Commonwealth of Virginia

Information Technology Resource Management Standard

for

INFORMATION TECHNOLOGY

INVESTMENT MANAGEMENT

Virginia Information Technologies Agency

Preface

Publication Designation

Commonwealth of Virginia (COV) Information Technology Resource Management (ITRM) Standard CPM 516-00

Subject

Information Technology Investment Management

Effective Date

September 30, 2008

Supersedes

None

Scheduled VITA Review

One (1) year from the effective date, then every two years thereafter.

Authority

Code of Virginia, §2.2-2007

(Powers and duties of the CIO)

Code of Virginia, §2.2-2010

(Additional powers of VITA)

Code of Virginia, §2.2-2017

(Powers and duties of the VITA Division of Project Management)

Code of Virginia, §2.2-2014

(Submission of information technology plans by state agencies and public institutions of higher education; designation of technology resource.)

Code of Virginia, §2.2-2015

(Authority of CIO to modify or suspend major information technology projects; project termination)

Code of Virginia, §2.2-2018; §2.2-2019; §2.2-2020; §2.2-2021

(Project Planning approval; Project Development Approval; Procurement approval for major information technology projects; Project oversight)

Code of Virginia, §2.2-2457; §2.2-2458

(Information Technology Investment Board; membership; terms; quorum; compensation; staff; Powers and duties of the Board)

Code of Virginia § 2.2-2651

(Council on Technology Services; purpose; membership; chairman)

Scope

This Standard is applicable to all Executive Branch state agencies and institutions of higher education (hereinafter collectively referred to as "agencies") that are responsible for the management, development, purchase and use of information technology investments in the Commonwealth of Virginia. This Standard does not apply to research projects, research initiatives or instructional programs at public institutions of higher education. Local government entities are encouraged to consider the implications of this standard for their work.

Purpose

To establish standards for the management of information technology investments in the Commonwealth of Virginia (COV).

General Responsibilities

(Italics indicate Code of Virginia requirements)

The Information Technology Investment Board (Board)

The Information Technology Investment Board is assigned the following general technology management responsibilities:

- *Approve or disapprove the development of all major information technology projects as defined in § 2.2-2006. The Board may terminate any major information technology project recommended for termination by the Chief Information Officer pursuant to § 2.2-2015;*
- *Approve strategies, standards, and priorities recommended by the Chief Information Officer for the use of information technology for state agencies in the executive branch of state government;*
- *Approve the four-year plan for information technology projects;*
- *Approve criteria for the review and approval of the planning, scheduling and tracking of major information technology projects as defined in § 2.2-2006;*
- *Appoint the Chief Information Officer as the chief administrative officer of the Board to oversee the operation of VITA pursuant to § 2.2-2005;*
- *Approve statewide technical and data standards for information technology and related systems;*
- *Approve statewide information technology architecture and related set of system standards;*
- *Adopt resolutions or regulations conferring upon the Chief Information Officer all such powers, authorities and duties as the Board deems necessary or proper to carry out the purposes of Chapter 20 of Title 2.2; and,*
- *Submit by September 1 of each year a list of recommended technology investment projects and priorities for funding such projects to the Governor and the General Assembly.*

Chief Information Officer (CIO)

The Chief Information Officer is assigned the following general technology management responsibilities:

- *Monitor trends and advances in information technology; develop a comprehensive, statewide, four-year strategic plan for information technology to include specific projects that implement the plan; and plan for the acquisition, management, and use of information technology by state agencies. The statewide plan shall be updated annually and submitted to the Board for approval. In developing and updating the plan, the CIO shall consider the advice and recommendations of the Council on Technology Services created pursuant to § 2.2-2651;*
- *Direct the formulation and promulgation of policies, guidelines, standards, and specifications for the purchase, development, and maintenance of information technology for state agencies, including, but not limited to, those (i) required to support state and local government exchange, acquisition, storage, use, sharing, and distribution of geographic or base map data and related technologies, (ii) concerned with the development of electronic transactions including the use of electronic signatures as provided in § 59.1-496, and (iii) necessary to support a unified approach to information technology across the totality of state government, thereby assuring that the citizens and businesses of the Commonwealth receive the greatest possible security, value, and convenience from investments made in technology;*
- *Direct the development of policies and procedures, in consultation with the Department of Planning and Budget, that are integrated into the Commonwealth's strategic planning and performance budgeting processes, and that state agencies and public institutions of higher education shall follow in developing information technology plans and technology-related budget requests. Such policies and procedures shall require consideration of the contribution of current and proposed technology expenditures to the support of agency and institution priority functional activities, as well as current and future operating expenses, and shall be utilized by all state agencies and public institutions of higher education in preparing budget requests;*
- *Review budget requests for information technology from state agencies and public institutions of higher education and recommend budget priorities to the Information Technology Investment Board. This review shall include, but*

not be limited to, all data processing or other related projects for amounts exceeding $100,000 in which the agency or institution has entered into or plans to enter into a contract, agreement or other financing agreement or such other arrangement that requires that the Commonwealth either pay for the contract by foregoing revenue collections, or allows or assigns to another party the collection on behalf of or for the Commonwealth any fees, charges, or other assessments or revenues to pay for the project. For each project, the agency or institution shall provide the CIO (i) a summary of the terms, (ii) the anticipated duration, and (iii) the cost or charges to any user, whether a state agency or institution or other party not directly a party to the project arrangements. The description shall also include any terms or conditions that bind the Commonwealth or restrict the Commonwealth's operations and the methods of procurement employed to reach such terms;

- *Direct the development of policies and procedures for the effective management of information technology investments throughout their entire life-cycles, including, but not limited to, project definition, procurement, development, implementation, operation, performance evaluation, and enhancement or retirement. Such policies and procedures shall include, at a minimum, the periodic review by the CIO of agency and public institution of higher education information technology projects estimated to cost $1 million or more or deemed to be mission-critical or of statewide application by the CIO;*

- *Report annually to the Governor and the Joint Commission on Technology and Science created pursuant to § 30-85 on the use and application of information technology by state agencies and public institutions of higher education to increase economic efficiency, citizen convenience, and public access to state government;*

- *Direct the development of policies and procedures that require VITA to review information technology projects proposed by state agencies and institutions exceeding $100,000, and recommend whether such projects be approved or disapproved. The CIO shall disapprove projects between $100,000 and $1 million that do not conform to the statewide information plan or to*

the individual plans of state agencies or institutions of higher education; and,

- Approve Contracts and Statements of Work for Independent Verification and Validation (IV&V) of Major IT Projects.

Virginia Information Technologies Agency (VITA)

The Virginia Information Technologies Agency is assigned the following general technology management responsibilities:

- *Prescribe regulations necessary or incidental to the performance of duties or execution of powers conferred under the Code of Virginia, §2.2-2010;*

- *Develop and adopt policies, standards, and guidelines for managing information technology by state agencies;*

- *Develop and adopt policies, standards, and guidelines for the procurement of information technology and telecommunications goods and services of every description for state agencies;*

- *Direct the establishment of statewide standards for the efficient exchange of electronic information and technology, including infrastructure, between the public and private sectors in the Commonwealth;*

- *Direct the compilation and maintenance of an inventory of information technology, including, but not limited to, personnel, facilities, equipment, goods, and contracts for services; and,*

- *Develop statewide technical and data standards for information technology and related systems to promote efficiency and uniformity.*

The Project Management Division (PMD) of VITA

The Project Management Division (PMD) is assigned the following general technology management responsibilities:

- *Implement the approval process for information technology projects developed in accordance with § 2.2-2008;*

- *Assist the CIO in the development and implementation of a project management methodology to be used in the development of and implementation of information technology projects in accordance with this article;*

- *Provide ongoing assistance and support to state agencies and public institutions of higher education in the development of information technology projects;*
- *Review information management and information technology plans submitted by agencies and public institutions of higher education and recommend to the CIO the approval of such plans and any amendments thereto;*
- *Monitor the implementation of information management and information technology plans and periodically report its findings to the CIO;*
- *Assign Project Management Specialists to review and recommend information technology proposals based on criteria developed by the Division based on the (i) degree to which the project is consistent with the Commonwealth's overall strategic plan; (ii) technical feasibility of the project; (iii) benefits to the Commonwealth of the project, including customer service improvements; (iv) risks associated with the project; (v) continued funding requirements; and (vi) past performance by the agency on other projects; and,*
- *Provide oversight for state agency information technology projects;*

Executive Branch (Cabinet) Secretaries

Executive Branch (Cabinet) Secretaries are assigned the following general technology management responsibilities:

- Make appropriate recommendations to the CIO regarding COV enterprise technology programs and projects, throughout the program or project life-cycle, which includes program or project initiation, planning, execution, closeout, and operations and support;
- Review agency Major IT Projects and make appropriate recommendations to the CIO, throughout the project lifecycle, which includes the project initiation, planning, execution, closeout, and operations and support phases; and,
- Participate in Proponent Secretariat Oversight Committees (PSOC) established by the CIO to provide oversight for Major IT Projects.

Executive Branch State Agencies

State agencies are assigned the following general technology management responsibilities:

- *All state agencies and public institutions of higher education shall prepare and submit information technology plans to the CIO for review and approval. All state agencies and public institutions of higher education shall maintain current information technology plans that have been approved by the CIO.*
- *The head of each state agency shall designate an existing employee to be the agency's information technology resource who shall be responsible for compliance with the procedures, policies, and guidelines established by the CIO;*
- *Prior to proceeding with any major information technology project, an agency shall submit to the Division (PMD) a project proposal, outlining the business need for the project, the proposed technology solution, if known, and an explanation of how the project would support the agency's business objectives and the Commonwealth's information technology plan. The Project Management Specialist may require the submission of additional information if needed to adequately review any such proposal;*
- *Upon approval of the CIO of the project plan, an agency shall submit to the Division (PMD) a project development proposal containing (i) a detailed business case including a cost-benefit analysis; (ii) a business process analysis, if applicable; (iii) system requirements, if known; (iv) a proposed development plan and project management structure; and (v) a proposed resource or funding plan. The Project Management Specialist may require the submission of additional information necessary to meet the criteria developed by the Division (PMD);*
- *Upon approval of the Board of the project development proposal involving a major information technology project that requires the procurement of goods or services, the agency shall submit a copy of any Invitation for Bid (IFB) or Request for Proposal (RFP) to the Division (PMD). The Project Management Specialist shall review the IFB or RFP and recommend its approval or rejection to the CIO. The CIO shall have the final authority to approve the IFB or*

RFP prior to its release and shall approve the proposed contract for the award of the project;

- *Whenever an agency has received approval from the Board to proceed with the development and acquisition of a major information technology project, the CIO shall establish an internal agency oversight committee. The internal agency oversight committee shall provide ongoing oversight for the project and have the authority to approve or reject any changes in the project's scope, schedule, or budget. The CIO shall ensure that the project has in place adequate project management and oversight structures for addressing major issues that could affect the project's scope, schedule, or budget and shall address issues that cannot be resolved by the internal Agency oversight committee;*

- *Whenever a statewide or multi-agency project has received approval from the Board, the primary project oversight shall be conducted by a committee composed of representatives from agencies impacted by the project, which shall be established by the CIO;*

- Comply with ITIB-approved policies and standards, and consider ITIB-approved guidelines for the management of information technology resources in the Commonwealth;

- Plan and manage agency IT projects and procurements throughout their lifecycles, which includes the initiation, planning, execution, closeout, and operations and support phases; and,

- Propose the initiation of Major IT Projects and Procurements to the CIO. Manage approved Major IT Projects, throughout the project lifecycle, which includes project initiation, planning, execution, closeout, and operations and support phases.

Related COV ITRM Policies, Standards, and Guidelines

- Enterprise Architecture Policy (EA 200-00);
- Project Management Standard (CPM 112-02);
- Technology Management Glossary Standard (GOV 2003-02.3); and,
- Technology Management Policy (GOV 2002-02.1).

ITRM Publication Version Control

It is the user's responsibility to ensure they have the latest version of this ITRM publication. Questions should be directed to the Supervisor of the Management Support Office in the Commonwealth Project Management Division (PMD). When revisions of this publication have been approved by the Information Technology Investment Board (ITIB), PMD will notify the Agency Information Technology Resources (AITRs) at all state agencies, as well as other parties PMD considers to be interested in the change.

This table contains a history of this ITRM publication's versions.

Version	Date	Purpose of Revision
Original	09/30/2008	Publication of ITIB-approved original document

Table of Contents

1. INTRODUCTION

1.1 Definition of Information Technology Investment Management

Information Technology Investment Management (ITIM) is a management process that provides for the pre-selection (identification), selection, control, and evaluation of business need driven Information Technology (IT) investments across the investment lifecycle. ITIM uses structured processes to minimize risks, maximize return on investments, and support Commonwealth agency decisions to maintain, migrate, improve, retire, or obtain IT investments. ITIM is the basis for the Commonwealth's approach to technology management as approved by the Information Technology Investment Board in the Commonwealth Technology Management Policy (CTM Policy).

1.2 Purpose of the Information Technology Resource Management ITIM Standard

The purpose of the Commonwealth of Virginia Information Technology Resource Management ITIM Standard (ITIM Standard) is to:

- describe the phases in the ITIM process;
- define how the value of an IT investment is measured in each phase;
- identify the required actions associated with each phase; and,
- assign roles and responsibilities for those actions,

in order to maximize the business value of IT investments in the Commonwealth.

1.3 Commonwealth Business Needs

The business needs of agencies drive IT investments in the Commonwealth. To identify those business needs, agencies draw from a number of sources. The Governor of Virginia and the Council on Virginia's Future both set goals that provide overarching guidance and direction on how Commonwealth agencies will meet the Commonwealth's strategic objectives. These goals help focus the agencies on what the citizens need. The Commonwealth goals also form the foundation for both the Commonwealth Strategic Plan for IT and the Agency Strategic Plans. Federal and State mandates and laws will also drive Commonwealth business needs. There are also opportunities to provide citizen services that arise when grant funding is made available to the agencies. In addition, some agencies use Consumer Boards to identify

the needs of the citizens who use the agency's services. Together, all of these drivers help Commonwealth agencies identify and document business needs, and invest in technology to meet those needs.

Figure 1: Drivers of Commonwealth Business Needs

1.4 The ITIM Process

ITIM is the Commonwealth's primary process for:

1. Identifying the potential business value in proposed IT investments;
2. Selecting IT investments that best meet the business needs;
3. Monitoring the performance of the initiatives for developing and placing the selected IT investments into operation; and
4. Determining if the selected IT investments are continuing to deliver the expected business value.

The ITIM process consists of four Phases. The goal of the Pre-Select (Identify) Phase is to identify, analyze, and document IT investments that support agency business needs. The goal of the Select Phase is to decide from among the potential investments identified in the Pre-Select (Identify) Phase which investments to undertake. The goal of the Control Phase is to ensure that IT investments are developed and placed in operation using a disciplined, well-managed, and consistent process. The goal of the Evaluate Phase is to compare the actual performance results and benefits of an

investment to the range of target performance measures established for the investment. The ITIM process is repeated within the agency and the Commonwealth on an annual basis and as part of the budget cycle.
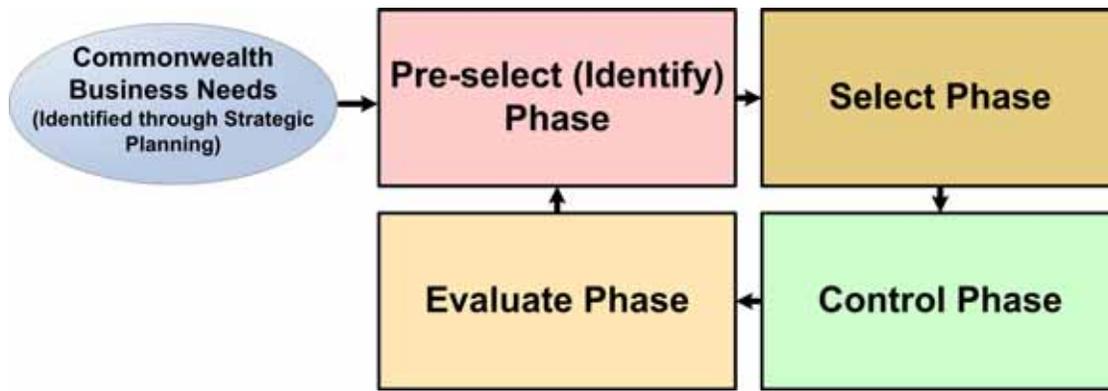
Figure 2: The ITIM Phases

ITIM in the Commonwealth is based on:

- The recognition that the Commonwealth strategic planning process drives technology investment strategies;
- The need to support effective communication about technology investment decisions;
- The concept that technology investments in the Commonwealth support and add value to the business of state government; and,
- The premise that technology investments should be prioritized, executed, and measured based on how they achieve agency and enterprise-wide strategic goals and objectives, and how they serve the critical business needs of the Commonwealth.

1.5 ITIM Stakeholders

ITIM stakeholders are the groups or individuals who have responsibility for activities, decisions, or governance within the ITIM lifecycle. Each stakeholder has an important role in maximizing the business value of IT investments in the Commonwealth.

1.5.1 Information Technology Investment Board (ITIB)

The Information Technology Investment Board (ITIB), as established in the *Code of Virginia*, is comprised of members appointed by the Governor and the Joint Rules

Committee of the General Assembly, plus the Secretary of Technology, who serves in an ex officio role with voting privileges, and the Auditor of Public Accounts, who is a non-voting member. The ITIB is charged with setting technology strategies, standards, and priorities, and with reviewing and prioritizing major technology investments proposed by Commonwealth executive branch agencies and institutions of higher education during the ITIM Select Phase.

Through ITIM, the ITIB helps the Commonwealth make informed IT investment decisions by providing code-mandated governance over agency IT investments, and by recommending a portfolio of high-value IT investments to the Governor and the General Assembly.

1.5.2 Commonwealth Chief Information Officer (CIO)

The Commonwealth Chief Information Officer (CIO), as established in the *Code of Virginia*, is an appointee of the ITIB, and leads the Virginia Information Technologies Agency (VITA.) On behalf of the ITIB, the CIO manages a wide variety of technology activities.

The CIO supports Commonwealth agency IT investment decisions during each Phase in the ITIM lifecycle. In the Pre-Select (Identify) Phase, the CIO supports the identification and documentation of agency IT investment business cases. In the Select Phase, the CIO makes recommendations to the ITIB as to which IT investments the Commonwealth should undertake. In the Control Phase, the CIO ensures that IT investments are developed and placed in operation using a disciplined, well-managed, and consistent process. In the Evaluate Phase, the CIO assists agencies by documenting the range of target performance measures established for the investment, as determined in the Control Phase.

In addition, the CIO approves all technology management policies, standards, and guidelines, and approves all major IT investments (projects, procurements, Invitations for Bid (IFB), and Requests for Proposal (RFP)) in accordance with *Code of Virginia* requirements.

1.5.3 Commonwealth Chief Applications Officer (CAO)

The Commonwealth Chief Applications Officer (CAO) is an assignee of the Governor. The CIO has delegated responsibilities to the CAO which include developing data standards, procedures, and metrics for agency Asset Portfolio Management, the

identification of enterprise and collaboration opportunities in IT application investments, and the oversight and management of shared application services.

The CAO supports Commonwealth agency IT investment decisions by providing the opportunity for agencies to use shared application services, providing the business criteria for evaluating enterprise and collaboration opportunities, facilitating agency Asset Portfolio Management processes, and providing oversight for the ITIM Evaluate Phase.

1.5.4 Commonwealth Project Management Division (PMD)

The Commonwealth Project Management Division (PMD), as established in the *Code of Virginia*, reports to the CIO and serves as the Commonwealth enterprise program management office. The PMD represents the ITIB and CIO in providing governance and oversight of Commonwealth IT investments, the Commonwealth Project Management Methodology (CPM Methodology), the Commonwealth Technology Portfolio, and the ITIM lifecycle. Project Management and ITIM Specialists within the PMD consult with agencies and assist them with the analysis and management of projects, procurements, and IT strategic plans. In addition, the PMD reviews project, procurement, IFB, RFP, and strategic planning documentation and prepares recommendations for the CIO and ITIB as appropriate.

Through ITIM, the PMD supports Commonwealth agency IT investment decisions by developing the ITIM Standard, providing guidance for agencies during each phase in the ITIM lifecycle, and providing governance for the ITIM Pre-select, Select, and Control Phases.

1.5.5 Commonwealth Secretariats

Commonwealth Secretariats coordinate the activities of agencies in the Secretariat to ensure efficient, effective delivery of services. The Secretary, the leader of a Commonwealth Secretariat, is the principal advisor to the Governor on policy related to the services the Secretariat's agencies provide. The Secretariat is responsible for the formulation of policy related to matters of concern to the Secretariat, and for the execution of approved policy.

Through ITIM, the Commonwealth Secretariats support agency IT investment decisions by determining the overall business priorities for their Secretariat, establishing and prioritizing IT investments during the ITIM Pre-select (Identify) Phase, and acting as a

key stakeholder for each major project within the Secretariat during the ITIM Control Phase.

1.5.6 Commonwealth Agencies

Commonwealth agencies are administrative units established by law or by executive order in the executive branch of government responsible for the oversight and administration of specific functions and services. Agencies are the business owners of IT investments in the Commonwealth, and the key stakeholders in the ITIM lifecycle. All ITIM activities are geared toward supporting Commonwealth agency IT investment decisions.

1.5.7 Commonwealth Programs

A program is a group of related projects managed in a coordinated way to obtain business value and control not available from managing the projects individually. Programs may include elements of related work outside of the scope of the discrete projects in the program. A program can be established in a variety of ways:

- By an agency to manage a group of projects collectively;
- By a Secretariat to manage a collection of projects that require collaboration across agency boundaries;
- By the Governor to facilitate enterprise-wide (i.e. state government-wide) productivity and technology improvements, shared services, or collaboration across Secretariat boundaries; or
- By the General Assembly.

Where the ITIB has an interest or oversight responsibilities for the IT components of a program, PMD will provide oversight on behalf of the ITIB.

1.6 Commonwealth Strategic Planning

Commonwealth agency strategic plans, the Commonwealth of Virginia Strategic Plan for Information Technology, the long-term objectives set forth by the Council on Virginia's Future, and the Governor's Priority Initiatives are used to ensure that IT directly and measurably supports business goals. Both the Commonwealth strategic planning process and the ITIM process align with the Commonwealth budgeting cycle.

Agencies within the executive branch develop and implement strategic plans and budgets designed to support the achievement of long-term objectives and the fulfillment of agency missions and mandates. In addition, agencies monitor the progress of their plans and make adjustments, as needed, to ensure desired outcomes are achieved. The strategic plan is used to provide guidance to all agency departments. Strategic planning is a management tool used by agency leaders to determine and communicate what the agency wants to accomplish in a designated time period, to monitor the agency's overall performance, and to make course corrections to help the agency achieve its strategic goals.

1.6.1 The Council on Virginia's Future

The Council on Virginia's Future was established on July 1, 2003, to measure Virginia's performance, prioritize future goals, and establish metrics to help measure the Commonwealth's progress toward meeting those goals.

The Council on Virginia's Future promulgates the *Roadmap for Virginia's Future*, a planning and accountability process capable of building and sustaining a consistent focus - throughout all functions and locations of state government - on those things most vital to Virginia's Future. The *Roadmap for Virginia's Future* identifies long term business objectives for the Commonwealth.

For more information about The Council on Virginia's Future, please go to their website at http://www.future.virginia.gov/

1.6.2 Commonwealth of Virginia Strategic Plan for Information Technology

The Commonwealth of Virginia Strategic Plan for Information Technology specifies the strategic Mission and Vision for information technology in the Commonwealth, and strategic goals for information technology, including objectives, measurements and initiatives that are intended to deliver on that Mission and Vision. The strategic goals align to and support the long term business objectives identified in the *Roadmap for Virginia's Future*.

All Commonwealth agency strategic plans are expected to fully align with the strategic goals, objectives, measurements, and initiatives identified in the Commonwealth of Virginia Strategic Plan for Information Technology.

For more information about the Commonwealth of Virginia Strategic Plan for Information Technology, please go to the VITA website at http://www.vita.virginia.gov /library/default.aspx?id=829.

1.6.3 Commonwealth Enterprise Architecture (EA)

Commonwealth Enterprise Architecture (EA) is a fundamental factor in developing and monitoring strategic planning for information technology. To ensure that EA and information technology support the business of the Commonwealth, an EA process model has been adopted that continually integrates and synchronizes appropriate technologies so that they best serve the business of state government and the citizens of the Commonwealth. In this process model, business needs drive what is done in the Commonwealth and enterprise architecture determines how information technology supports those business needs.
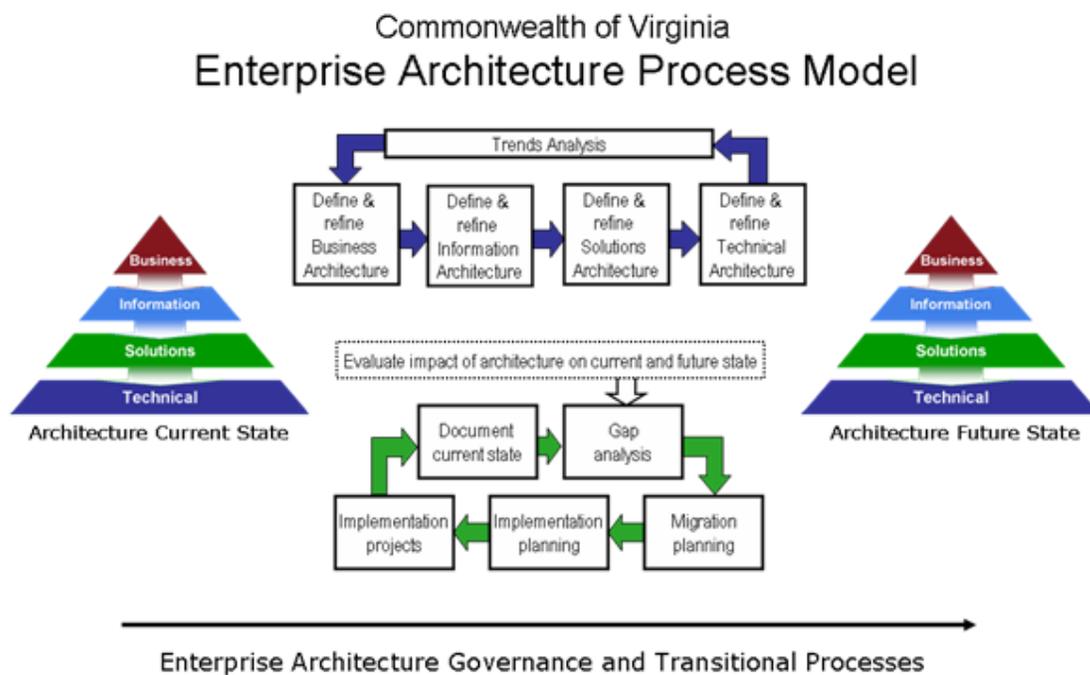

Figure 3: Enterprise Architecture Process Model

For more information about EA, please go to the VITA website at http://www.vita.virginia.gov/oversight/default.aspx?id=349.

1.6.4 Commonwealth Technology Portfolio (CTP)

The Commonwealth Technology Portfolio (CTP) is the executive branch repository for technology investments, and is an aggregated view of individual agency projects and assets supporting Commonwealth and agency business strategies. The CTP documents the current "as-is" view of projects and assets, and facilitates selection of technology investments for the migration to the "to-be" enterprise architecture. The selection of technology investments, and migration to the "to-be" architecture, begins with a comprehensive analysis of the current ("as-is") technology portfolio. When the "as-is" state is understood, the Commonwealth can evaluate the ability of the portfolio to meet the strategic goals and objectives, and/or address critical business needs, and select IT investments that best support agency missions and the business activities of the Commonwealth.

1.6.5 Agency IT Strategic Plan (ITSP)

The agency IT Strategic Plan (ITSP) is a collaborative effort between the business and IT leaders within the agency, and is comprised of the *Resources: Information Technology Summary* and the *Appendix A: Information Technology* sections of the Agency Strategic Plan. The ITSP is the primary tool for communicating how agency business needs drive IT investment decisions, and how the agency's IT investments support the business goals and objectives of the agency and the Commonwealth. The ITSP provides a detailed view of agency IT investments, identifies the alignment of each individual IT investment to the agency's service area objectives and "as-is" business architecture, and provides additional information for each investment (i.e., costs, start and end dates, service area owner, etc.)

1.6.6 Agency Technology Portfolio (ATP)

The Agency Technology Portfolio (ATP) is a best practice of keeping a central repository for all the IT investment information the agency needs to manage. If all of an agency's IT investment management information is documented in the CTP, the agency can use the CTP in lieu of maintaining a separate ATP. However, if an agency has IT investments that are not documented in the CTP, then a separate ATP is highly recommended. The size and complexity of the ATP depends on the scope of the agency's IT investments: an agency with relatively few IT investments outside the CTP may be able to manage their ATP using a spreadsheet, while an agency with significant IT investments outside the CTP may need to use a portfolio management tool to

manage their ATP. While an ATP is not required, its use to support agency IT investment decisions is strongly encouraged.

2. MEASURING IT INVESTMENT VALUE

2.1 What is Value?

Value is a measure that demonstrates how an IT investment contributes to improved constituent service levels, agency operational efficiencies, and the strategic goals of the Commonwealth. IT investments may have multiple value measures in one, two, or all three value categories. Some value measures may even apply to two or even three categories.

The Commonwealth uses the measurement of an IT investment's value as a way to quantify agency business benefits and track them throughout the IT investment lifecycle. Measuring IT investment value with a focused, standardized set of evaluation criteria allows the Commonwealth to forecast value during investment business case development and investment selection.

2.1.1 Constituent Service

Constituent service is the measure of how well an IT investment helps the citizens of the Commonwealth. This can include offering financial benefits such as lower cost of interaction, reduced fees, or quicker reimbursements. It can also include service improvements such as reduced wait times, improved access, new services leading to constituent benefits, or a greater focus on constituent needs.

2.1.2 Operational Efficiency

Operational efficiency is the measure of an IT investment's capability to reduce agency operational and inventory costs, or provide other financial benefits such as streamlined supply chains, new revenue streams, higher productivity, error reductions, faster merging of administrative processes, or an improvement in agency performance against Department of Planning and Budget (DPB) Productivity Measures.

2.1.3 Strategic Alignment

Strategic alignment is the measure of an IT investment's support for Commonwealth goals and objectives as expressed in the individual agency strategic plans, the Commonwealth of Virginia Strategic Plan for Information Technology, the Governor's

Initiatives, federal and state mandates, and the Commonwealth's Enterprise Architecture. It also includes the applicability of the investment across the enterprise.

2.2 Using Value and Risk to Make IT Investment Decisions

One of the primary goals of ITIM is to support value-based agency IT investment decisions, and the use of value and risk can be tracked across the entire ITIM cycle. In the Pre-select (Identify) Phase, the value of an IT investment in serving an agency business needs is compared to the IT investment's risks as illustrated in the example IT investor map below. In the Select Phase, IT investments are ranked based on their proposed value relative to risk and the investments with the best ranking are chosen for implementation. In the Control Phase, IT investment values are refined and risks are mitigated in conjunction with asset delivery. And in the Evaluate Phase, IT asset performance is measured against value metrics to determine if the investment is meeting the agency's business needs.
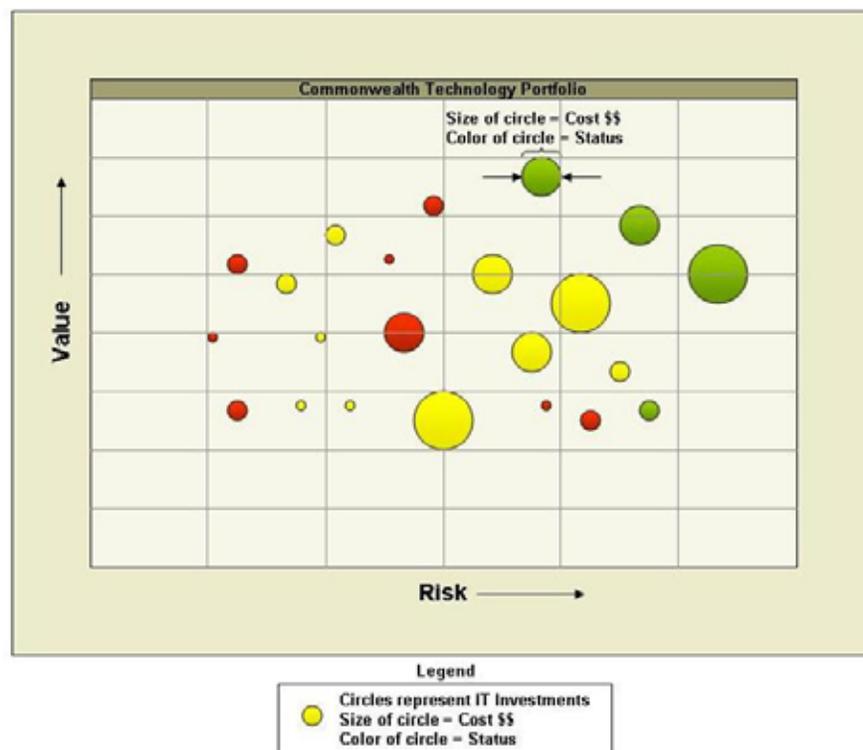
Figure 4: Example IT Investor Map Showing Value vs. Risk

3. PORTFOLIO MANAGEMENT

3.1 What is Portfolio Management?

In a manner similar to managing a collection of financial investments contained in a financial portfolio, the Commonwealth uses portfolio management techniques to manage IT investments across the ITIM process. The CTP is the executive branch repository for IT investments, and is an aggregated view of individual agency IT investments supporting Commonwealth and agency business strategies. The CTP contains investments in current IT assets and projects to deliver new IT assets. IT investments are managed across the four ITIM phases by executing two cycles of activities in the CTP: Project Portfolio Management and Asset Portfolio Management.

Figure 5: ITIM, APM, and PPM

3.2 Commonwealth Project Portfolio Management (PPM)

Commonwealth Project Portfolio Management (PPM) is a cycle of activities directed by the *Code of Virginia* and aligned with industry best practices that the Commonwealth uses for governing and executing current or proposed IT investments. The fundamental objective of the PPM cycle is to determine the optimal mix and sequencing

of IT investments and control their delivery to best achieve the Commonwealth's overall goals.
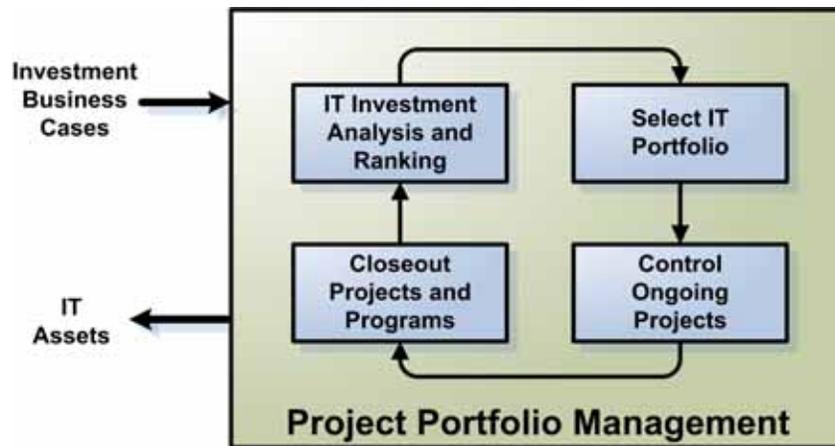

Figure 6: The PPM Lifecycle

PPM supports ongoing measurement of the project portfolio so each IT investment can be monitored for its relative contribution to business goals and improving business value.

3.2.1 IT Investment Analysis and Ranking

During the IT Investment Analysis and Ranking Phase of PPM, all of the agency investment business cases are collected from their agency ITSPs. At the direction of the ITIB, the PMD conducts analysis on major and non-major IT investment business cases based on the relative value the IT investments provide to the Commonwealth. Major IT investments are then ranked by value in the draft Recommended Technology Investment Projects Report (RTIP Report) and presented to the ITIB for review.

3.2.2 Select IT Portfolio

During the Select IT Portfolio Phase of PPM, the ITIB reviews the draft RTIP Report, and the value provided by each IT investment, and selects which IT investments will ranked in the final RTIP Report. The ITIB then submits the final RTIP Report, including recommended priorities for funding the projects, to the Governor and General Assembly. This submission is due each September 1 as required by the *Code of Virginia*. When the final RTIP Report is submitted the projects are added to the CTP.

3.2.3 Control Ongoing Projects

During the Control Ongoing Projects Phase of PPM, executive branch agencies use the CPM Methodology identified in the PM Standard to manage the ITIB-approved projects in the CTP. The CPM Methodology is used by the ITIB, the CIO, and the Secretariats to ensure that Commonwealth projects are managed on time, on budget, and within scope against a managed baseline.

3.2.4 Closeout Project and Programs

During the Closeout Project and Programs Phase of PPM, project and programs are closed out and agencies accept the deliverables. When the operational products or services are established, the project oversight authority concludes that the project or program has satisfied its purpose as described in the CTP. Projects and programs also deliver a set of performance metrics for each IT asset at closeout. The performance metrics are documented in the ATP and used by the agency during the Asset Portfolio Management lifecycle to evaluate the degree to which the asset serves the agency's business needs.

3.3 Commonwealth Asset Portfolio Management (APM)

Commonwealth Asset Portfolio Management (APM) is a cycle of activities aligned with industry best practices that the Commonwealth uses for evaluating the performance of IT assets and linking investments in IT assets to business needs. The objective of the APM cycle is to realize optimal value from IT investments. APM supports ongoing measurement of IT investment performance to ensure the asset's contribution to business goals and improving business value.
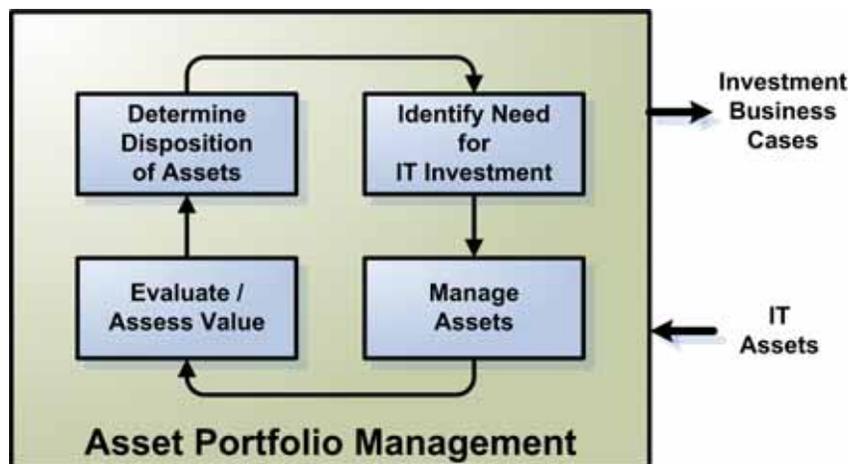
Figure 7: The APM Lifecycle

APM is conducted using two parallel cycles of asset management activities: Infrastructure Service Portfolio Management and Solutions Portfolio Management. To facilitate APM activities, agencies are strongly encouraged to maintain an ATP as a central repository for all the asset management information the agency needs for each of the agency's IT investments.

3.3.1 Infrastructure Service Portfolio Management (ISPM)

Commonwealth Infrastructure Service Portfolio Management (ISPM) is a subset of APM that the Commonwealth uses for evaluating the performance of agency infrastructure services and linking infrastructure investments to agency business needs.
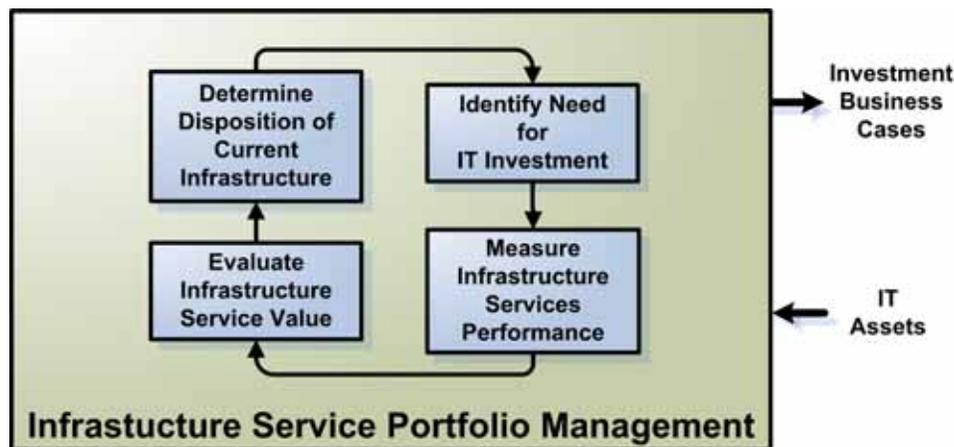

Figure 8: The ISPM Lifecycle

ISPM includes both specialized infrastructure managed by the agencies and infrastructure services managed through the Commonwealth's IT Partnership.

3.3.1.1 Measure Infrastructure Services Performance

During the Measure Infrastructure Services Performance Phase of ISPM, agencies systematically collect, record, and report information on the performance of all IT infrastructure services in their ATP. All infrastructure services in the ATP, whether managed through the IT Partnership or managed by the agency, should have service level performance measures assigned to them, and the performance measures should be directly tied to the business needs of the agency and the value the investment provides

to the Commonwealth. For guidance on performance measures please see the Strategic Planning section of the DPB website at http://dpb.virginia.gov/sp/sp.cfm.

3.3.1.2 Evaluate Infrastructure Service Value

During the Evaluate Infrastructure Service Value Phase of ISPM, the agency compares the results of the infrastructure service performance measurements gathered in the first ISPM phase to the service level agreements documented in the ATP. Corrective actions are developed as needed to bring infrastructure services into alignment with their service levels. In addition, trends in infrastructure service performance are compared to trends in infrastructure service costs to determine if there is a gap between the projected business value of the infrastructure service and the agency's business needs as documented in the Agency Strategic Plan.

3.3.1.3 Determine Disposition of Current Infrastructure

During the Determine Disposition of Current Infrastructure Phase of ISPM, agency leadership determines the disposition of infrastructure services currently in the ATP based on the analysis conducted in the Evaluate Infrastructure Service Value Phase. The disposition of a current infrastructure services falls into one of four categories:

1. **Maintain**—continue to sustain infrastructure services that will meet or exceed the business needs of the agency;
2. **Migrate**—modify the use of infrastructure services that are not meeting their target agency business need to address a different agency business need;
3. **Improve**—reengineer or otherwise modernize infrastructure services that are not meeting their target agency business need to successfully address that need; or,
4. **Retire**—withdraw from service infrastructure services that do not justify maintenance, migration, or improvement due to limited business value. Infrastructure services are retired when the retirement produces more business value than the other three disposition options.

3.3.1.4 Identify Business Need for IT Investment

During the Identify Business Need for IT Investment Phase of ISPM, agency leadership assesses the agency's business needs and identifies all opportunities for business investment. Agency leadership then examines the opportunities and determines if an IT investment offers a possible solution. The agency then identifies each potential infrastructure service investment in their agency's ITSP. The inclusion of the potential

infrastructure service investment in the ITSP is the first step in obtaining infrastructure services whether the service is provided through VITA or obtained through the procurement, IFB, or RFP process.

3.3.2 Solutions Portfolio Management (SPM)

Commonwealth Solutions Portfolio Management (SPM) is a subset of APM that the Commonwealth uses for evaluating the performance of agency applications and linking application investments to agency business needs.
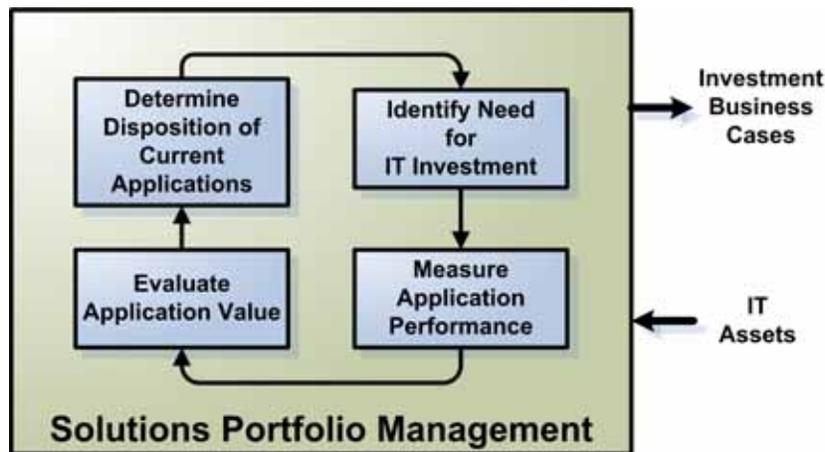

Figure 9: The SPM Lifecycle

SPM includes both specialized applications managed by the agencies and application services managed through the Commonwealth's IT Partnership.

3.3.2.1 Measure Application Performance

During the Measure Application Performance Phase of SPM, agencies systematically collect, record, and report information on the performance of all IT applications in their ATP. All IT applications in the ATP should have performance measures assigned to them, and the performance measures should be directly tied to the business needs of the agency and the value the investment provides to the Commonwealth. For applications delivered through the CPM Methodology, the proposed range for each performance measure is included in the investment business case, and the specific performance measures are documented in the project's Closeout Report. For guidance on performance measures please see the Strategic Planning section of the DPB website at http://dpb.virginia.gov/sp/sp.cfm.

3.3.2.2 *Evaluate Application Value*

During the Evaluate Application Value Phase of SPM, the agency compares the results of the application performance measurements gathered in the Measure Application Performance Phase to the target performance measures documented in the ATP. Corrective actions are developed as needed to bring applications into alignment with their expected performance targets. In addition, trends in application performance are compared to trends in application costs to determine if there is a gap between the projected business value of the application and the agency's business needs as documented in the agency strategic plan.

3.3.2.3 *Determine Disposition of Current Applications*

During the Determine Disposition of Current Applications Phase of SPM, agency leadership determines the disposition of applications currently in the ATP based on the analysis conducted in the Evaluate Application Value Phase. The disposition of a current application falls into one of four categories:

1. **Maintain**—continue to sustain applications that will meet or exceed the business needs of the agency;
2. **Migrate**—modify the use of applications that are not meeting their target agency business need to address a different agency business need;
3. **Improve**—reengineer or otherwise modernize applications that are not meeting their target agency business need to successfully address that need; or,
4. **Retire**—withdraw from service applications that do not justify maintenance, migration, or improvement due to limited business value. Applications are retired when the retirement produces more business value than the other three disposition options.

3.3.2.4 *Identify Business Need for IT Investment*

During the Identify Business Need for IT Investment Phase of SPM, agency leadership assesses the agency's business needs and identifies all opportunities for business investment. Agency leadership then examines the opportunities and determines if an IT investment offers a possible solution. The agency then identifies each potential application investment in their agency's ITSP. The inclusion of the potential application investment in the ITSP is the first step in obtaining the application whether it is provided through VITA or obtained through the procurement, IFB, or RFP process.

4. PHASES OF ITIM

4.1 Pre-select (Identify) Phase

The purpose of the Pre-Select (Identify) Phase is to identify, analyze, and document IT investments that support agency business needs in the context of Commonwealth business needs. The Pre-Select (Identify) Phase allows agencies to define business objectives, associate costs with the potential IT investments needed to meet those business objectives, and document a range of performance measures for their potential IT investments. Completion of this phase answers the question "What proposed IT investments potentially solve agency business needs?"

4.1.1 Pre-select (Identify) Phase Requirements

The high-level requirements of the Pre-Select (Identify) Phase and their relationship to the APM and PPM lifecycles are illustrated below.
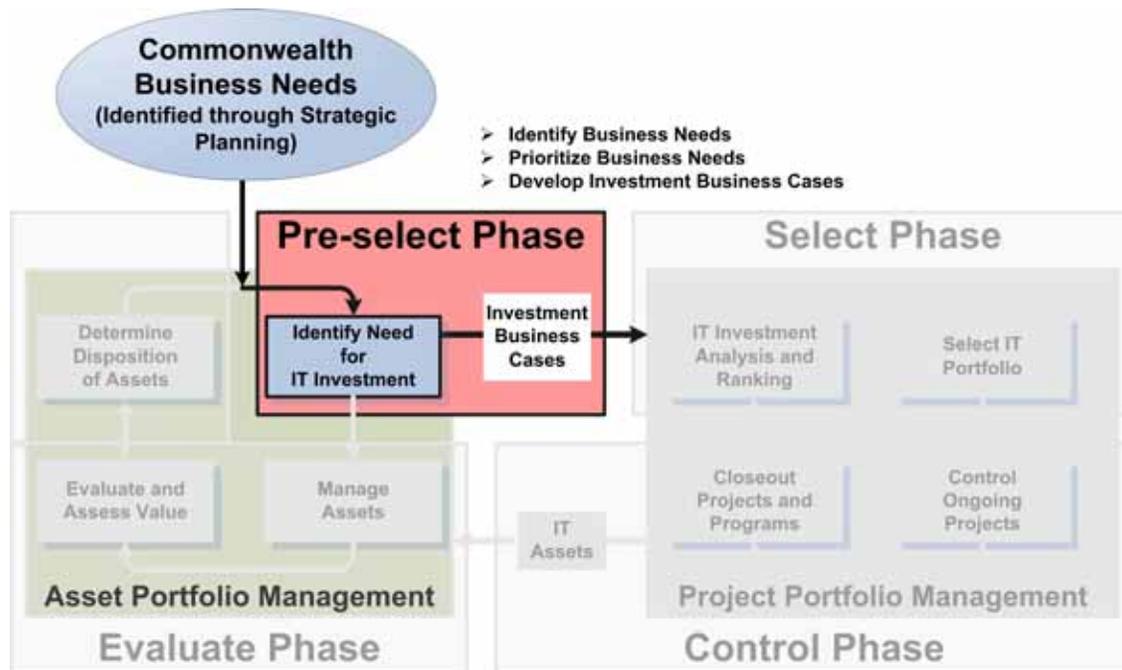

Figure 10: Pre-Select (Identify) Phase

4.1.1.1 Identify Business Needs

A key outcome of the agency IT strategic planning process is the identification of new business needs that can be met with potential IT investments. This is combined with the results of the agency's identification of business needs and investment opportunities from the APM process to derive a list of IT investment opportunities. The agency may identify additional IT investment opportunities from the Commonwealth of Virginia Strategic Plan for Information Technology, the long-term objectives set forth by the Council on Virginia's Future, and the Governor's Priority Initiatives.

4.1.1.2 Prioritize Business Needs

Agencies frequently will not have the resources to undertake all of the IT investment opportunities identified in their strategic plans, therefore, agencies must review and rank potential IT investments according to their business priorities. In determining business priorities, agencies draw information from their Agency Strategic Plan, their Secretariat, and the CAO.

4.1.1.3 Develop Investment Business Cases

The final requirement in the Pre-Select Phase is to develop the Investment Business Case (IBC) for each potential investment not currently identified in the CTP, and to add the IBC to the Agency Strategic Plan. The IBC provides, at a high level and in a standardized format, the information necessary to evaluate a potential IT investment in the ITIM Select Phase. The IBC must include a range of target performance measures that will be refined during the ITIM Control Phase and used in the ITIM Evaluate Phase.

4.1.2 Pre-select (Identify) Phase Roles and Responsibilities

The roles and responsibilities of the stakeholders in the ITIM lifecycle are documented in both the *Code of Virginia* and in Commonwealth standards. The following is a summary of the major stakeholder roles and responsibilities for the ITIM Pre-Select (Identify) Phase.

Role	Pre-select (Identify) Phase Responsibilities
ITIB	• Approve all criteria for evaluating Commonwealth IT Investments; • Approve statewide information technology architecture and related set of system standards; • Approve the four-year Commonwealth of Virginia Strategic Plan for Information Technology; • Approve statewide technical and data standards for information technology and related systems; and • Approve strategies, standards, and priorities recommended by the Chief Information Officer for the use of information technology for state agencies in the executive branch of state government.
CIO	• Define criteria for evaluating Commonwealth IT investments; • Review and approve all state agency and public institution of higher education information technology plans; • Evaluate and recommend approval or disapproval of the IT components of agency strategic plans or IT investment changes to agency strategic plans; • Develop the four-year Commonwealth of Virginia Strategic Plan for Information Technology, update the Plan annually, and submit to the Board for approval; • Plan and forecast future needs for information technology and conduct studies and surveys of organizational structures and best management practices of information technology systems and procedures; • Assist state agencies and public institutions of higher education in the development of information management plans and the preparation of budget requests for information technology; • Develop statewide technical standards for information technology and related systems; and • Define the Commonwealth's "as-is" and "to-be" Enterprise Architecture.
PMD	• Evaluate all IT investments that qualify as Commonwealth Portfolio investments according to ITIB-approved criteria; • Review agency and public institution of higher education information management and information technology plans and recommend approval or disapproval to the CIO; • Monitor agency and public institution of higher education implementation of information management and information technology plans and periodically report findings to the CIO; • Every two years, as part of the budget process, evaluate agency and public institution of higher education Information Technology Strategic Plans (ITSP) and recommend approval or disapproval to the CIO; • Insure all agencies and public institutions of higher education under oversight and governance have a CIO-approved ITSP; and • On an ongoing basis, evaluate IT investment changes to agency and public institution of higher education strategic plans and recommend for approval or disapproval to the CIO.

Role	Pre-select (Identify) Phase Responsibilities
CAO	• When delegated by the CIO, and within the Policy, Standards and Guidelines already established in the Commonwealth: o Develop statewide data standards for information technology and related systems; o Develop and obtain ITIB approval of the business criteria used for evaluating the enterprise and collaboration opportunities in agency IT application projects; o Evaluate the enterprise and collaboration opportunities in agency IT application projects using ITIB approved criteria; and, o In coordination with the CIO, define the Commonwealth's "as-is" and "to-be" Enterprise Business Architecture, Enterprise Information Architecture, and Enterprise Solutions Architecture.
Secretariat	• Establish business priorities for their Secretariat.
Agency	• Identify business needs and prioritize potential investments; • Document target performance metrics and identify business value for potential investments in Investment Business Cases; • Research possible enterprise or collaboration opportunities for the agency; and • Update the Agency Strategic Plan and Agency Technology Portfolio with IT investment business cases, identified business needs, and identified value for each potential investment.

For ease of reference, the appendices enumerate ITIM Phase requirements by stakeholder.

4.2 Select Phase

The purpose of the Select Phase is to decide from among the investments identified in the Pre-Select (Identify) Phase, and investments in the current CTP, which investments best support:

1. The agency's mission, strategic goals, and mandates;
2. The Commonwealth of Virginia Strategic Plan for Information Technology;
3. The long-term objectives for the Commonwealth identified in the *Roadmap for Virginia's Future*; and
4. The Governor's Priority Initiatives.

In the Select Phase, all major IT project investments are scored and ranked by their business value, in conjunction with the Commonwealth budget development cycle, to determine which investments are to be recommended for funding by the ITIB to the Governor and General Assembly on September 1 of each year.

The IBC for a proposed IT investment is initially evaluated and scored by the agency. The scores from the proposed IT investments are then analyzed along with the scores from the agency's on-going IT investments. Based on the agency internal analysis, the agency ranks all its IT investments and subsequently selects the investment business cases to include in the Agency Strategic Plan. Once the agency selects its investment business cases, proposed investments that qualify as Commonwealth investments are identified for evaluation and approval at the Commonwealth level. Completion of the Select Phase answers the question "What IT investments best meet the business needs?"

4.2.1 Select Phase Requirements

The high-level requirements of the Select Phase and their relationship to the APM and PPM lifecycles are illustrated below.
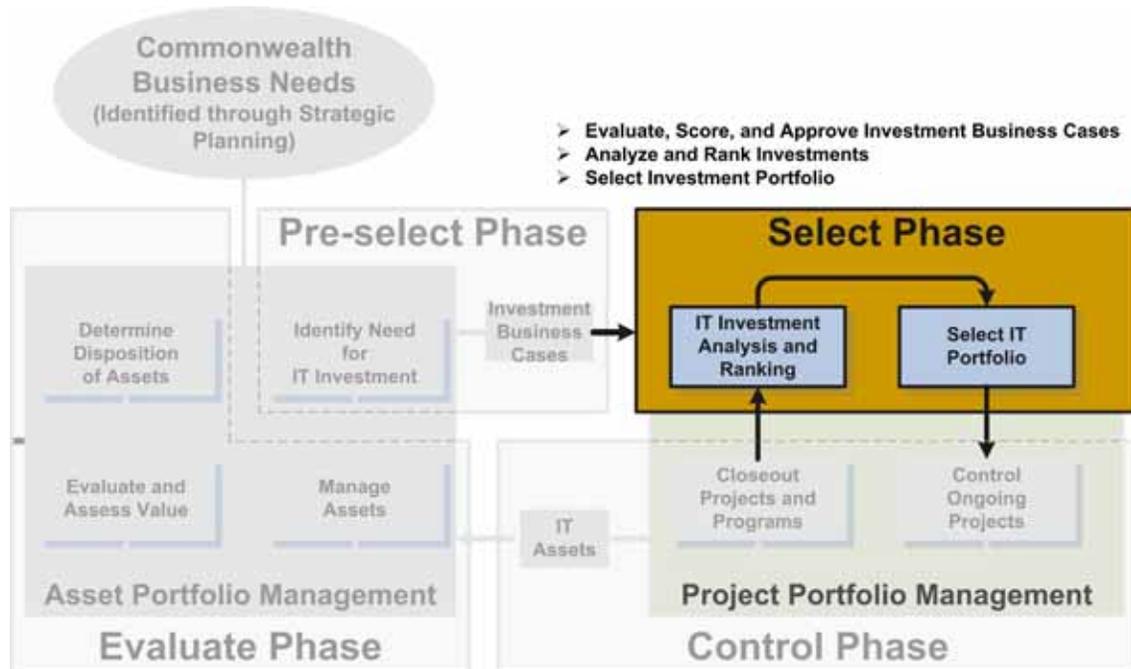

Figure 11: Select Phase

4.2.1.1 Evaluate, Score, and Approve Investment Business Cases

After IT investments are identified based on business needs, each IBC will be evaluated, scored, and approved. At the agency level, it is highly recommended that the agencies use the Commonwealth's evaluation and scoring criteria, as established by the ITIB, to demonstrate how an IT investment contributes to improved constituent service levels, agency operational efficiencies, and the strategic goals of the Commonwealth. The

evaluation and scoring procedures contained in the Commonwealth IT portfolio management tool workflow must be used for agency proposed investments that qualify as Commonwealth investments. Commonwealth investments are defined as projects or procurements that are mission critical, projects or procurements that have state-wide application, projects with a cost greater than $100,000, or procurements with a cost greater than $50,000. The results of the agency evaluation and scoring activities should be documented in the ATP.

Commonwealth IBCs must be evaluated and approved by the CIO prior to inclusion in the CTP.   PMD administers the evaluation and approval process using the Commonwealth IT portfolio management tool workflow.

The final output from this evaluation and approval process is a decision on whether a proposed investment is:

- Identified for Preliminary Planning (IPP)—A project portfolio category for projects that address an agency business need, but which require additional effort by the agency or further review by the CIO and ITIB before the expenditure of funds will be authorized;
- Approved for Project Planning (APP)—A project portfolio category for projects that have received approval of the project's investment business case from the CIO. APP authorizes the agency to expend funds in preparation for Development Approval; or
- Disapproved.

Agency approving authorities will make appropriate decisions for projects and that do not exceed $100,000. The CIO will make appropriate decisions for major and non-major IT projects and procurements over $100,000.

Commonwealth IT investments which are given IPP status or disapproved will include a CIO rationale for the decision. IPP and disapproved potential IT investments may be re-submitted by the agency, with additional information that addresses the CIO rationale, for further consideration by the CIO.

4.2.1.2 Analyze and Rank Investments

The next requirement in the Select Phase is to analyze all the approved IT investments in the portfolio and rank them in order by business value. At the agency level, the final output from this activity will be an agency-ranked investment portfolio reviewed and approved by the agency approving authority.

At the Commonwealth level, PMD uses the measurement of an IT investment's value as a way to quantify agency business benefits, and will make a recommendation to the CIO on the rank order for all Major IT projects that have been granted APP status on a quarterly basis.

Analysis of the CTP must follow the Commonwealth IT portfolio management tool workflow.

4.2.1.3 *Select Investment Portfolio*

The final requirement in the Select Phase is to select and approve the IT investment portfolio. The agency portfolio will be approved by the agency approving authority. The CTP must be documented in the Commonwealth IT portfolio management tool. The CIO will review a final RTIP Report, with Major IT Projects ranked by business value and recommended priorities for funding major IT projects, and submit it to the ITIB. The ITIB will approve or disapprove priorities and funding for Commonwealth investments in the RTIP Report and submit their recommendation to the Governor and General Assembly by September 1 of each year.

4.2.2 Select Phase Roles and Responsibilities

The roles and responsibilities of the stakeholders in the ITIM lifecycle are documented in both the *Code of Virginia* and in Commonwealth standards. The following is a summary of the major stakeholder roles and responsibilities for the ITIM Select Phase.

Role	Select Phase Responsibilities
ITIB	- Approve the evaluation, scoring, and ranking criteria for major IT projects; - Approve the inclusion of investments, and the ranking of those investments, in the RTIP Report; and - Submit by September 1 of each year the RTIP Report, with priorities for funding recommended projects, to the Governor and the General Assembly.
CIO	- Review agency IT budgets and make recommendations to the Department of Planning and Budget (DPB); - Build and maintain a Commonwealth Technology Portfolio (CTP) to include both assets and projects; - Review and approve for planning all Major and Non-major IT projects and procurements over $100,000; and - Review Commonwealth IT portfolio analysis, accompanying documents, and the recommended Commonwealth IT portfolio and submit the annual RTIP Report, with recommended priorities for funding projects, to the Board in anticipation of the Board submitting the RTIP to the Governor and the General Assembly by September 1 of each year.

Role	Select Phase Responsibilities
PMD	• Provide ongoing assistance and support to state agencies and public institutions of higher education in the development of information technology projects; • Review agency IT investments and recommend planning approval or disapproval to the CIO; • Evaluate, score, and rank all major IT projects according to the approved ITIB criteria and submit a recommendation for funding to the CIO; • Prepare the Annual Recommended Technology Investment Projects (RTIP) Report and provide a quarterly update; • Obtain ITIB approval of the RTIP Report with recommended priorities for funding projects; • Obtain CIO and ITIB key themes and messages and prepare the RTIP Report for delivery to the Governor and General Assembly on September 1 of each year; and • Review and approve agency IT budget recommendations to the CIO.
CAO	• Coordinate with Secretariats to prioritize the Secretariat's Major IT application Projects for the RTIP Report; • Work with the agencies to establish a Commonwealth Applications Strategy that establishes priorities for business application requirements; and • As a supplement to the Preliminary Risk Assessment performed by PMD, identify the risks associated with IT application investments as presented in the RTIP report and document the risks in the Commonwealth Technology Portfolio (CTP).
Secretariat	• Prioritize the Secretariat's Major IT Projects.
Agency	• Establish a process for evaluating, scoring, and ranking IT investments for the agency; and • Prioritize agency IT Projects.

For ease of reference, the appendices enumerate ITIM Phase requirements by stakeholder.

4.3 Control Phase

The purpose of the Control Phase is to ensure, through timely oversight, quality control, and executive review, that IT investments are developed and placed in operation using a disciplined, well-managed, and consistent process. During this process, the progress and performance of IT investment initiatives are regularly monitored against projected cost, schedule, and performance metrics, in accordance with the investment's planned review schedule. When issues or problems are identified, corrective action is taken. The Control Phase is characterized by decisions to continue, modify, or terminate investment initiatives. Decisions are based on reviews at key milestones during the investment lifecycle and reviews conducted on pre-defined periodic schedules. The focus of these reviews changes and expands as the investment moves through the

investment lifecycle, and as projected investment costs and benefits change. Completion of the Control Phase answers the question "Are the initiatives for developing and placing the selected IT investments into operation performing as planned?"

4.3.1 Control Phase Requirements

The high-level requirements of the Control Phase and their relationship to the APM and PPM lifecycles are illustrated below.
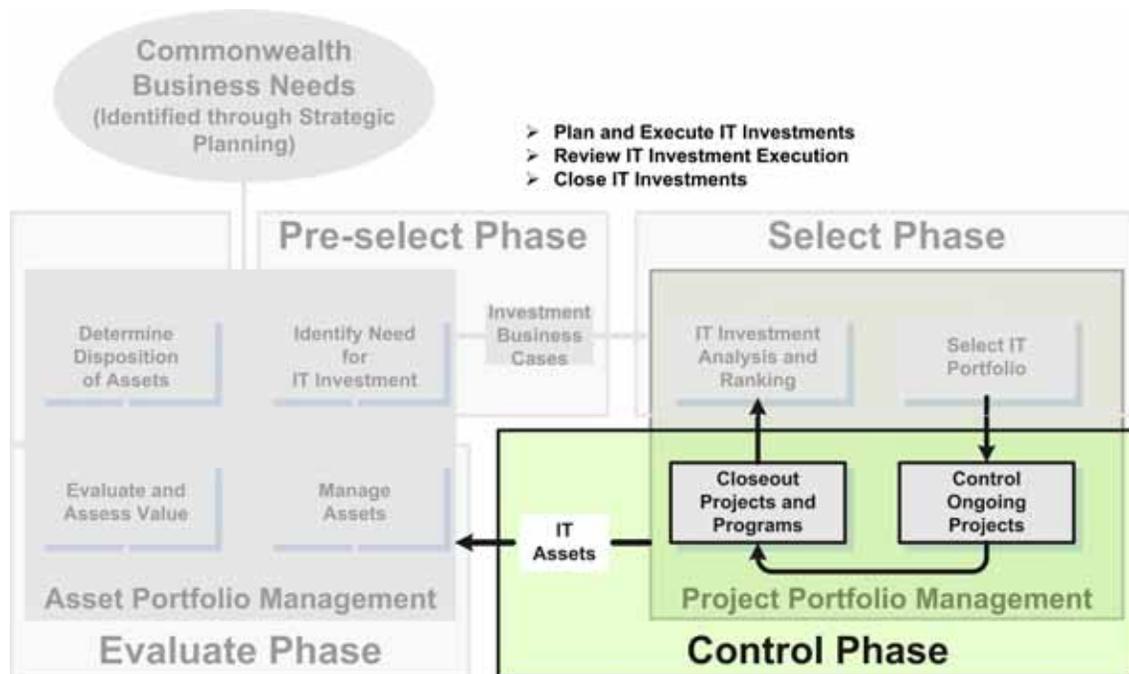

Figure 12: Control Phase

4.3.1.1 Plan and Execute IT Investments

After an investment is initiated in the Control Phase, it must be planned and executed in accordance with Commonwealth standards. IT projects that have received Development Approval are governed by the Commonwealth Project Management Standard. IT contracts must be obtained through an approved Agency Procurement Request (APR) and are governed by the *VITA IT Procurement: Authority and Delegation Policies*. The agency planning and executing the IT investment must ensure that the business value of the IT investment is translated into concrete asset performance measures. The performance measures will be assessed throughout the lifecycle of the IT investment to ensure the Commonwealth is receiving the desired business value. The

ITIB has established a Commonwealth IT portfolio management tool to assist stakeholders with planning, executing, and documenting IT investments.

4.3.1.2 Review IT Investment Execution

The *Code of Virginia* requires proper oversight and governance over the planning and execution of IT investments. Stakeholder roles and responsibilities for projects are documented in the Commonwealth Project Management Standard. At minimum, a monthly review of Major IT investments is required; a monthly review of all IT investments is strongly recommended. All Commonwealth IT investments must be documented in the CTP. The ITIB will review the performance of Major IT Projects in a quarterly update to the RTIP Report that includes:

- IT investment status as it relates to cost, schedule and scope;
- Significant changes since the last report;
- Identification of underperforming investments;
- Recommended remediation plans;
- Remediation plan status (if required); and,
- Recommendations to continue, modify or terminate each investment.

In addition, the ITIB reviews updates to the CTP on a quarterly basis.

4.3.1.3 Close IT Investments

The final requirement in the Control Phase is to close all IT investments. Major and non-major IT projects, procurements, contracts and requests for service must be closed out in accordance with Commonwealth standards and guidelines. During this point in the IT investment lifecycle, it is important to document lessons learned, produce final closeout reports, and ensure contractual requirements have been met. As part of this requirement, stakeholders should update the IT asset performance measures and document them in the agency ATP if available.

4.3.2 Control Phase Roles and Responsibilities

The roles and responsibilities of the stakeholders in the ITIM lifecycle are documented in both the *Code of Virginia* and in Commonwealth standards. The following is a summary of the major stakeholder roles and responsibilities for the ITIM Control Phase.

Roles	Control Phase Responsibilities*
ITIB	• Approve or disapprove Major IT Project development; • Approve criteria for the review and approval of the planning, scheduling, and tracking of Major IT Projects; • Review the status of Major IT Projects; and • Approve or disapprove the termination of Major IT Projects recommended for termination by the CIO.
CIO	• Review and grant Development Approval or disapproval of Major and Non-Major IT Projects and procurements; • Appoint an Internal Agency Oversight Committee (IAOC) for each Major IT project to provide oversight and direction to the project for which they are chartered and participates (or appoints a representative) as a voting member on the Proponent Secretariat Oversight Committee (PSOC) for Major IT projects; and • Approve, as a part of the project plan, the target asset performance measures to be used in the asset's Post Implementation Review (PIR).
PMD	• Provide oversight and governance on all Major and Non-Major IT Projects; • Provide appropriate reports to the CIO and ITIB in accordance with the *Code of Virginia*; and • Ensure projects are being run in accordance with statewide technical and data standards for information technology and related systems.

CAO	• When delegated by the CIO, and within the Policy, Standards and Guidelines already established in the Commonwealth:
	  o Serve on the oversight committee for each statewide or multiagency Major IT application project which has received development approval from the ITIB; and
	  o Approve, as a part of the project plan, the target asset performance measures to be used in an IT application investment's Post Implementation Review (PIR).

Secretariat	• Review, approve, and comment on monthly status reports, baseline adjustments greater than 10%, and IV&V reports for each active Major project as needed.
Agency	• Translate business value into asset performance measures; • Develop detailed project plans and execute projects as directed in the Commonwealth Project Management Standard; • Develop applications and application modifications in accordance with statewide technical and data standards for information technology and related systems; and • Prepare and submit monthly status reports, requests for baseline adjustments greater than 10%, and IV&V reports for each Major IT Project (as scheduled).

* Other requirements are documented in the Commonwealth of Virginia ITRM Project Management Standard and *Code of Virginia*.

For ease of reference, the appendices enumerate ITIM Phase requirements by stakeholder.

4.4 Evaluate Phase

The purpose of the Evaluate Phase is to compare the actual performance results and benefits of an investment to both the range of target performance measures that were initially projected in the IBC and refined in the Control Phase, and the risks of operating and maintaining the asset, such as reliability, impact of failure, and cost of failure mitigation. The Evaluate Phase includes all agency IT assets that have been in operation six or more months.

In the Evaluate Phase, new assets receive a Post Implementation Review (PIR). The PIR is an evaluation process that compares the expected results before the implementation of a project (as identified in the IBC and Control Phase) with the actual performance achieved by the IT asset. In addition, the key performance metrics of the assets are monitored at regular intervals and "out of bounds" performance statistics trigger in-depth review and analysis.

Evaluate Phase performance measurements are collected and evaluated by the agency and reported to the CAO. The performance measurements are also reported to the CIO and ITIB for Commonwealth investments. These measurements provide a better understanding of investment performance and identify necessary investment adjustments or the need for a replacement investment. The Evaluate Phase answers the question "Are the selected IT investments continuing to deliver the expected business value?"

4.4.1 Evaluate Phase Requirements

The high-level requirements of the Evaluate Phase and their relationship to the APM and PPM lifecycles are illustrated below.
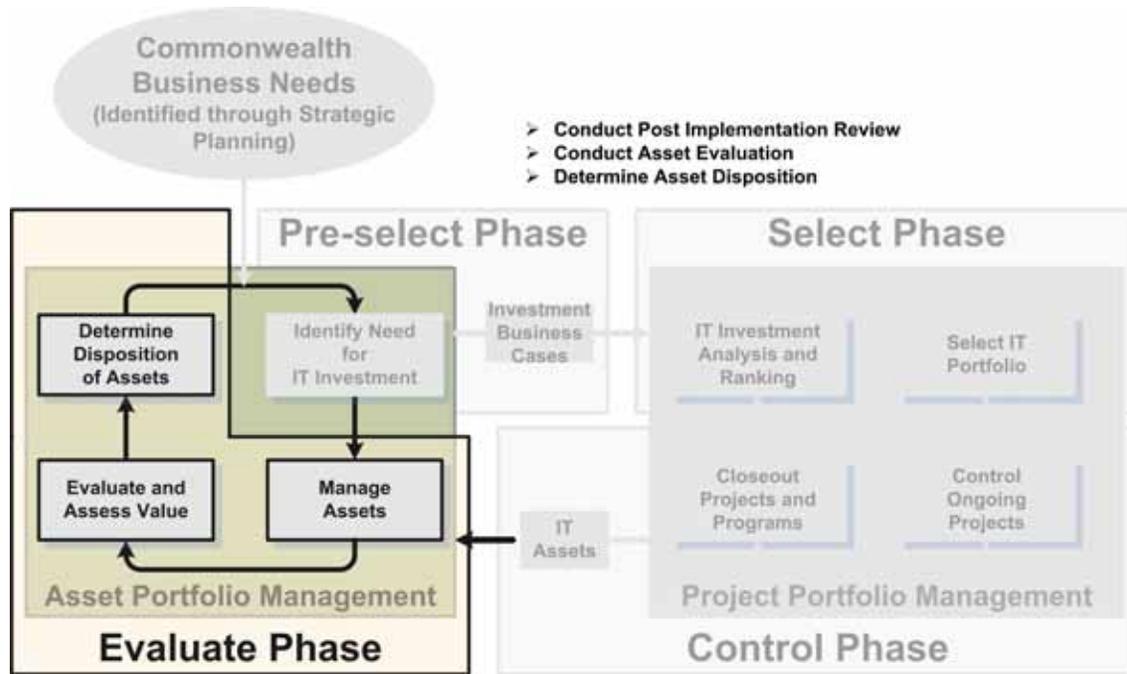
Figure 13: Evaluate Phase

4.4.1.1 Conduct Post Implementation Review

At the end of the ITIM Control Phase, after an IT investment initiative is closed out, the investment becomes an asset and is added to the ATP. IT assets must be managed to insure they are providing the business value expected by the Commonwealth. A PIR using asset performance measures established in the Control Phase will be completed on all new IT assets within 6 – 12 months of the investment becoming an IT asset. For Commonwealth investments, the PIR must follow the workflow in the Commonwealth IT portfolio management tool.

4.4.1.2 Conduct Asset Evaluation

IT Asset Evaluations will be performed on all IT assets at both the agency and Commonwealth level and will provide a method for timely identification of sub-optimal performance. Each IT asset is assigned associated performance criteria, a monitoring schedule for the collection of performance data, and an identified range of acceptable performance. Performance criteria will be based on industry benchmarks, the performance metrics identified by the agency, the agency's strategic plan, and the Commonwealth's performance measurements.

4.4.1.3 Determine Asset Disposition

The final requirement in the Evaluate Phase is to make a determination to maintain, migrate, improve or retire each IT asset. Agencies must decide to:

1. **Maintain**—continue to sustain IT assets that will meet or exceed the business needs of the agency;
2. **Migrate**—modify the use of IT assets that will not meet the agency business needs that justified the initial IT investment, but which can be repositioned to address other agency business needs;
3. **Improve**—reengineer or otherwise modernize IT assets that will not meet the agency business needs that justified the initial IT investment, but which can be used to meet other agency business needs; or,
4. **Retire**—withdraw from service IT assets that do not justify maintenance, migration, or improvement due to limited business value.

As part of determining the disposition of IT assets, agencies must analyze gaps between current business needs and the performance of IT assets. These gaps will then be added to the overall list of business requirements from the agency and used in the Pre-Select Phase.

4.4.2 Evaluate Phase Roles and Responsibilities

The roles and responsibilities of the stakeholders in the ITIM lifecycle are documented in both the *Code of Virginia* and in Commonwealth standards. The following is a summary of the major stakeholder roles and responsibilities for the ITIM Evaluate Phase.

Roles	Evaluate Phase Responsibilities*
ITIB	• Appoint the CIO as the chief administrative officer of the Board to oversee the operation of VITA.

Roles	Evaluate Phase Responsibilities*
CIO	• Submit to the Governor and General Assembly an annual report on all contracts describing each information technology program or project associated with the contract, its progress, revenue impact, and such other information as may be relevant; • Evaluate the needs of agencies in the Commonwealth with regard to (i) a consistent, reliable, and secure information technology infrastructure, (ii) existing capabilities with regard to building and supporting that infrastructure, and (iii) recommended approaches to ensure the future development, maintenance, and financing of an information technology infrastructure befitting the needs of state agencies and the service level requirements of its citizens; • Produce a monthly status report on partnership infrastructure projects to provide scope, schedule, cost, risk, and performance measure information; and • Build and maintain a Commonwealth Technology Portfolio to include both assets and projects.
PMD	• Participate in Major IT Project Post Implementation Reviews as directed in the Commonwealth Project Management Standard.

CAO	• When delegated by the CIO, and within the Policy, Standards and Guidelines already established in the Commonwealth:
	    o Build and maintain a portfolio of all applications used by state agencies (in the Executive Branch) and public institutions of higher education; and
	    o Consult with agencies on the disposition of applications.

Secretariat	• Monitor agency use of IT in support of the delivery of stakeholder services.
Agency	• Conduct Post Implementation Reviews on Major IT Projects 6 to 12 months after the IT investment has been implemented using the asset performance measures established in the Control Phase; • Use asset performance measures to measure the business value, cost, systems performance, technical relevance (EA), and risk of the agency's IT assets; • Document IT asset performance using industry benchmarks, the performance metrics identified by the agency, the agency's strategic plan, and the Commonwealth's performance measurements; • Analyze gaps between current business needs and performance of IT assets; and • Make a determination to maintain, migrate, improve, or retire each IT asset in the agency technology portfolio.

* Other requirements are documented in the Commonwealth of Virginia ITRM Project Management Standard and *Code of Virginia*

For ease of reference, the appendices enumerate ITIM Phase requirements by stakeholder.

APPENDIX A: ACRONYMS USED IN THE ITIM STANDARD

APM—Commonwealth Asset Portfolio Management

APP—Approved for Project Planning

ATP—Agency Technology Portfolio

CAO—Commonwealth Chief Applications Officer

CIO—Commonwealth Chief Information Officer

CPM Methodology—Commonwealth Project Management Methodology

CTM Policy—Commonwealth Technology Management Policy

CTP—Commonwealth Technology Portfolio

DPB—Department of Planning and Budget

EA—Enterprise Architecture

IBC—Investment Business Case

IFB—Invitations for Bid

IPP—Identified for Preliminary Planning

ISPM—Commonwealth Infrastructure Service Portfolio Management

ITIB—Information Technology Investment Board

ITIM Standard—Commonwealth of Virginia Information Technology Resource Management ITIM Standard

ITIM—Information Technology Investment Management

IT—Information Technology

ITSP—Agency IT Strategic Plan

PIR—Post Implementation Review

PMD—Commonwealth Project Management Division

PPM—Commonwealth Project Portfolio Management

RFS—Requests for Service

RTIP Report—Recommended Technology Investment Projects Report

SPM—Commonwealth Solutions Portfolio Management

VITA—Virginia Information Technologies Agency

APPENDIX B: ITIB ITIM PHASE RESPONSIBILITIES

Phase	ITIB Responsibilities
Pre-select (Identify) Phase	• Approve all criteria for evaluating Commonwealth IT Investments; • Approve statewide information technology architecture and related set of system standards; • Approve the four-year Commonwealth of Virginia Strategic Plan for Information Technology; • Approve statewide technical and data standards for information technology and related systems; and • Approve strategies, standards, and priorities recommended by the Chief Information Officer for the use of information technology for state agencies in the executive branch of state government.
Select Phase	• Approve the evaluation, scoring, and ranking criteria for major IT projects; • Approve the inclusion of investments, and the ranking of those investments, in the RTIP Report; and • Submit by September 1 of each year the RTIP Report, with priorities for funding recommended projects, to the Governor and the General Assembly.
Control Phase	• Approve or disapprove Major IT Project development; • Approve criteria for the review and approval of the planning, scheduling, and tracking of Major IT Projects; • Review the status of Major IT Projects; and • Approve or disapprove the termination of Major IT Projects recommended for termination by the CIO.
Evaluate Phase	• Appoint the CIO as the chief administrative officer of the Board to oversee the operation of VITA.

APPENDIX C: CIO ITIM PHASE RESPONSIBILITIES

Phase	CIO Responsibilities
Pre-select (Identify) Phase	• Define criteria for evaluating Commonwealth IT investments; • Review and approve all state agency and public institution of higher education information technology plans; • Evaluate and recommend approval or disapproval of the IT components of agency strategic plans or IT investment changes to agency strategic plans; • Develop the four-year Commonwealth of Virginia Strategic Plan for Information Technology, update the Plan annually, and submit to the Board for approval; • Plan and forecast future needs for information technology and conduct studies and surveys of organizational structures and best management practices of information technology systems and procedures; • Assist state agencies and public institutions of higher education in the development of information management plans and the preparation of budget requests for information technology; • Develop statewide technical standards for information technology and related systems; and • Define the Commonwealth's "as-is" and "to-be" Enterprise Architecture.
Select Phase	• Review agency IT budgets and make recommendations to the Department of Planning and Budget (DPB); • Build and maintain a Commonwealth Technology Portfolio (CTP) to include both assets and projects; • Review and approve for planning all Major and Non-major IT Projects and procurements over $100,000; and • Review Commonwealth IT portfolio analysis, accompanying documents, and the recommended Commonwealth IT portfolio and submit the annual RTIP Report, with recommended priorities for funding the projects, to the Board in anticipation of the Board submitting the RTIP to the Governor and the General Assembly by September 1 of each year.
Control Phase	• Review and grant Development Approval or disapproval of Major and Non-Major IT Projects and procurements; • Appoint an Internal Agency Oversight Committee (IAOC) for each Major IT project to provide oversight and direction to the project for which they are chartered and participates (or appoints a representative) as a voting member on the Proponent Secretariat Oversight Committee (PSOC) for Major IT projects; and • Approve, as a part of the project plan, the target asset performance measures to be used in the asset's Post Implementation Review (PIR).

Phase	CIO Responsibilities
Evaluate Phase	• Submit to the Governor and General Assembly an annual report on all contracts describing each information technology program or project associated with the contract, its progress, revenue impact, and such other information as may be relevant; • Evaluate the needs of agencies in the Commonwealth with regard to (i) a consistent, reliable, and secure information technology infrastructure, (ii) existing capabilities with regard to building and supporting that infrastructure, and (iii) recommended approaches to ensure the future development, maintenance, and financing of an information technology infrastructure befitting the needs of state agencies and the service level requirements of its citizens; • Produce a monthly status report on partnership infrastructure projects to provide scope, schedule, cost, risk, and performance measure information; and • Build and maintain a Commonwealth Technology Portfolio to include both assets and projects.

APPENDIX D: PMD ITIM PHASE RESPONSIBILITIES

Phase	PMD Responsibilities
Pre-select (Identify) Phase	• Evaluate all IT investments that qualify as Commonwealth Portfolio investments according to ITIB-approved criteria; • Review agency and public institution of higher education information management and information technology plans and recommend approval or disapproval to the CIO; • Monitor agency and public institution of higher education implementation of information management and information technology plans and periodically report findings to the CIO; • Every two years, as part of the budget process, evaluate agency and public institution of higher education Information Technology Strategic Plans (ITSP) and recommend approval or disapproval to the CIO; • Insure all agencies and public institutions of higher education under oversight and governance have a CIO-approved ITSP; and • On an ongoing basis, evaluate IT investment changes to agency and public institution of higher education strategic plans and recommend for approval or disapproval to the CIO.
Select Phase	• Provide ongoing assistance and support to state agencies and public institutions of higher education in the development of information technology projects; • Review agency IT investments and recommend planning approval or disapproval to the CIO; • Evaluate, score, and rank all major IT projects according to the approved ITIB criteria and submit a recommendation for funding to the CIO; • Prepare the Annual Recommended Technology Investment Projects (RTIP) Report and provide a quarterly update; • Obtain ITIB approval of the RTIP Report with recommended priorities for funding projects; • Obtain CIO and ITIB key themes and messages and prepare the RTIP Report for delivery to the Governor and General Assembly on September 1 of each year; and • Review and approve agency IT budget recommendations to the CIO.
Control Phase	• Provide oversight and governance on all Major and Non-Major IT Projects; • Provide appropriate reports to the CIO and ITIB in accordance with the *Code of Virginia*; and • Ensure projects are being run in accordance with statewide technical and data standards for information technology and related systems.
Evaluate Phase	• Participate in Major IT Project Post Implementation Reviews as directed in the Commonwealth Project Management Standard.

APPENDIX E: CAO ITIM PHASE RESPONSIBILITIES

Phase	CAO Responsibilities

Pre-select (Identify) Phase	• When delegated by the CIO, and within the Policy, Standards and Guidelines already established in the Commonwealth:
	   o Develop statewide data standards for information technology and related systems;
	   o Develop and obtain ITIB approval of the business criteria used for evaluating the enterprise and collaboration opportunities in agency IT application projects;
	   o Evaluate the enterprise and collaboration opportunities in agency IT application projects using ITIB approved criteria; and
	   o In coordination with the CIO, define the Commonwealth's "as-is" and "to-be" Enterprise Business Architecture, Enterprise Information Architecture, and Enterprise Solutions Architecture.

Select Phase	• Coordinate with Secretariats to prioritize the Secretariat's Major IT application Projects for the RTIP Report; • Work with the agencies to establish a Commonwealth Applications Strategy that establishes priorities for business application requirements; and • As a supplement to the Preliminary Risk Assessment performed by PMD, identify the risks associated with IT application investments as presented in the RTIP report and document the risks in the Commonwealth Technology Portfolio (CTP).

Control Phase	• When delegated by the CIO, and within the Policy, Standards and Guidelines already established in the Commonwealth:
	   o Serve on the oversight committee for each statewide or multiagency Major IT application project which has received development approval from the ITIB; and
	   o Approve, as a part of the project plan, the target asset performance measures to be used in an IT application investment's Post Implementation Review (PIR).

Evaluate Phase	• When delegated by the CIO, and within the Policy, Standards and Guidelines already established in the Commonwealth:
	   o Build and maintain a portfolio of all applications used by state agencies (in the Executive Branch) and public institutions of higher education; and
	   o Consult with agencies on the disposition of applications.

APPENDIX F: SECRETARIAT ITIM PHASE RESPONSIBILITIES

Phase	Secretariat Responsibilities
Pre-select (Identify) Phase	• Establish business priorities for their Secretariat.
Select Phase	• Prioritize the Secretariat's Major IT Projects.
Control Phase	• Review, approve, and comment on monthly status reports, baseline adjustments greater than 10%, and IV&V reports for each active Major project as needed.
Evaluate Phase	• Monitor agency use of IT in support of the delivery of stakeholder services.

APPENDIX G: AGENCY ITIM PHASE RESPONSIBILITIES

Phase	Agency Responsibilities
Pre-select (Identify) Phase	- Identify business needs and prioritize potential investments; - Document target performance metrics and identify business value for potential investments in Investment Business Cases; - Research possible enterprise or collaboration opportunities for the agency; and - Update the Agency Strategic Plan and Agency Technology Portfolio with IT investment business cases, identified business needs, and identified value for each potential investment.
Select Phase	- Establish a process for evaluating, scoring, and ranking IT investments for the agency; and - Prioritize agency IT Projects.
Control Phase	- Translate business value into asset performance measures; - Develop detailed project plans and execute projects as directed in the Commonwealth Project Management Standard; - Develop applications and application modifications in accordance with statewide technical and data standards for information technology and related systems; and - Prepare and submit monthly status reports, requests for baseline adjustments greater than 10%, and IV&V reports for each Major IT Project (as scheduled).
Evaluate Phase	- Conduct Post Implementation Reviews on Major IT Projects 6 to 12 months after the IT investment has been implemented using the asset performance measures established in the Control Phase; - Use asset performance measures to measure the business value, cost, systems performance, technical relevance (EA), and risk of the agency's IT assets; - Document IT asset performance using industry benchmarks, the performance metrics identified by the agency, the agency's strategic plan, and the Commonwealth's performance measurements; - Analyze gaps between current business needs and performance of IT assets; and - Make a determination to maintain, migrate, improve, or retire each IT asset in the agency technology portfolio.