual project requests to minimize IT software and hardware duplication and leverage existing technology investments;

Ensure that proposed project schedules are feasible, and/or that ongoing projects are within scope and budget, and are on schedule.

Early in the process, agencies are requested to submit both a business and technical viability analysis for each proposed project. The business analysis, reviewed by staff from the Department of Management and Budget (DMB) and DIT, includes such factors as business objectives; return on investment including cost savings, cost avoidance, enhanced revenue, non-quantifiable service benefits, staff savings and staffing efficiencies; indicators to measure success, estimated costs, business related risks and alternatives to the proposed project.

The technical analysis, reviewed by staff from DIT, includes such factors as proposed system architecture and its compatibility with the County’s technical architecture standards, impact on existing systems and infrastructure, data conversion, electronic interface requirements, and staffing requirements for development and maintenance of the solution. DMB and DIT make recommendations for improvement of the proposals. The final proposals are presented in an oral interview setting conducted by DIT and DMB senior management, who make funding recommendations for consideration by the Senior IT Steering Committee. This process is guided by the five information technology priorities established by the Senior IT Steering Committee. The Senior IT Steering Committee reviews the recommendation for inclusion in the County Executive’s annual proposed budget. ITPAC provides the County Executive input and recommendations on technology issues for consideration as part of the Advertised Budget input process; the committee also composes an advisory letter to the Board of Supervisors supportive of the strategy and themes contained in the proposed IT project funding package under consideration for inclusion in the County’s Adopted Budget.

Funding in the IT modernization budget represents the strategic and enterprise-wide initiatives for the County. If during the project review process a project is identified that is not strategic, does not have enterprise wide benefits or benefits a major department mission but does benefit a small independent function, funding may be accomplished within in requesting agencies’ departmental budgets. Departmental projects must follow the established IT standards, methodology and architecture requirement with DIT providing advisory consultation, infrastructure, resources, and/or standards compliance. All technology solutions are required to be brought before the DIT Architecture Review Board for solution technical review. Formal architecture standards have been developed that provide further guidance to the project managers. All projects must follow the County’s standards and project methodology as defined by the CTO in the County’s IT standards.

Once projects are approved for funding, a steering committee is created for each project. This committee can vary in size and membership, based on the dollar value and the strategic importance of the project. A project manager is selected from the department sponsoring the project and a technical project manager
is assigned from DIT and/or the user agency’s technical group if one exists. Project managers are required to prepare Project and Expenditure plans, hold regular project meetings and report progress and issues. Guidance is provided by the IT PMO in DIT.

The Business Sponsor’s Project Manager (PM) is responsible to manage business requirements, project scope, and transition of the business to the new technology capabilities. DIT assigns a Technical Project Manager (TPM) that works with the business sponsor PM responsible to design and approve the technical solution, help develop the schedule, coordinate implementation activities in DIT, and execute the technical solution. The Technical project manager is involved in the solution selection process and (normally) solution provider contract negotiations. The DIT PMO assists with IT contracts development review, and compliance.

DIT may conduct periodic project reviews to track progress and support conformance to standards. DIT has established the Architectural Review Board to assist agencies in determining viability of solution and compatibility with architectural standards and the County’s infrastructure as a part of the competition and acquisition process. This includes participation on Selection Advisory and Technical Advisory panels. Major IT projects with increased risk, higher strategic value, or a material degree of external visibility may receive direct oversight in tracking project performance, contract requirements, and technical guidance from the Project Management Office (PMO) function in DIT. As available, the County may offer an IT Project management training program for business practitioner project managers. Knowledge goals focus on project reporting and administration, contract negotiation and management, technical architecture, business process redesign, task planning and other topics.

**Summary**

Project investment prioritization and execution is based on the following elements that work together to create an enterprise wide process and focus for IT in Fairfax County. The process is inclusive of all agencies and ensures that selected IT solutions align with the enterprise strategic goals:

- Executive management
- Private sector and internal County board of directors roles
- Executive IT Steering Committee
- County-wide planning and review of technology investments
- Focus on standards
- Project Steering Committees
- Collaboration between agencies and DIT
- Leverage investments
- Portfolio management
- Architectural Review Board
- Skilled project management
- Performance management
In any organization, a wide range of business processes and practices support all information technology projects directly or indirectly. They are integral to both the development and the delivery of flexible, cost-effective and reliable solutions. The following sections provide a brief description of four of these processes, which have been crucial to the successful implementation of information technology solutions in the County’s service environment. These processes are:

**STRATEGIC PLANNING PROCESS**

- Information Technology Architectural Planning and Execution
- System Development Life Cycle Standards (SDLCS)
- Information Technology Project Management Program

Each process is briefly discussed in terms of its origins, its larger operational context, the primary functions performed, principal business benefits achieved and future directions.
4.2 Strategic Planning Process

Periodically, DIT assembles a Strategic Planning team of staff across the IT organizational specialties to gather input on value, need, and expectations related to the future provision of information technology solutions and services, and alignment with County-wide business strategy.

This effort complements development of the IT budget, organization evolution to take advantage of technology and societal changes in technology capabilities, the IT Plan and operations of the Department of Information Technology.

The focus of the planning process is to ensure a comprehensive approach to IT across the enterprise, taking into consideration a number of important influences (both internal and external) of relevance to the organization. Influential factors include changing requirements and channels for ‘G2G’, ‘G2B’ and ‘G2P’ interaction, the need for business integration and interoperability for cross-cutting County initiatives, fast adoption of e-government opportunities, industry and economic trends, transparency and similar imperatives, Social Media and industry trends. The strategic thinking and planning process provides a framework to make decisions around alignment of IT resources to meet the needs of County government. The Strategic Plan provides the County forethought for long term technology commitments and allocation.
of limited resources to achieve business objectives. This process is necessary to keep and update technology, analyze appropriateness of technology refresh cycles, and the effectiveness and sustainability of technology investments.

Our strategy is based on certain realities: keeping up with the pace of change in technology and using technology effectively to meet government business requirements and public expectations are still the most critical challenges facing information technology providers. Advances in technology enable the workforce to provide better and faster service at a reduced cost, but changes in technology are expensive and complex. New technology must be adopted carefully and integrated wisely into the existing technology infrastructure of an organization in order to maximize the benefits in a cost-effective manner. To give focus and direction to staff within the technology department and to better plan for the future, a vision statement was adopted by DIT that aligns with the County’s vision statement:

“We are a skilled, forward thinking and responsive organization that builds partnerships in the delivery of a strong and innovative technology environment. We pursue and embrace opportunity to creatively enable and strengthen service delivery through Fairfax County.”

Values were developed along with strategic goals and initiatives. These values, goals and initiatives, are in the Department of Information Technology Strategic Plan, October 2003. They remain valid today.

Seven major trends impact technology solutions and enrich the County’s current technology architecture. These trends maximize IT capability for users and stakeholders while presenting some deployment challenges in the face of IT resource limitations:

1. The workplace is more mobile; therefore, job functions can be performed without being tied to a physical location.
2. Communication, collaboration, and information sharing methods are increasingly automated.
3. Information resources must be managed from a full life cycle perspective.
4. Security for information and communications systems and privacy of information are critical priorities.
5. Technical architectures are facing increased capacity and flexibility demands (includes ‘clouds’ and new WEB/Social Media capabilities).
6. Citizens require “around the clock” access to information and services, increased transparency, on-line interaction and enhanced engagement with government, through a variety of convenient delivery channels (including new WEB/Social Media).
7. Interoperability requirements drive a need for data standards and open information architecture.

To accomplish DIT’s mission and vision, strategic initiatives are categorized within three strategic focus areas to ensure well-defined purpose. The successful adaptation of these strategic initiatives positions
DIT to provide an effective technology infrastructure and efficient customer service support. The overall outcome promotes County agencies working together with partners, maximizes County agency resources to provide diverse government services and optimizes accessibility to County constituents and customers.

Internal DIT Collaborative Initiatives are focused around governance structure and processes, technology rollout, interoperability framework, technology portfolio management and marketing. Customers Service Delivery Initiatives are designed to improve customer service, improve continually the quality, responsiveness and cohesiveness of products and services delivered. The third set of initiatives, Staff Improvement Initiatives, revolves around resource allocation of personnel and skills ownership and accountability. Efforts are on-going supporting these initiatives and development of measures that will result in improvements and alignment DIT and County-wide business goals and continuous improvement mode. The process of refreshing the strategic plan, score card, and dashboard is on-going. Key considerations include the strategic direction of the County agencies served, and how agencies’ strategies drive core County-wide IT infrastructure and operations plans, the development of IT resources, and with a view toward lowest practicable cost at highest performance reliability in the overall cost of IT delivery.

4.3 Architectural Planning and Execution

DIT is faced with the constant challenge of staying nimble while aligning the County’s information technology strategy with the agencies’ evolving business requirements. The IT provider imperative is that solutions must be delivered on time and within budget. Rapid changes in business requirements can also overwhelm the capabilities of the IT infrastructure. Disparate decisions and infrastructure investments can easily create an overly complex, ridged and/or fragile computing environment that is intolerant of change. Given the rapid pace of today’s business innovation, no agency can afford to be locked into an environment that is inflexible and cannot scale. One of DIT’s key goals, well aligned with industry-wide best practices, is to develop operational agility. In that effort, the modern IT function has to lower the cost of future changes while optimizing the total cost of ownership for each solution.

IT Architectural Planning creates an adaptive architecture that “engineers out” inhibitors of change, while “engineering in” a high tolerance for the unanticipated. It also provides for transition to next generation capabilities which may be internal or external sources and capabilities. Specifically, an IT Architectural Plan maximizes the effectiveness of IT, while minimizing the risk associated with IT execution. DIT’s architectural planning sets a clear direction for the future development of information technology in Fairfax County. IT Architecture introduces a set of architectural best practices to guide IT in the process of designing a flexible technical infrastructure, which frees the organization to provide an IT environment that meets business requirements.

Execution of the IT Architecture Strategic Plan insures the following benefits:

- Better alignment of IT assets with business goals to create a shared enterprise-wide vision
- Supercharging the infrastructure with leading-edge technologies and ‘on-demand’ capacity
- Developing a consistent framework for future technology decisions
- Making viable IT investments and optimizing IT funding processes
- Resolving emerging business problems while leveraging the existing technology investments
- Reducing unnecessary database, hardware and application software redundancy, thereby providing the potential to reduce the cost of IT (DIT recognizes that some redundancy is necessary and beneficial to promote availability, reliability, and recovery of systems)
- Promoting data sharing between agencies and across IT platforms; improving interoperability and the potential for agency resource sharing
- Harnessing "Big Data"
- Promoting anywhere/anytime access
- Balanced approach, not trend for trend’s sake

The Architecture Review Board (ARB) was established in FY 2005 in DIT to provide oversight of all County architecture and infrastructure standards, policies, directions, to address IT architecture issues County wide, to propose IT architectural goals, standards and guidelines for consideration in implementing IT projects and initiatives throughout the County. The responsibilities of the ARB include application development architecture, infrastructure and information architectures, security architecture, emerging technology, process and data modeling, integration and interoperability methodologies, technical standards, and System Development Life Cycle Standards (SDLCS) compliance. ARB’s role is extremely important and valuable given the need to leverage solution platforms and processes across the enterprise and provide scalability, repeatable processes, and seamless interoperability for achieving cross agency business initiatives and County wide goals.

In addition to assessing conformance of proposed solutions, the committees’ review process provides an opportunity to emphasize the need for interoperability of systems and processes that cross agency or functional lines.

The ARB also works with County departments to ensure participation and inclusion in decisions that affect the annual IT planning process. Responsibilities of the Committee include:

- Provide information technology architectural leadership to Fairfax County Government in supporting the on-going development of a strong, flexible, interoperable and secure technology environment.
- Ensure an integrated view between the County’s architectural direction and technology initiatives and implementation plans.
- Work closely with County agencies business sponsors, Project Managers, and IT groups to identify IT architectural issues related to business needs and IT projects, and propose approaches to address them.
- Propose IT architectural plans and standards to DIT, the DCE and the Senior IT Steering Committee for adoption and County wide implementation.
Agency IT Analysts work directly with DIT divisions on a routine basis in consulting and execution of agency based solutions. DIT has regular monthly meetings with all IT analysts on key subjects contribution to new enterprise-wide solutions and capabilities and strategy such as messaging solutions, MS upgrade paths, DIT-cloud and service catalogue offerings, remote access, bring your own device (BYOD), other infrastructure, and security.

DIT also sponsors several user groups that provide for engagement of agencies in architectural and enterprise wide IT capabilities planning and related issues, awareness, and all-hands efforts. Through a variety of forums, these include:

- ALL IT Analysts forum
- County IT Security Coordinators
- WEB Analysts and Communications
- Agencies GIS Analyst

### 4.4 System Development Life Cycle Standards (SDLCS)

The County publishes standards for documenting the development and implementation activities for technology applications and systems. The standards include means of conveying information about the planned solutions to allow for development methodology, controls, performance, data integrity, appropriate infrastructure and operational procedures required to place the application into production. The Systems Development Life Cycle Standards (SDLCS) form the basis of making the development of applications a consistent, repeatable process. The SDLCS provides application developers a framework of the important procedures and universal requirements necessary to complete an application. As new technologies emerge and become part of the County’s systems portfolio, new application development techniques and application architectures using emerging technologies are assessed. The current SDLC includes new WEB development, wireless application, interoperability, and updated security standards; the process is enhanced for business applications to include reviews for e-government and GIS, and requirements for Continuity of Operations Planning (COOP) plan and related disaster recovery information which is a requirement for deployment of any new system. As an example, web applications must conform to Section 508 and the American Disability Act (ADA) requirements, which enable the use of assistive technology such as screen readers for the blind. The standards are being enhanced to take advantage of collaboration software, WEB 3.0, open source, 'Cloud', data analytics and beyond technologies that will further enhance citizen to government engagement, decision support, and transparency. ‘Cloud’ based opportunities such as Software as a Service (SaaS) are also reviewed for feasibility given the County’s security standard is provided.

The SDLCS and architecture standards apply to all applications developed for use by Fairfax County Government. All staff, contractors, and solution providers providing, developing and maintaining applications for County Government must comply with the Standards, which are published.
4.5 Project/Portfolio Management Office (PMO)

The Department of Information Technology (DIT) is responsible for a portfolio of IT projects supporting the County’s investments in major technology projects that improve access to County services, promote government efficiencies, enhanced customer service, performance, and cyber security capabilities. The IT investment portfolio reflects and supports the strategic goals and mandates of the Board of Supervisors and technology priorities established by the County’s Senior IT Steering Committee.

DIT PMO manages the IT Investment Portfolio and assists with strategic planning, fiscal management, general oversight, and progress of IT projects in the portfolio. Additionally the PMO provides direction to project managers for compliance with established fiscal, budgetary, and procurement requirements, as well as guidelines for conformity with the County’s IT standards and project management requirements.

The DIT PMO also manages the development and publication of the County’s IT Plan, is responsible for specialized audits, and assisting project managers resolve contract issues by working with the Department of Procurement and Material Management.

4.6 IT Project Management Training Program

Managing an information technology project to successful completion on time and within budget is extremely challenging. Successful completion of complex initiatives depends on project managers’ knowledge and understanding of technical aspects of an IT project as well as having the skills required for managing projects in a dynamic environment. In recent years emphasis has been placed on managing risks, IT security, organizational change management, and business process redesign. The overall objective of the training is to provide IT project managers with a foundation in basic project management concepts, principles, and practices to effectively and efficiently manage IT projects.

Core content areas recommended are:

- IT Project Management Fundamental
- Project Leadership and Communication
- IT Project Plan Development
- Project Management Tools
- Solutions Delivery Framework for Information Systems
- Project Budgeting and Cost Management
- Information Security, Risks and Controls
- Project Procurement and Contract Management
- Project Risk Management
- The Technology Delivery Process
- Business Process Redesign
- Information Systems Audit and Control
- Group Presentation & IT Systems Case Study
- Best Practices and Lessons Learned
The IT Project Management Training is offered when there are new projects or new staff assigned to manage projects. In June of 2008 Fairfax County’s IT Project Management Training program was recognized by the National Association of Counties and received the association’s annual Model Program Award which recognizes innovative County government programs designed to modernize and streamline County government and increase services to citizens. In years where there are no new projects, DIT does not normally run a full curriculum.

DIT also provides training funds for agency-based IT analysts to maintain skills needed for key technologies.