



Commonwealth of Virginia Strategic Plan for Information Technology

Results of Stakeholder Workshops

January 2006

| | | |
|----------|---|-----------|
| 1 | INTRODUCTION | 2 |
| 2 | ACKNOWLEDGMENTS..... | 3 |
| 3 | EXECUTIVE SUMMARY | 6 |
| 4 | EXTERNAL TRENDS..... | 11 |
| 4.1 | DEMOGRAPHIC TRENDS | 11 |
| 4.2 | PUBLIC EXPECTATIONS | 11 |
| 4.3 | ECONOMIC TRENDS..... | 12 |
| 4.4 | EDUCATION TRENDS | 13 |
| 4.5 | POLITICAL TRENDS | 14 |
| 4.6 | GENERAL TECHNOLOGY TRENDS | 14 |
| 4.7 | WORKFORCE TRENDS | 15 |
| 5 | CITIZEN SERVICES | 16 |
| 5.1 | SERVICES..... | 16 |
| 5.2 | SERVICE DELIVERY | 16 |
| 5.3 | CITIZEN COMMENTS..... | 17 |
| 6 | BUSINESS SERVICES..... | 18 |
| 6.1 | SERVICES..... | 18 |
| 6.2 | SERVICE DELIVERY | 19 |
| 6.3 | BUSINESS COMMENTS..... | 19 |
| 7 | VIRGINIA GOVERNMENT BUSINESS TRENDS | 20 |
| 7.1 | COMMUNICATIONS..... | 20 |
| 7.2 | SERVICES..... | 21 |
| 7.3 | MANAGEMENT | 23 |
| 8 | VIRGINIA INFORMATION TECHNOLOGY TRENDS | 27 |
| 8.1 | INFRASTRUCTURE | 27 |
| 8.2 | SECURITY | 27 |
| 8.3 | INFORMATION EXCHANGE | 28 |
| 8.4 | APPLICATIONS..... | 29 |
| 8.5 | SERVICE DELIVERY | 30 |
| 8.6 | MANAGEMENT | 31 |
| 8.7 | WORKFORCE | 32 |
| 8.8 | PROCUREMENT..... | 32 |
| 8.9 | EXISTING ENTERPRISE/COLLABORATION IT PROJECTS..... | 33 |
| 9 | TECHNOLOGY TRENDS | 34 |
| 9.1 | INFRASTRUCTURE | 34 |
| 9.2 | SECURITY | 35 |
| 9.3 | INFORMATION EXCHANGE | 35 |
| 9.4 | APPLICATIONS..... | 35 |
| 9.5 | SERVICE DELIVERY | 37 |
| 9.6 | MANAGEMENT | 37 |
| 9.7 | WORKFORCE | 38 |
| 9.8 | PROCUREMENT..... | 39 |

1 Introduction

The Commonwealth of Virginia is continually striving to improve its competitive position in the national and global marketplace, and to provide the best environment for economic development and quality of life for citizens. Virginia's investment in information technologies plays a critical supporting role in reaching the state's business goals as well as maintaining the Commonwealth's position of best-managed state in the nation.

The Commonwealth Information Technology Strategic Planning project has been designed to create a strategic plan that will provide technology direction and guidance for state agencies and a foundation upon which to base technology investment decisions that are supportive of Virginia's business direction.

Sixteen stakeholder workshops and many one-on-one sessions were conducted to collect the perspectives of stakeholders. Over 130 people contributed to the products recapped in this document.

Virginia citizen and business representatives, Virginia government and IT leaders, higher education representatives, legislators and legislative staff all gave generously of their time and expertise to work with this project, outlining and describing what matters most in moving technology forward to support the business of the Commonwealth.

Technology experts' "view over the horizon" on leading edge technology showing promise for state government were gathered through futures presentations, a vendor/partner workshop, and reviews of Gartner Group reports.

The products of these workshops sessions will provide the strategic planning retreat participants with stakeholder perspectives on external trends that may impact Virginia, citizen and business expectations, Virginia government business trends, Virginia IT trends and leading edge technology direction.

2 Acknowledgments

Listed below are the individuals who contributed to the creation of this document. This contribution of time and effort to Virginia’s information technology future is greatly appreciated.

| | |
|--------------------|---|
| Clay Alward | Virginia Racing Commission/VITA |
| Benny Ambler | Virginia Information Technologies Agency |
| Velma J.Ballard | Department of Housing and Community Development |
| Dave Barbour | Virginia Museum of Fine Arts |
| Erik Barth | Virginia Marine Resources Commission |
| Bill Bell | Dominion Resources |
| Paul Bender | Department of Planning and Budget |
| Foster Billingsley | Virginia Commission for the Arts |
| Jim Bowen | Department of Forestry |
| Jeanne Branch | Department of Professional & Occupational Regulation, |
| Kim Brewer | Department of Employee Dispute Resolution |
| Mindia Brown | Department of Forestry |
| Dave Burhop | Department of Motor Vehicles |
| Pamela Campen | Department of Planning and Budget/VITA |
| Leslie Carter | Virginia Information Technologies Agency |
| Tim Catherman | Department of Aging |
| Doug Chandler | Department of Forensic Science |
| Karen Chappell | Department of Motor Vehicles |
| Mary C. Clarke | Virginia Department of Transportation |
| Gay Cohn | Virginia Department of Health |
| John Colligan | Department of Criminal Justice Services |
| Steven Combs | Department of Veterans Services |
| Steven Conley | Woodrow Wilson Rehabilitation Center |
| Mark D'Amato | Board of Accountancy |
| Joe Damico | Department of General Services |
| Charline Davidson | Department of Mental Health, Mental Retardation, & Substance Abuse Services |
| Rick Davis | Department of Corrections |
| Robyn de Socio | Compensation Board |
| Frank Derby | Unisys |
| Douglas Dix | Department of State Police |
| Debbie Dodson | Virginia Information Technologies Agency |
| Fred Duball | Virginia Information Technologies Agency |
| Lynn Dubard | Virginia Interactive |
| John Eagle | City of Hampton, Virginia |
| Dorothy Edwards | Richard Bland College |
| Bill Ernst | Department of Housing and Community Development |
| Leonard Eshmont | Department of Aging |
| Bob Farley | Department of Treasury |
| Jan Fatouros | Department of General Services |
| Nancy Feldman | Board of Accountancy |

| | |
|--------------------|---|
| Jim Fisher | Department of Accounts |
| Keith W. Francis | 360, Incorporated. |
| Carl Garrison | Department of Forestry |
| R.F. "Chip" German | University of Mary Washington |
| Perida Giles | Department of Agriculture and Consumer Services |
| Craig Goeller | Department of Medical Assistance Services |
| Bruce Gould | Motor Vehicle Dealer Board |
| Hubert Harris | Virginia Employment Commission |
| Bo Harris | Department of Social Services |
| Karen Helderman | Auditor of Public Accounts |
| Joe Hilbert | Department of Health |
| Stanford Hostetter | Department of Mental Health, Mental Retardation, Substance Abuse Services |
| Quatro Hubbard | Department of Historic Resources |
| Dale Hulvey | James Madison University |
| Dr. Evelyn Hume | Longwood University |
| Delveta Hylton | Virginia Museum of Natural History |
| Katherine Idrissi | Motor Vehicle Dealer Board |
| Dean Irwin | Northrop Grumman |
| Robert H. Jenkins | Department of Juvenile Justice |
| Jim Keck | Department of Emergency Management |
| Virgil Kopf | Department of Game and Inland Fisheries |
| Janet LaFleur | Department of Environmental Quality |
| Walter Kucharski | Auditor of Public Accounts |
| Ariel Lambert | Department of Historic Resources |
| Loyd Lane | Virginia Information Technologies Agency |
| Ronald Layne | Department of Forensic Science |
| Cheryl Lewis | Department of Veterans Services |
| David Lightfoot | Central Virginia Community College |
| Marion Long | Department of State Police |
| Tod Love | Department of Housing and Community Development |
| Paul Lubic | Virginia Information Technologies Agency |
| Debbie Madison | Department of Corrections |
| Tod Massa | State Council on Higher Education in Virginia |
| Margaret Massey | Norfolk State University |
| H. Neil Matkin | Virginia Community College System |
| Del. Joe May | Virginia House of Delegates |
| Randy McCabe | Department of Accounts |
| Mark Monson | Department of Health Professions |
| Frank Moore | Longwood University |
| Chris Moore | Dept. of Medical Assistance Services |
| Charles R. Moore | Alcoholic Beverage Control |
| Newton J. Munson | Virginia Institute of Marine Science |
| Beth Nelson | Department of Emergency Management |
| Del. Samuel Nixon | Virginia House of Delegates |
| Don O'Connell | Department of Agriculture and Consumer Services |
| Pat Paquette | Department of Health Professions |
| Jim Peck | Science Museum of Virginia |
| Nan Pemberton | Virginia Board for People with Disabilities |

| | |
|---------------------|---|
| Rick Phillips | Department of Accounts |
| Homer Pierce | Virginia School for the Deaf, Blind & Multi-Disabled at Hampton |
| Steve Pittard | Department of Rail and Public Transportation |
| Bill Price | Department of Conservation and Recreation |
| Jean Puckett | Jamestown-Yorktown Foundation |
| Darlene Quackenbush | James Madison University |
| Murali Rao | Virginia Department of Transportation |
| Todd Richardson | Department of Mines, Minerals and Energy |
| Peter Rotscheid | Virginia Department of Health |
| Michael Salsberg | Unisys |
| Chris Saneda | Virginia Information Technologies Agency |
| Alan G. Saunders | Office of Comprehensive Services |
| Chuck Savage | Office of Comprehensive Services |
| Joseph W. Schaefer | Department of Forestry |
| Walt Sevon | George Mason University |
| Jerry Simonoff | Virginia Information Technologies Agency |
| Catherine Slusser | Department of Historic Resources |
| Jay Snyder | Jamestown-Yorktown Foundation |
| Scott Somerhalder | Virginia Interactive |
| John Stanley | Riverside Health System |
| Ernie Steidle | Department of Rehabilitative Services |
| Jeb Stewart | Virginia Tech |
| Harry Sutton | Department of Social Services |
| John Taylor | Department of Corrections |
| Valerie Thomson | Department of Environmental Quality |
| Glen Tittermary | JLARC |
| Jeff Tozzi | Microsoft |
| Dennis Unger | Department of Rehabilitative Services |
| Craig Vanderland | Alcoholic Beverage Control |
| Cindy Vernacchia | Virginia State Police |
| Paul Van Lenten | House Appropriations |
| Frederick Waithe | Dept. of Medical Assistance Services |
| Lisa Wallmeyer | JCOTS |
| Stephen Walz | Department of Mines, Minerals and Energy |
| Peggy Ward | Virginia Information Technologies Agency |
| Lynne Wasz | Virginia Information Technologies Agency |
| Rusty Waterfield | Old Dominion University |
| Kenny White | Virginia Information Technologies Agency |
| Al Williams | Department of Housing and Community Development |
| Marcella Williamson | Virginia Information Technologies Agency |
| Mark Willis | Virginia Commonwealth University |
| Anne Wilmoth | State Compensation Board |
| Patrick Wilson | Department of Correctional Education |
| Walter Witschey | Science Museum of Virginia |
| Elizabeth Wong | Virginia Museum of Fine Arts |
| Susan Woolley | Virginia Information Technologies Agency |

3 Executive Summary

This summary provides a broad overview of the perspectives of the Commonwealth Strategic Plan for Information Technology stakeholder workshops. The workshops were designed to capture high-level external trends that may impact Virginia, perspectives on citizen and business services, Virginia government business trends, Virginia information technology trends, and leading edge technology trends that may have implications for state government. These information sets will inform the retreat participants as they create the plan.

External Trends

These trends provide an overview of what participants perceive are factors that may need to be considered when planning for Virginia's future.

- Rapid change in technology, mobility, flexibility and broadband infrastructure were trends most identified by workshop participants. Citizens, the business community and state government staff all expect Virginia to provide efficient and effective services through optimal use of technology.
- Demographic trends that are impacting Virginia include; an aging population that will put increasing demands on senior services, cultural diversity that requires expansion of multilingual services; a growing population that is increasing its demand for services and shifting from rural to urban areas; and a continuing digital divide for the poor and elderly.
- Federal deficits are reducing resources available to states, even as federal requirements for states are growing. High energy costs and rising health care costs are reducing resources for both businesses and government.
- Participants also recognized that Virginia is competing for industries and jobs in an increasingly global economy. They were also concerned that rising tuition costs may put higher education out of reach for more Virginians, hurting Virginia's ability to compete for quality jobs in the future.
- Workshop participants believe federal and state regulation and requirements for performance measurement are increasing, and reflect a trend toward greater accountability and transparency in government.
- Virginia's workforce is aging, and the Commonwealth will face significant knowledge loss in its workforce in the upcoming years. Recruiting and retaining staff are perceived to be a challenge, and workshop participants believe it has become more difficult to attract workers to state government jobs.

Citizen Services

Citizen participants indicated they would like more services delivered through the Internet, in both transactional capability and information access. They would like those services delivered through a comprehensive web portal, and also want more options in subscribing to email notification services.

Business Services

Businesses are pleased with the progress Virginia is making in providing services electronically, but see room for improvement. Businesses would like to see increased availability of state data in formats that can be downloaded and analyzed, and to share data with state agencies in the areas of public safety and geospatial information. They want state agencies to improve their capacity to share data with each other to reduce redundancy in state reporting requirements for business, and for state government to cooperate with the federal government in providing universal IDs other than social security numbers.

Virginia Government Business Trends

While each Virginia state agency creates, implements and monitors its own strategic plan, trends from these plans have emerged that cross agency and secretariat boundaries, and represent the overarching priorities and direction of the business of state government in aligning to the eight long term objectives set forth by the Council on Virginia's Future.

Workshop participants believe that state agencies must continue to seek more effective avenues of communicating with the public and that increased public awareness of government functions, services and outcomes are essential to promote good public and private decision-making. Opportunities also exist in internal communication, within and between agencies, to strengthen collaboration and effectiveness, as well as to reduce redundancies.

Participants perceive that the demand for services is increasing and strong emphasis is placed on providing services cost effectively and efficiently to meet growing demands with limited resources.

The first and most important obligation in governance is execution and compliance with code mandates. Agency business leaders see opportunities for improving the use of information to promote and ensure compliance.

Fiscal management trends reflect an emphasis on good stewardship and accountability, while funding trends reflect concern over adequacy of resources and the need to maximize opportunities for additional funding where needed for programs.

Ensuring an effective, skilled and productive workforce remains a priority for agencies.

In the area of planning, improvement of internal controls and use of planning methods for maximizing efficiency are ongoing concerns. Emerging directions in planning include focusing on core competencies and incorporating best practices from the private sector, re-engineering business processes, and evaluating government services based on performance metrics, a leap forward in government accountability.

Virginia Information Technology Trends

Trends identified by workshop participants include moving toward infrastructure centralization as well as a need to expand on and improve infrastructure throughout the Commonwealth.

Virginia IT leaders identified increasing emphasis on security as high-priority. Maintaining a robust information technology security program is viewed as critical to ensure effective operation of the Commonwealth of Virginia’s enterprise.

Workshop participants identified the need to improve the ability to share data across agencies, and between state agencies and localities, and to provide more effective information access to the public.

Participants perceive that to an extent, information sharing and exchange among state agencies and between the state and localities are obstructed in the current “stove-piped” environment. Where information sharing is required among and between these entities, the lack of common data vocabularies slows business processes, and creates redundancies for both agencies and citizens. Although some progress has been made, more effort is needed to detail how information sharing responsibilities and relationships will advance this task.

Virginia IT leaders recognize consolidation of technologies that provide administrative functions will allow the Commonwealth to provide more effective services, reduce redundancy, and lower costs.

In addition, replacement of outdated legacy systems offers not only the opportunity for cost savings and improved service, but also to coordinate similar projects within and across secretariats.

Geospatial technology, data management, and data mining were identified as key applications technologies to support business decisions.

Service-oriented architecture has the potential to “join up” government through interactive business components that are usable across application and enterprise boundaries.

IT leaders, business leaders, Virginia businesses and citizens all identified the need to expand service delivery through a single point of contact portal, truly moving to an e-government environment.

Workshop participants identified movement toward greater accountability in IT investment, formalized risk management and documentation of results. Participants believe that governance of information technology as a service should be assistive rather than dictatorial.

Existing Enterprise/Collaboration IT Projects

Agency proposed IT projects that have been identified for initial planning or approved for planning and that were evaluated for potential IT collaboration opportunities. These represent enterprise level IT project trends in the Commonwealth, and are categorized in the following areas:

Services to Citizens: (the mission and purpose of Virginia government in terms of the services it provides both to and on behalf of its citizens) – Projects under Workforce Management: training and employment

Mode of Delivery: (describes the mechanisms the Commonwealth uses to achieve the purpose of government or its services for citizens) – Projects under Regulatory Compliance and Enforcement: permits and licensing

Support of Delivery of Services: (provides the critical policy, programmatic and managerial underpinnings that facilitate the state government’s delivery of services to citizens and to other state and local government agencies) Projects under Revenue Collection: debt collection, user fee collection

Management of Government Resources (refers to the resource management activities that must be performed for the State Government to operate effectively on a day-to-day basis) Projects under Administrative Management: equipment management, facilities management, travel. Financial Management – All functions, financial vehicles. Human Resource Management – All functions. Supply Chain Management - goods acquisition, inventory control, services acquisition

Leading Edge Technologies

New and emerging information technology trends were identified through seminars, workshops and discussions with the Commonwealth’s vendors/partners, the Higher Education CIO Council, and through research from a variety of sources, most often, from the Gartner Group.

IT management trends include asset management, global sourcing, IT utility, telecommunications and “joining up” government. Voice/data convergence is gaining ground.

Security, privacy and risk are increasingly critical and must be balanced but also must be consistent with business goals and business risk priorities. Information security and

identity management need to provide privacy, security, and accessibility to data with a higher granularity of access rights

Interoperability of systems and information exchange are vital. The demands of legislative and regulatory compliance requirements, such as Freedom of Information Act legislation, are realities forcing a risk management approach. Expectations of agencies are greater and so are constraints in funding and resources.

Service-Oriented Architecture provides interoperability, maintainability, lower integration and testing, re-use (lower cost, predictability), agility (real-time enterprise), enables shared services between enterprises, and reduced need for standardization

Web services protocols and standards used for exchanging data between applications or systems are becoming increasingly important.

Open source provides cost savings, with less upfront cost, interoperability, long-term archive, quicker time to market for software, and increased innovation.

Service delivery trends identified by participants include consolidated operational environments, wireless delivery, government provided broadband, single portal/public access, and GIS based services

Participants deemed IT management trends in asset management, integrating government and business performance management areas of potential.

The IT workforce will be undergoing profound changes in the future, as new technologies reduce the need for IT specialists.

Global sourcing demands a focus on operational excellence. In less than five years, the remote and virtual nature of global delivery will force the decoupling of business process and applications, which will give rise to selective business process utilities.

4 External Trends

In each workshop, participants were asked to identify high-level trends external to state government that may impact Virginia.

These trends provide an overview of what participants perceive are factors that may need to be considered when planning for Virginia's future.

4.1 *Demographic Trends*

Summary:

Demographic trends that are impacting Virginia include an: aging population that will put increasing demands on senior services; cultural diversity that requires the expansion of multilingual services; a growing population that is increasing demand for services and shifting from rural to urban areas; and a continuing digital divide for the poor and elderly.

Detail:

- ❑ **Aging Population:** The baby boom wave is reaching retirement. This puts increasing demands on Social Security, Medicare and senior services, while the tax base will decline due to fewer workers contributing income tax dollars to public coffers.
- ❑ **Cultural Diversity:** Increasing cultural diversity in Virginia, particularly in Northern Virginia, is creating more need for multilingual services, and service delivery tailored to different cultures.
- ❑ **Growing Population:** Virginia's population is increasing, and continuing to shift from rural areas to urban areas. Service needs are growing and shifting with the population, and urban migration stressing already overburdened transportation systems. The demand for services is growing, and budgets are not keeping pace. Greater efficiency and effectiveness are needed to provide additional services with static or declining resources.
- ❑ **Digital Divide:** While the overall population has become more technologically sophisticated, the digital divide still exists. The poor, frequently in need of state services, have the fewest options in accessing services. The elderly frequently do not possess the technological sophistication to use e-government. Language barriers also compound immigrants' ability to access services electronically as well as in person.

4.2 *Public Expectations*

Summary:

Workshop participants perceived that the public is becoming increasingly sophisticated in use of technology, and has growing expectations for electronic services, on flexible schedules that fit their lifestyles.

Along with increased use and access comes a demand for protection from new varieties of technologically enabled crime, as well as physical protection from terrorism and natural disasters.

Detail:

- **More Sophisticated Public:** The public is becoming increasingly sophisticated in use of technology, and has greater expectations of government in services and information. The public increasingly expects 24/7 access, with use of cell phones, wireless devices and broadband growing.
- **More Service Options:** Families have changed; there are more single heads of households, and more families with two breadwinners, creating a demand for services outside of traditional nine-to-five hours.
- **Demand for Electronic Security:** Technology has created new varieties of crime, such as identity theft, and the public wants protection.
- **Demand for Physical Security:** Terrorism threats, natural disasters and disease threats have increased public awareness of the need for government emergency planning and response. Continuity of operations planning and seamless communication among emergency responders and health care providers are high priorities.

4.3 Economic Trends

Summary:

Federal deficits are reducing resources available to states, even as federal requirements for state resources are growing. High energy costs and rising health care costs are reducing resources for both businesses and government. Workshop participants also recognized that Virginia is competing for industries and jobs in an increasingly global economy.

Detail:

- **Federal Deficits:** Federal deficits are growing and there is increasing competition for fewer resources. Public dissatisfaction will increase as services decline due to reduced funding. The Commonwealth is under pressure to preserve programs and services with state funds. Even as fewer federal funds are available, federal mandates such as the Health Insurance Portability and Accountability Act

(HIPAA) and the Americans with Disabilities Act (ADA) demand additional state resources.

- ❑ **High Energy Costs:** High energy costs are impacting agency budgets and the public. Rising costs have a disproportionate effect on low-income families and communities. High costs may provide impetus to seek alternative energy sources. Energy costs may also accelerate the move toward flexible work schedules and environments.
- ❑ **Health Care Costs:** Health care costs and the cost of insurance are leaving greater numbers of people without adequate coverage. This affects the workforce, as productivity is lost when workers do not have adequate health care. Reductions in federal health care subsidies also put additional pressure on state budgets.
- ❑ **Global Economy:** The global economy and technology have created more opportunities for companies to outsource on and offshore. Virginia needs to be competitive to retain and create jobs for Virginians. Worldwide political stability also affects the global economy and trade, which impacts Virginia's economy. Wars and terrorism change funding priorities, and shift funds away from initiatives such as revamping federal and state infrastructure.

4.4 Education Trends

Summary:

Workshop participants identified a need for schools to keep pace with rapidly changing technology, contributing to higher costs of public education.

They were also concerned that rising tuition costs may put higher education out of reach for more Virginians, hurting Virginia's ability to compete for quality jobs in the future.

Today's college students are members of the first generation whose abilities and expectations have been shaped by access to computers and the Internet since early childhood. IT has also facilitated different instructional methods, and this will impact these graduates' expectations when they enter adulthood and the workforce.

Detail:

- ❑ **Education and Technology:** Families are using increasingly sophisticated technology in the home. The schools need to keep pace with the latest technology in the classroom, raising the cost of public education.
- ❑ **Rising Tuition:** Higher education tuition is increasing, potentially widening the gap in educational opportunities between the economic classes and reducing the

number of Virginians able to obtain a quality education. Fewer educated workers will reduce Virginia’s competitiveness in attracting high quality industries.

- “Digital Natives”: The first generation of children raised with computers and the Internet is entering higher education institutions – they are “digital natives” rather than “digital immigrants”. These students have completely different styles of learning than previous generations and IT is facilitating new forms of instructional delivery. As this generation enters the workforce, they will have vastly different expectations of workplace environments and service provision, and this will further accelerate the move toward “virtual offices” and on-demand information and services from the state.

4.5 Political Trends

Summary:

Workshop participants believe federal and state regulation and requirements for performance measurement are increasing, and reflect a trend toward greater accountability and transparency in government. Clear and objective performance data is a key component in demonstrating results and cost effectiveness.

Participants also expressed concern with lack of continuity caused by Virginia’s four-year gubernatorial term limit.

Detail:

- Federal/State Regulations and Performance Measurement: Federal and state regulation and oversight are growing as a consequence of demand for accountability and demonstration of results. Improvements in collection and use of data are needed to meet reporting requirements and create transparency in government.
- Stricter Privacy Regulations and Advocacy: Citizens are wary of government involvement in private lives, resulting in legislation such as HIPPA. There are growing conflicts between protecting privacy and using data to improve services.
- Four Year Gubernatorial Term Limit: Virginia’s administration changes every four years, resulting in a lack of continuity and wasted resources due to changing priorities and initiatives.

4.6 General Technology Trends

Summary:

Rapid change, mobility, flexibility and broadband infrastructure were trends most identified by workshop participants. Citizens, the business community and state

government staff all expect Virginia to provide efficient and effective services through optimal use of technology.

Detail:

- ❑ **Rapid Change:** Rapid changes in technology accelerate obsolescence and upgrade/replacement costs. Changes in technology also require constant training to upgrade workforce skill sets.
- ❑ **Mobile Technology:** Increasing use of mobile technologies such as PDAs and cell phones, and increasing availability of wireless create demands for access to state services through these devices.
- ❑ **Broadband Infrastructure:** Rural areas are still lacking broadband access, creating an urban-rural digital divide that complicates service delivery and hinders economic development.
- ❑ **Information Exchange Standards:** Exchange standards establish a foundation for greater efficiency in data sharing and elimination of redundancy.

4.7 Workforce Trends

Summary:

Virginia’s workforce is aging and the Commonwealth will face significant knowledge loss in its workforce in the future. Recruiting, retaining, training and retraining the state workforce are perceived to be a challenge, and workshop participants believe it has become more difficult to attract workers to state government jobs.

Detail:

- ❑ **Aging Workforce:** A significant percentage of the Commonwealth’s workforce is approaching retirement. Aggressive recruitment, training and retraining will be needed to compensate for knowledge loss.
- ❑ **Generation X Workforce:** This generation of workers expects mobility, telecommuting and flextime. They also lack desire to work for state government, as salaries are not competitive with the private sector.

5 Citizen Services

In the citizens' workshop participants were asked to consider/reflect on the services they currently receive from state government and their expectations of services offerings for the future. They were also asked to consider how they would like to receive those services.

Citizen participants indicated they would like more services delivered through the Internet, in both transactional capability and information access. They would like those services delivered through a comprehensive web portal, and also want more options in subscribing to email notification services.

5.1 Services

Summary:

In the citizens' workshop the participants indicated a desire to interact with state government more on an electronic footing. This type of interaction covers the full spectrum of transactional and information services. They also indicated concerns on the accuracy and timeliness of information.

Detail:

The participants provided the following examples:

Transactions

- Vote on-line
- Pay taxes on-line (remit directly to the state, and not through commercial software)
- Driver's test on-line

Information

- 211 /311/511 transactions by phone and information available by phone and web (on social services, research, ordering vital records, etc.)
- Reporting highway problems (potholes, etc.), on-line
- Neighborhood sex offender site accurate & complete
- On-line textbooks and lesson plans
- On-line student aid assistance

5.2 Service Delivery

Summary:

The participants of the citizens workshop recognized that services are currently being provided in a multitude of different venues such as: in person, by telephone, through the mail, by media (radio and television), through intermediaries such as

financial institutions and through the Internet. They indicated that their belief is that these media are not being fully utilized. They also indicated that from a service delivery aspect they would like to see more use of electronic media and technologies that automatically deliver information to them.

Detail:

Examples provided by citizens in how they would like to see services delivered:

Delivery

- Email subscription services that would provide emergency data on natural disasters or other threats/topics/issues (Email emergency information (or reverse 911)).
- Comprehensive web site for all services available.
- The ability to authenticate once for state government across all services and agencies.
- “Push” services based on demographic or interest (i.e. 529 program sent to new parents)

Infrastructure

- Fiber infrastructure
- Wireless access points statewide

5.3 Citizen Comments

Participants were asked what other factors they believe need to be taken into consideration when the plan is created:

- The accuracy and timeliness of information supplied to citizens is sometimes an issue. Old/out of date information is left on websites, which can mislead.
- It would be interesting to get unit costs of services so we could make informed decisions about the cost/benefit relationship of state services.
- We would not like a huge tax increase

6 Business Services

In the business workshop participants were asked to consider/reflect on the services they currently receive from state government and their expectations of services offerings for the future. They were also asked to consider how they would like to receive those services. Following is a synopsis of the information they provided which has been categorized into “Services” (what services business desires) and “Service Delivery” (how they wish to receive those services).

6.1 Services

Summary:

Businesses are pleased with the progress Virginia is making in providing services electronically, but see room for improvement. Businesses would like to see increased availability of state data in formats that can be downloaded and analyzed, and to share data with state agencies in the areas of public safety and geospatial information. They want state agencies to improve their capacity to share data with each other to reduce redundancy in state reporting requirements for business, and for state government to cooperate with the federal government in providing universal IDs other than social security numbers.

Detail:

Business representatives provided the following examples:

Procurement

- Improve EVA

Information

- Data Accessibility – For example, employers should have access to employment data (VEC) for potential hiring, be able to access and download VHI detail data via web on a more timely basis, and download VEC data for analysis,, report on student data (Health Reporting) - Provide data via a web page
- Medicaid Eligibility - On-line access to eligibility screening for health care providers
- Coordinating Health and Human Services - A single database of client records that can be shared amongst local service providers (examples; Red Cross, DSS, H.E.L.P)
- Share information across public safety agencies and businesses, for example during weather and emergency events
- Share geospatial data among agencies and businesses
- Share information among regulatory agencies with similar missions, to eliminate duplicative reporting requirements for business

- ❑ Provide universal ID other than SSN (coordinate this with the federal government)

6.2 Service Delivery

Summary:

Businesses interact with the Commonwealth through multiple venues such as: email, interactive voice response, paper, EDI, mail, internet, telephone, VPN, EVA, in person, VCIN, mobile radio, the Internet, and through public officials. Business workshop participants saw opportunities to improve service delivery through more seamless and comprehensive access to services, both in physical location and on the Internet, and through the use of technologies that “push” information to customers, such as email subscription services.

Detail:

Examples provided by business representatives in how they would like to see services delivered:

- ❑ Regulation: A notification system that will email business about upcoming changes in regulations that will affect or influence their climate
- ❑ Business transaction web portal: A business that knows nothing about the state should have a single reference point for information and transactions regarding doing business with the Commonwealth via the web
- ❑ One-stop service centers statewide; more consolidated and coordinated presence of IT and agencies at the local/regional level
- ❑ Develop consistency in customer service and processes

6.3 Business Comments

Participants were asked what other factors they believe need to be taken into consideration when the plan is created:

- ❑ State agencies can operate at cross-purposes and that can be counter-productive. For example: Economic development and environmental protection may have contradictory positions. Agencies are “siloesd” – they need to be horizontally integrated.
- ❑ As the state moves forward with IT, there is a need to look at business process, and to look at streamlining business process. No amount of IT will fix bad processes

7 Virginia Government Business Trends

Virginia government business leader workshops were designed to capture government business trends at the secretariat level.

While each Virginia state agency creates, implements and monitors its own strategic plan, trends from these plans have emerged that cross agency and secretariat boundaries, and represent the overarching priorities and direction of the business of state government in aligning to the eight long term objectives set forth by the Council on Virginia’s Future.

Virginia government business trends have been summarized into the following categories: Communications, Services, Management and Governance. The business trends identified by workshop participants are grouped under the sub-headings below each category.

7.1 Communications

Summary:

Improvement in communications was identified as a common trend among secretariats, both with the public (external) and within and between agencies (internal).

Workshop participants believe that state agencies must continue to seek move effective avenues of communicating with the public and that increased public awareness of government functions, services and outcomes are essential to promote good public and private decision-making.

Participants also believe that agencies play an important role in continuing to identify the needs of the public through customer feedback to service providers, and are responsible for communicating these needs to decision makers.

Opportunities also exist in internal communication, within and between agencies, to strengthen collaboration and effectiveness, as well as to reduce redundancies.

Detail:

External Communications

Improve and Enhance Communication with the Public

- Develop and promulgate effective and wide-ranging methods of disseminating information and improving customer service both internally and externally.
- Improve public awareness and ensure information is available to the public through meaningful and useful delivery mechanisms.

- ❑ Public knowledge and awareness of government functions and services will promote sound government and good public and private decision-making.
- ❑ Have the right people communicating the right message at the right time in the right format.

Continued Need for Advocacy and Services for the Commonwealth of Virginia's Public

- ❑ Improve communication to promote, inform and advocate for citizens through information and referral, grants, legislation and public involvement through boards and commissions.
- ❑ Advocate for the needs of citizens with the legislators, governor and key decision makers.

Internal Communications

Improve Communication with All Stakeholders

- ❑ Develop and promulgate effective and wide-ranging methods of disseminating information and improving customer service both internally and externally.
- ❑ Effective and timely communication upward and downward between agency and agency, between agency and customers, internal and external to the Commonwealth of Virginia.

7.2 Services

Summary:

Government business leaders saw common trends in the areas of Service Delivery (how the public receives services), Service Management (how resources are deployed in delivering services), and Service Development and Maintenance (what core services are provided or need to be provided).

Participants perceive that the demand for services is increasing and strong emphasis is placed on providing services cost effectively and efficiently to meet growing demands with limited resources. E-government is seen as not only providing more and better service options for the public, but also providing services more cost effectively.

The areas of service development and maintenance, agency business leaders identified continuing needs to develop, manage and preserve the Commonwealth's resources, enhance economic development opportunities, provide and improve education, and protect public health and safety.

Detail:

Service Delivery

Provide Cost Effective and Efficient Services

- ❑ Ensure that services are delivered in an accurate, secure and efficient manner.
- ❑ Enhance ability to identify needed services
- ❑ Ensure appropriate utilization of available resources in the provision of required services and programs by improving operational efficiency and working smarter
- ❑ Ensure information systems within and across agencies are using best practices and providing timely and accurate output and outcomes.

Improve Service Delivery to Citizens through the Use of E-Gov

- ❑ Increase access, availability and efficiency of resources through better and more extensive-government services
- ❑ Provide government services, online, anywhere, anytime, to citizens, with transparency between levels of government

Service Management

Assure the Quality and Cost-Effectiveness of Funded Services

- ❑ Improve programs by using cost and productivity data and research as management feedback to drive iterative improvement
- ❑ Develop multiple service delivery channels

Address Increased Demand for Services

- ❑ Expand and improve service provision through increased capacity, more widespread geographic coverage, new and innovative services to meet emerging needs

Promote Resource Partnership

- ❑ Encourage partnership initiatives, between state agencies and the private sector, and state agencies and the federal government. For example, Housing and Community Development may partner with the non-profit Community Housing Partners Corporation to obtain a grant to for affordable energy-efficient housing, and contract with the non-profit to design, build and sell or lease the housing.

Service Development and Maintenance

Enhance Economic Development Opportunities

- ❑ Create an environment within the state and its communities that facilitates economic development.
- ❑ Maintain world-class institutions through collections, scholarly works and expertise, research, and best practices.
- ❑ Contribute significantly to economic development through education and tourism.

Effectively Develop, Manage and Preserve the Commonwealth's Resources

- ❑ Provide stewardship of natural, economic, historic resources to the benefit of the citizens of the Commonwealth
- ❑ Using regulations, reviews, incentives and the power of persuasion to help Virginia's communities protect and use natural (land, air, water) and historic resources for the benefit of future generations.

- ❑ Develop sound land management and water conservation measures through public education and participation and inform, advise and make recommendations to stakeholders so they can make better decisions regarding the environment and land use
- ❑ Achieve preservation of threatened open space lands and inform land owners of the trend of shrinking land base in the Commonwealth of Virginia to enhance the likelihood of stalling or reversing the trend.
- ❑ Just as we are working with stakeholders to conserve resources statewide, agencies of the Commonwealth must demonstrate leadership by example in the conservation and stewardship of lands and resources.

Provide and Improve Education

- ❑ Improve access to education and educational communications
- ❑ Inform and carry out the Commonwealth's educational mission
- ❑ Direct provision of services and formal/informal education to citizens while working collaboratively with others to improve services and educational services provided by other agencies and non-governmental organizations. For example, the Science Museum may partner with schools and church youth groups to ensure children have the opportunity to visit an educational exhibit

Protect Public Health and Safety and Enhance the Quality of Life

- ❑ Protect the safety of the general public and public workforce
- ❑ Develop programs, processes, policies, procedures and practices that ensure the safe movement of goods, services, people and adequate collection and protection of related data.
- ❑ Provide an environment (regulatory control, assistance/education) that protects against negative external effects of business activity, striking a balance between facilitating economic development and protection of the public.
- ❑ Promote health and safety through regulations, consumer protection, quality assurance and enforcement activity.
- ❑ Make improvements in the independence, well being, education and personal responsibility of customers from cradle to grave
- ❑ Provide public safety services related to fire protection, dam safety and floodplain management, food safety and food protection

7.3 Management

Summary:

Government management trends have been categorized into: Governance (ensuring execution of mandates and compliance), Fiscal Management (the effective and efficient use of fiscal resources), Funding (improving availability of funds), Workforce (ensuring a productive and skilled workforce), and Planning (directions in achieving higher performance levels and accountability).

The first and most important obligation in governance is execution and compliance with code mandates. Agency business leaders see opportunities for improving the use of information to promote and ensure compliance.

Fiscal management trends reflect an emphasis on good stewardship and accountability, while funding trends reflect concern over adequacy of resources and the need to maximize opportunities for additional funding where needed for programs.

Ensuring an effective, skilled and productive workforce remains a priority for agencies.

In the area of planning, improvement of internal controls and use of planning methods for maximizing efficiency are ongoing concerns. Emerging directions in planning include focusing on core competencies and incorporating best practices from the private sector, re-engineering business processes, and evaluating government services based on performance metrics, a leap forward in government accountability.

Detail:

Governance

Execution of Code Mandates

- Fully comply with code requirements using decreasing resources

Promote and Ensure Compliance with Federal, State and Local Laws, Regulations, Policies and Procedures

- As stewards of the public trust, protect the general public through implementation of programs. Providers and users of Commonwealth services, and the public in general, realize/experience a safe, secure and healthy environment in which to conduct their lives
- Improve the performance in the implementation of programs and projects by adhering to standards.

Fiscal Management

Promote and Ensure Financial Accountability and Efficient Use of Resources

- Effectively and efficiently utilize taxpayer dollars
- Maximize the delivery of services by using accountable and measurable best business practices
- Secure fiscal resources to improve the funding available to support programs and staffing
- Promote stewardship of fiscal resources to ensure sustainability and flexibility, consumer focus and take full advantage of resource opportunities

Funding

Improve Funding and Use of Assets

- ❑ To advocate for protection and growth of assets and funding on behalf of the agency and providers of relevant services while maximizing the effective utilization of available resources
- ❑ Use and protect assets through conservation, preservation and continued collection.
- ❑ Secure adequate levels of institutional resources; funding, people, facilities, and public/private leverage

Workforce

Ensure an Effective and Professional Workforce

- ❑ Recruit, develop, train and retain a highly effective and professional workforce to provide services to the Commonwealth.
- ❑ Develop a positive work environment and a diverse, high performance, customer-focused workforce
- ❑ Provide the workforce with the resources to meet business needs.
- ❑ Improve recruitment, retention and skill levels through more effective workforce development, succession planning, academic partnerships and incentives for improved staff performance
- ❑ Increase workforce productivity through the use of technology and process/training/HR/performance management.
- ❑ Develop a global, mobile, “always available” collaborative workforce
- ❑ Mitigate loss of institutional knowledge

Planning

Improve Internal Controls

- ❑ Utilize recognized best business practices from business and government to properly protect and account for agency financial and human resources

Efficient Use of Resources

- ❑ Maximize the delivery of services by using accountable and measurable best business practices, and secure fiscal resources to improve the funding available to support programs and staffing.

Focus on Core Competencies and Incorporate Best Practices from Private Sector

- ❑ Identifying services that are core competencies for government – developing strategies (partnerships, outsourcing, etc.) for services determined to be non-core.
- ❑ The supplier community is being challenged to provide bundled solutions (service focused, not “things” – i.e. PPEA)
- ❑ Outsourcing/right sourcing: seek opportunities to partner with the private sector to provide services more cost effectively.

Re-engineer Government Business Processes

- ❑ Improve decision-making ability and effectiveness
- ❑ Identify redundancies, opportunities for consolidation, integrating and standardizing to improve citizen services and increasing efficiencies and cost savings.

- ❑ Develop an enterprise view into fiscal and administrative systems (ERP, business intelligence).
- ❑ Keep a citizen-centric focus; emphasis on citizen/customer services.

Judge Value of Services Based on Performance Metrics/Government Accountability to Achieve Results

- ❑ Shifting emphasis from processes to outcomes.
- ❑ Manage resource and operational elements by performance management.
- ❑ Fiscal accountability and performance based budgeting, and more quantifying of results tied to budget
- ❑ This represents a fundamental change in the way the Commonwealth does business. Traditionally, government focused on process and judged performance through measurements of services delivered and assurance of compliance with code and regulation. Measurement of performance through evaluation of results and outcomes not only provides the public with objective cost/benefit information with which to judge where to invest resources, but also provides government managers with feedback that can be used for continuous improvement.

8 Virginia Information Technology Trends

Virginia government IT leader workshops were designed to capture existing enterprise level information technology trends that cross agency and secretariat boundaries.

Virginia government IT trends have been summarized into the following categories: **Infrastructure, Security, Information Exchange, Applications, Service Delivery, Management, Workforce, and Procurement.** Specific trends identified by workshop participants are grouped under the sub-headings below each category.

8.1 *Infrastructure*

Summary:

Trends identified by workshop participants include moving toward infrastructure centralization as well as a need to expand on and improve infrastructure throughout the Commonwealth.

Detail:

Centralization of Infrastructure

- ❑ Emphasis on standardization
- ❑ Resource consolidation and sharing in contracts, hardware, software, services, and through regionalization
- ❑ Information/Voice/Data/Video Convergence

More Emphasis on Architecture

- ❑ Need to define standards and build solutions and support a limited set.

Expand and Improve Infrastructure

- ❑ Trying to earmark funds to replace/upgrade aging equipment while increasing deploying network availability, and deploying infrastructure statewide, even in rural areas
- ❑ Infrastructure issues: capacity, obsolescence – support business operations and needs

Emergence of Standards

- ❑ Movement away from proprietary software environments to open standards (at least at the interface level)

8.2 *Security*

Summary:

Virginia IT leaders identified increasing emphasis on security as high-priority. Maintaining a robust information technology security program is viewed as critical to ensure effective operation of the Commonwealth of Virginia’s enterprise.

Detail:

Security

- ❑ Emphasis on security and control of IT operations
- ❑ Provide a secure and protected environment for data, equipment and access both electronically and physically.
- ❑ Provide data protection and privacy in compliance with Federal and State policy and legislation (FOIA, HIPPA, etc.)
- ❑ Simple sign-on; same log-on, multiple systems
- ❑ Greater emphasis on enterprise approaches to security

Access, Identity Management and Mobility

- ❑ Provisioning for all constituents for access anytime/anywhere
- ❑ From anywhere, anytime for research, learning, self-service, collaboration and information. Users include faculty, staff, students, alumni, applicants, business partners, and the public.

8.3 Information Exchange

Summary:

Workshop participants identified the need to improve the ability to share data across agencies, and between state agencies and localities, and to provide more effective information access to the public.

Participants perceive that to an extent, information sharing and exchange among state agencies and between the state and localities are obstructed in the current “stove-piped” environment. Where information sharing is required among and between these entities, the lack of common data vocabularies slows business processes, and creates redundancies for both agencies and citizens. Although some progress has been made, more effort is needed to detail how information sharing responsibilities and relationships will advance this task.

Detail:

Exchange Information

- ❑ Exchange information between business units, other state and federal agencies, constituents, customers and employees (intra-agency, inter-agency, extra-agency)
- ❑ Information/data standardization is needed to increase efficiency, decrease duplication, and to ensure compliance with federal mandates and industry standards
- ❑ Interoperability of systems (local, state and federal) in a secure fashion within established data standards

- ❑ Ability to capture real-time information (or services) from customers through web-based applications; the availability of data online and electronically
- ❑ Ability to process transactions – (e.g. license applications, purchases) via e-government.
- ❑ State services available on the Internet: convenience, security, cost effective, easy to use, meet accessibility standards.
- ❑ Secure transfer of funds and data while maintaining confidentiality.

Repository for Public Information

- ❑ Accumulate, maintain, and disseminate public records and data, public communications and /information dissemination; and educate the public.

Research Computing

- ❑ High performance computing, National LambdaRail and research connectivity, storage, research collaboration, grant funding and support

Process Efficiency/Integration, and Integration across Traditional Boundaries

- ❑ Gather data once, use it multiple times and ways.
- ❑ Combining information resources and connecting across systems for new functionality through web portals and collaboration software
- ❑ Integrating systems across departments, agencies, academic units and institutions

8.4 Applications

Summary:

Virginia IT leaders recognize consolidation of technologies that provide administrative functions will allow the Commonwealth to provide more effective services, reduce redundancy, and lower costs.

In addition, replacement of outdated legacy systems offers not only the opportunity for cost savings and improved service, but also to coordinate similar projects within and across secretariats.

Geospatial technology, data management, and data mining were identified as key applications technologies to support business decisions.

Service-oriented architecture has the potential to “join up” government through interactive business components that are usable across application and enterprise boundaries.

Detail:

Replacing Legacy Applications and Consolidation of Systems and Data

- ❑ Reduce number of legacy and discontinued systems to improve delivery of services and reduce costs.

- ❑ Similar systems in different agencies moving toward a common solution.
- ❑ As old systems need to be replaced/upgraded, turnkey vendor solutions become more viable options.
- ❑ Migration from “stove-pipe” homegrown customized applications and toward standardized commercial off-the shelf applications (COTS) where possible.

Enterprise Applications at Business Process Level and Centralization

- ❑ Common business practices required to use common business applications - Licensing, EA-PPEA, e-government, standard tool sets (functional and technical), policy, practice, architecture.
- ❑ Eliminating duplication of systems
- ❑ This may provide high-level efficiencies but may require sub-optimal business practices at the agency or service delivery level.
- ❑ Identifying appropriateness of standards and guidelines across disparate sized agencies with disparate strategic objectives

Integration of Geospatial Technology into the Enterprise (GIS/GPS)

- ❑ Need to provide geographically enabled data.
- ❑ Enhance decision support through the integration of GIS, GPS, remote sensing, etc. into enterprise functions

Data Management/Records Retention/Archive

- ❑ Provide data management, records retention and archival capacity in compliance with agency and state policies, driven by business needs
- ❑ Electronic document management and automation of processes
- ❑ Elimination of paper processes with more efficient electronic processes. Ability to store scanned documents, imaging, and other electronic documents that can be accessed, shared and archived

Data Mining

- ❑ Business intelligence technology to be used for decision making, trending, forecasting and planning.
- ❑ Review performance measures to improve business processes and procedures more effectively and efficiently.
- ❑ Improve IT services to support business operations to meet or exceed agency and state goals, metrics, objectives, strategies (i.e. VA Long Term Objectives)

Integration (Service-oriented Architecture)

- ❑ Tools, technologies, standards to facilitate reuse of code and data sharing

8.5 Service Delivery

Summary:

It is perceived that information technology service delivery in the Commonwealth is continuing to build on the single portal concept for public services, and to respond to the growing demand for mobility.

IT leaders, business leaders, Virginia businesses and citizens all identified the need to expand service delivery through a single point of contact portal, truly moving to an e-government environment.

Detail:

Single Point of Contact “Portal Concept”

- ❑ E-Government portal – single place to acquire all services, improved customer support, single point of contact for: operational & functional support, help desk, contracts, automation, finance, expanded and improved broadband and portal capability for customer access.
- ❑ Dissemination of government services to the citizen, i.e. information about agency functions to inform the citizen through automated portals or other sources.

Virtualization

- ❑ Storage and computing resources that are dynamic, scalable, flexible.
- ❑ Increased use of mobile technologies and demand for broadband
- ❑ Removing time/place constraints (e.g. e-learning)
- ❑ Demand to support personnel off-site access to systems and telecommuting
- ❑ Virtual offices: Finding solutions for off-site service delivery and co-location, home workers, hotelling, and other ways to shift work locations

8.6 Management

Summary:

Workshop participants identified movement toward greater accountability in IT investment, formalized risk management and documentation of results. Participants believe that governance of information technology as a service should be assistive rather than dictatorial.

Detail:

Accountability

- ❑ Monitor and report program/project progress, expenditures, etc., accurately (including data) in a secure environment
- ❑ Governance as a service: being assistive rather than dictatorial
- ❑ Focus on value added
- ❑ Greater emphasis on formalized risk management (government version of Sarbanes-Oxley)

IT Investment Management

- ❑ Manage limited resources (funds and people) across the Commonwealth

8.7 Workforce

Summary:

IT leaders in Virginia find challenges in attracting and retaining skilled staff in a rapidly changing environment. Workshop participants also perceive that the Commonwealth’s non-IT workforce is not prepared to fully benefit from the increased productivity technology provides due to lack of IT knowledge and skills.

Detail:

Maximizing Staff

- ❑ Manage staff as an investment (training, etc.), resources best suited to task, conserving best of staff (i.e. knowledge) for most effective use
- ❑ Careful cost/benefit analysis of in-source versus outsource and buy versus build
- ❑ Best practice culture: Collaborative efforts, knowledge exchange, strong organizations like Educause, collectively reinforcing higher education’s mission in the face of rapidly changing context

Attracting a Skilled Workforce

- ❑ Difficulty filling professional level positions to advance agency IT
- ❑ More complex technology drives frequent changes, requires higher skilled staff, creates obsolescence in people’s skill sets and in technology

Workforce Not Applying Technology to Daily Operations

- ❑ The non-IT workforce is resistant to change and has a lack of training in how to use technology.
- ❑ There is also a lack of emphasis on training by management, and a low appreciation in management for these skills.
- ❑ Business process owners have not adapted IT innovations.

8.8 Procurement

Summary:

Outsourcing and the use of private sector resources to provide IT services and staff is a trend in Virginia IT identified by workshop participants, with some concerns over loss of control over IT costs at the agency level.

Partnerships/PPEA

- ❑ Outsourcing and use of private sector to provide IT commodity services and staff

Loss of Control over Purchasing and Increase in Non-Discretionary IT Costs

- ❑ Transition to VITA and centralized purchasing
- ❑ Loss of management control over IT costs

8.9 Existing Enterprise/Collaboration IT Projects

Appendix E of the Recommended Technology Investment Report (RTIP) includes all agency proposed IT projects that have been identified for initial planning or approved for planning and that were evaluated for potential IT collaboration opportunities. It should be noted that institutions of higher education are not included in the "AS IS" component of the Enterprise Business Architecture and are not included in this list.

The criteria for the Common Business Functions evaluation was developed based on identifying line of business functions in the Enterprise Business Architecture that have many identifiable processes and procedures that may be standardized across the enterprise and be supported by common IT solutions.

The following is a categorized list of multiple projects that have been rolled up under support areas. This list has been recapped from Appendix E, and represents enterprise level project trends in the Commonwealth.

Services to Citizens: (the mission and purpose of Virginia government in terms of the services it provides both to and on behalf of its citizens)

- Workforce Management – training and employment**

Mode of Delivery: (describes the mechanisms the Commonwealth uses to achieve the purpose of government or its services for citizens)

- Regulatory Compliance and Enforcement – permits and licensing**

Support of Delivery of Services: (provides the critical policy, programmatic and managerial underpinnings that facilitate the state government's delivery of services to citizens and to other state and local government agencies)

- Revenue Collection – debt collection, user fee collection**

Management of Government Resources (refers to the resource management activities that must be performed for the State Government to operate effectively on a day-to-day basis)

- Administrative Management – equipment management, facilities management, travel.**
- Financial Management – All functions, financial vehicles.**
- Human Resource Management – All functions.**
- Supply Chain Management - goods acquisition, inventory control, services acquisition**

9 Technology Trends

New and emerging information technology trends were identified through seminars, workshops and discussions with the Commonwealth’s vendors/partners, the Higher Education CIO Council, and through research from a variety of sources, most often, from the Gartner Group.

For classifying these Technology Trends, we used the same categories that were used in “the Virginia Information Technology Trends” section of this report. Those categories are: Infrastructure, Security, Information Exchange, Applications, Service Delivery, Management, Workforce, and Procurement.

9.1 Infrastructure

Summary:

IT management trends include asset management, global sourcing, IT utility, telecommunications and “joining up” government. Voice/data convergence is gaining ground.

Detail:

Infrastructure Consolidation

- ❑ Creates higher performance, lower costs, leverage/scalability/agility, cutting edge technology, best practices, cost savings, centralized management, and reduces resources
- ❑ Challenges: Giving up power/control, government decision authorization, scope of control, political, organization, commitment over long haul, merge diverse technologies, and the lack of standards

Virtualization

- ❑ Storage and computing resources that are dynamic, scalable, flexible.
- ❑ Increased use of mobile technologies and demand for broadband
- ❑ Simplifies consolidation, higher availability, more secure

Server Virtualization

- ❑ Multiple OS environments/server
- ❑ Challenges: Emerging standards/vendors

SAN storage

- ❑ Cost savings, flexibility
- ❑ Challenge: There are a huge number of vendors, and it is unknown which will remain in the market

Telecommunications

- ❑ VOIP

- ❑ Security
- ❑ Voice/data convergence: Voice/data convergence based on IP telephony and VoIP will be under way in more than 95 percent of major companies by 2010.
- ❑ Wireless (Mobility)

9.2 Security

Summary:

Security, privacy and risk are increasingly critical and must be balanced but also must be consistent with business goals and business risk priorities. Information security and identity management need to provide privacy, security, and accessibility to data with a higher granularity of access rights

Detail:

Information Security and Identity Management

- ❑ Privacy, security, accessibility to data with a higher granularity of access rights
- ❑ Digital rights management
- ❑ Federated Identity Management

9.3 Information Exchange

Summary:

Interoperability of systems and information exchange are vital. The demands of legislative and regulatory compliance requirements, such as Freedom of Information Act legislation, are realities forcing a risk management approach. Expectations of agencies are greater and so are constraints in funding and resources.

- ❑ Information Management:
“Discussions with many government agencies have shown that three prime drivers shape how agencies consider information management:
 - The imperative to produce better results for stakeholders, whether they be citizens, politicians, agency employees or other constituents. Often, these relate to "pain points" occurring with particular stakeholder groups.
 - The need to achieve greater business efficiencies and productivity, particularly in light of continuing budget constraints. Improvements in information management yield operational benefits.” Gartner Group Publication ID Number: G00129709, “Selecting Which Government Information Management Issues to Tackle”, Page 3 of 6

9.4 Applications

Summary:

Service-Oriented Architecture provides interoperability, maintainability, lower integration and testing, re-use (lower cost, predictability), agility (real-time enterprise), enables shared services between enterprises, and reduced need for standardization

Web services protocols and standards used for exchanging data between applications or systems are becoming increasingly important.

Open source provides cost savings, with less upfront cost, interoperability, long-term archive, quicker time to market for software, and increased innovation.

Detail:

Service-Oriented Architecture (SOA)

- Provides interoperability, maintainability, lower integration and testing, re-use (lower cost, predictability), agility (real-time enterprise), enables shared services between enterprises, and reduced need for standardization
- “SOA shifts developer focus from software to business functions, thereby transforming installed software from an inhibitor to a facilitator of rapid business change. Realizing these benefits will, however, require increased investment in software, infrastructure, skills and business process change. SOA will become the dominant framework for creating and delivering software, shifting value from packaged software to subscription services, and from monolithic suites to composite applications.” Gartner Group Publication ID Number: G00125868, “Gartner’s Positions on the Five Hottest Topics and Trends in 2005”, Page 4 of 6
- Challenges: Cost of infrastructure and application re-write (legacy), knowing the business process, requires re-examination of business processes, discovery of services, security for shared services, staff re-allocation

Web Services

- A web service is a collection of protocols and standards used for exchanging data between applications or systems. Software applications written in various programming languages and running on various platforms can use web services to exchange data over computer networks like the Internet in a manner similar to inter-process communication on a single computer. This interoperability (e.g., between Java and Python, or Windows and Linux applications) is due to the use of open standards.

Open Source (OSS)

- Provides cost savings, with less upfront cost, interoperability, long-term archive, quicker time to market for software, and increased innovation
- “OSS is a catalyst that will restructure the industry, producing higher-quality software at a lower cost.” Gartner Group Publication ID Number: G00125868, “Gartner’s Positions on the Five Hottest Topics and Trends in 2005”, Page 2 of 6
- Challenges: COTS vendors supporting standards, standards and security, training, immaturity, quality/assurance, and long-term costs

9.5 Service Delivery

Summary:

Service delivery trends identified by participants include consolidated operational environments, wireless delivery, government provided broadband, single portal/public access, and GIS based services

Detail:

IT as a Utility

- ❑ Operational Environment: consolidated/central operation, common operating system, Enterprise policies and standards
- ❑ “IT-utility-style computing enables companies to fulfill IT business process, application and infrastructure requirements from "resource pools," rather than dedicated resources. By 2010, 25 percent of application demands will be delivered through IT utility, either in-house or from service providers, up from less than 5 percent currently. IT utility will shift hardware and maintenance labor budgets to software and software budgets from packaged licenses to pay-per-use models. Improving asset use (presently 10 percent to 20 percent) will reduce hardware spending. Large organizations can reduce IT hardware costs 10 percent to 30 percent and labor costs 30 percent to 60 percent while improving quality of service and increasing agility.” Gartner Group Publication ID Number: G00129709, “Selecting Which Government Information Management Issues to Tackle”, Page 4 of 6

Wireless

- ❑ Provides mobility, flexibility
- ❑ Challenges: Cost, security, speed (versus LAN), coverage, evolving standards

Government provided broadband

- ❑ Re-use public safety/transportation infrastructure, revenue sharing
- ❑ Challenges: Cost, not core to government, revenue sharing

Single Portal/Public Access

- ❑ “On-demand/self-service” government services: Access to my government on my device
- ❑ Benefits: Customer service, instant fulfillment, convenience, staffing for peak times, guaranteed funds, paper storage reduction
- ❑ Challenges: Education, marketing, control/power, security

GIS based services

- ❑ Information delivery, better customer service, convenience
- ❑ Challenges: Cost, implementation approach, keeping it current

9.6 Management

Summary:

Participants deemed IT management trends in asset management, integrating government and business performance management areas of potential.

Detail:

Asset Management

- Project and Portfolio Management: “Supports organizational and procedural change and metrics collection using project/resource management; significant return on investment for project-intensive organizations through improved planning, resource use, project change management and project communications; very important in government to support public value of IT and to complement enterprise architecture”; Gartner Group Publication ID Number: G00128242, “Hype Cycle for Government, 2005”, Page 10 of 26

Integrating Government

- Business Process Improvement/Modeling
- ERP/CRM

Business performance management and corporate performance management

- Use IT to improve business performance, manage key performance indicators, real-time dashboards, real-time feedback between business and IT
- Challenges: Re-evaluate business processes, political

9.7 Workforce

Summary:

The IT workforce will be undergoing profound changes in the future, as new technologies reduce the need for IT specialists.

Detail:

Rise of Programmer-Free IT

- IT rules can be modified by business experts, increasing agility
- Business rules are separated from application logic, addresses less expertise in marketplace and focuses on core business
- “The job market for IT specialists will shrink 40 percent by 2010. IT specialists who do not develop business-oriented competence are at risk of being unemployable within the next five years. Only a rapid and intentional expansion from technical specialization into areas that more clearly link technology to enterprise goals and advantage — such as information design, process design and relationship management — will position today's IT specialists as credible business contributors. Speed is important: For example, the window of opportunity for business process design will start to close by 2010. By then, emerging process modeling tools in the hands of business leaders will do more to align business and IT objectives than will the evolution of IT specialists' business

competence. IT specialists must learn to demonstrate a deep contextual grasp of their companies' competitive forces, revenue and cost drivers, industry influences, product and service strategies, differentiating processes, customer bases, regulatory requirements, cultural constraints, and external suppliers. Moreover, they must demonstrate and apply that understanding through a widening selection of roles, assignments, projects and problem-solving methods. Finally, they must use that contextual knowledge to craft IT solutions that reflect business situations.” Gartner Group Publication ID Number: G00135987, “Gartner’s Top Predictions for 2006 and Beyond”, Page 14 of 18

9.8 Procurement

Summary:

Global sourcing demands a focus on operational excellence. In less than five years, the remote and virtual nature of global delivery will force the decoupling of business process and applications, which will give rise to selective business process utilities.

Detail:

Global Sourcing:

“The global sourcing of talent and intellect is economically compelling for a growing set of IT and business processes and part of a broader trend toward flexibility in delivery options. Global sourcing demands a focus on operational excellence and gives rise to the question of what roles and functions can be delivered in a remote or distributed fashion. It has the potential to fundamentally change many industries because each component of a business process is scrutinized for the optimal delivery model. In less than five years, the remote and virtual nature of global delivery will force the decoupling of business process and applications, which will give rise to selective business process utilities. IT budgets will make a dramatic shift from being dominated by infrastructure and other asset intensive line items to significant spending on external sourcing and the development of internal sourcing competencies (for example, governance and relationship management). Sourcing strategies must include a systematic evaluation of global resource options, and governance must become a core competency of any IT department.” Gartner Group Publication ID Number: G00125868, “Gartner’s Positions on the Five Hottest Topics and Trends in 2005”, Page 5 of 6