

1. INTRODUCTION

A “confluence of opportunities for technology” makes this the right time to move beyond the view of information technology (IT) as a “back office” function to a bolder vision of technology as the enabler of far-reaching solutions. These solutions address significant common business needs while improving citizen access to services, increasing transparency and embedding technology as an integral part of the business framework. As identified in other sections of this plan, these opportunities require a stable state funding model; mature project and technology investment management governance models; a consolidated, adaptive and up-to-date infrastructure; and flexibility in sourcing and procurement activities to meet changing citizen and workforce expectations for technology; and the capacity to address unique agency business priorities at the speed required.

Best managed organizations recognize the relationships between technology and cost-effective enterprise level solutions and are prepared to make a commitment to dedicate the resources to technology, and prioritize and leverage technology investments.

This plan updates the Commonwealth Technology Business Plan, which was developed by the Information Technology Advisory Council (ITAC) pursuant to Chapter 136 of the 2010 *Acts of Assembly*. In recognition of the need for an enterprise-wide business plan as the foundation of successful IT strategic planning, the Virginia Information Technologies Agency (VITA) and the Customer Advisory Council (CAC) jointly developed the current plan in consultation with the Council on Virginia’s Future. Revisions to this plan will be integrated into the annual updates to the Commonwealth IT Strategic Plan, which VITA is tasked with developing pursuant to § 2.2-2007 of the *Code of Virginia*. In turn, the Commonwealth Technology Business Plan and the Commonwealth IT Strategic Plan establish the framework for individual executive branch agency IT strategic plans.

2. ENVIRONMENTAL CONSIDERATIONS

Any planning effort logically begins with consideration of those significant environmental factors that affect the plan’s development and will substantially impact how the plan is carried out. In the context of this Commonwealth Technology Business Plan, six such “external realities” have been identified and are outlined below.

Financial Outlook

The global financial outlook that was characterized by turmoil when this plan was initially presented in 2011 now has stabilized. However, a December 2015 report presented to agency heads concluded that growth nationally and in Virginia will remain modest. Virginia growth will be disparate between urban and rural areas. On the positive side, also in December 2015, the governor announced that “there are more jobs in Virginia now than at any other time in the commonwealth’s history.” While modest, the growth in the Virginia economy is one factor in allowing the governor to propose the Commonwealth’s first \$100 billion dollar budget.

The improving financial outlook presents an opportunity to reconsider the role of technology in meeting the state’s business needs and develop funding models that support the acquisition of new technology solutions while sustaining existing technology investments.

Continued Population Growth

In terms of its population, Virginia continues to be one of the fastest growing states in the nation. The state's 2010 Census count of 8,001,024 was almost one million greater than in 2000, a 13 percent increase (as compared to the overall U.S. increase of 9.7 percent). In turn, the state's 2015 count was 8,382,993, a 4.8 percent increase. The long-term trend for significant state population growth is expected to continue, with the population projected to increase by about 5 percent by 2020 and another 9 percent by 2030. It also should be noted that the population growth is not distributed equally across the state. The population in rural areas is declining while increasing in urban areas.

Population growth inevitably adds to demands for public services. Meeting these demands in a responsive, cost-effective manner likely will require new or expanded technologies. For example, technology can be employed to deliver remote services to rural areas where the population cannot support dedicated service professionals. In turn, this requires that the commonwealth's communications infrastructure, such as broadband, be installed with the capacity to support the remote provision of services.

Diversity of Virginia's Population

In addition to growing, as noted above, Virginia's population is becoming more demographically and geographically diverse. Figures from the University of Virginia Weldon Cooper Center for Public Service show that slightly less than half of the population growth from 2010 to 2014 came from migration into the state, increasing the diversity of the state's population. The figures also show there is increasing diversity between the state's urban and rural populations, with younger citizens moving from rural to urban centers, leaving an older population in the rural areas.

Over the next 20 years, as the "baby boomer" population cohort reaches retirement age, the increasing percentage of older Virginians will further add to online service requirements. This cohort is more technologically savvy than prior seniors and their use of technology at home is significant. This will contribute to the demand for high-speed internet access throughout the state.

Aging of the State Government Workforce

As a corollary to the aging of Virginia's population in general, the state government workforce also is, on average, getting older. Data from the Department of Human Resource Management (DHRM) yields the following telling statistics:

- The average age of a state worker has increased 10.4 percent in last 20 years.
- State workers' average years of service has increased 17.6 percent in last 20 years.

When an experienced state worker retires or otherwise leaves state employment, more than just manpower is often lost. All too frequently, substantial institutional knowledge and in-depth understanding of long-standing systems and processes leaves as well. Technology can play a key role in capturing such institutional knowledge and in-depth understanding.

Attractiveness of Government Careers to Younger Generations

DHRM statistics indicate that the number of full-time-equivalent (FTE) state positions has decreased by 8 percent over the past three years. That decrease, coupled with the above-noted exodus of knowledge and experience, puts even greater emphasis on the need to bring qualified younger workers into the state workforce.

However, trends also show increasing difficulties in attracting younger workers to public service. “Gen-X” (ages 30-45) and “millennials” (under 30) have distinctly different workplace goals than the boomers. Millennials in particular are looking for challenges (knowledge work, not rote tasks), flexibility in and outside of the workplace, collaboration (and lots of cool technology to support that) and (potentially good news for government) a chance to make a difference by solving real problems.

Virginia state government faces similar issues in attracting and keeping younger workers. DHRM data indicates that the highest turnover rate among state employees occurs in the first five years of service, when 53 percent of all separations occur. The data shows that millennials, which comprise about 20 percent of the state workforce, are resigning at about twice the rate as prior generations.

Pervasiveness of Technology

As noted in the Commonwealth Strategic Plan for Information Technology, “the introduction of new technologies is now a common feature of today's marketplace, and it is widely accepted that the overall pace of technology change has increased over the past decade.” This, in turn, has created a proliferation of technologies that impact both government and citizens. The pervasiveness of technology brings both opportunities and challenges to state government, for example:

- State employees and organizations are leveraging tools that originated in the consumer market to communicate, collaborate and share knowledge both in the workplace and with citizens.
- Proliferation of social media has created expectations of instant information and given government greater opportunity for transparency.
- As technology has spread through citizen’s day-to-day lives, government is increasingly in possession of more sensitive data that needs to be protected.
- The Internet of Things represents the addition to the internet of smart devices, such as sensors, security cameras and automobiles. The Commonwealth Strategic Plan for Information Technology continues, “The availability of such ubiquitous data sources has the potential to ‘disrupt’ many aspects of state government information technology use. At a minimum, all such devices implemented by state government will need to be secured, managed and supported.”

3. DESIRABLE PLAN ATTRIBUTES

As noted in the first edition, the above-outlined environmental considerations strongly suggest a Commonwealth Technology Business Plan that is pragmatic, focused and takes advantage of available resources and initiatives for optimum impact. During the update process, the following attributes were identified or reaffirmed:

- *Leverage the Work of the Council on Virginia’s Future (COVF)* - The legislative charge to create the original Commonwealth Technology Business Plan included the directive to work in collaboration with the COVF. That council has, in turn, created the commonwealth’s award-winning Virginia Performs website, organized around the state’s seven long-term goals, and has worked with the Department of Planning and Budget (DPB) on agency and secretariat strategic planning and performance-based budgeting. The ITAC Business Plan update process reaffirmed the strong relationship between the COVF’s activities and the objectives of the Commonwealth Technology Business Plan.

- *Drive off recognized business priorities* - Virginia has a well-established process in place for developing and maintaining agency-level strategic (business) plans. Working from a higher-level summary of the commonwealth's overarching business priorities was a key to creating a supportive, yet focused, Commonwealth Technology Business Plan and remains a key element of the updated plan.
- *Focus on key leverage points* - State agencies cover a wide range of missions and associated constituent services. Finding common points of interest that could then be leveraged for a variety of specific purposes will not only enable the initiatives to have the broadest impact, but those impacts can be the basis for identifying best practices that could be shared across state government. One leverage point that should be explored is identifying areas for collaboration through technology across state agencies and secretariats.
- *Push agencies toward best practices* – In addition to identifying best practices, the plan should propose actions and opportunities that encourage and support agencies adoption of best practices. Establishing a fund (e.g., innovation incubation fund, innovation process improvement fund) similar to the former productivity investment fund will to pay for development or adoption of best practice process improvements.
- *Create an action agenda – with follow-through* - To be worthy of further time and attention, the plan must describe a clear path for acting on the initiatives to obtain meaningful benefits with measurable outcomes.

4. PLAN UPDATES

The CAC formed a special workgroup to focus on the task, starting with updates to the Commonwealth Technology Business Plan, which took place in several phases: determination of the commonwealth's high-level business priorities; identification of key initiatives that could become technology focal points in support of those business priorities; and development of the plan document, including action steps for implementation.

The following subject matter experts provided input into the update process:

- The executive director of the Council on Virginia's Future provided updates to the commonwealth's high-level business priorities in an overview presentation
- Representatives from Weldon Cooper Center provided demographics information in a presentation entitled "Babies, Aging and Migration: How is Population Changing?"
- Chmura Economics & Analytics provided a financial update in the "Dynamic Change in Virginia's Economy" presentation.
- The DHRM agency head provided a presentation entitled "Future of the State Workforce ... Technology can Help Solve the Problem."

5. TECHNOLOGY BUSINESS PLAN INITIATIVES

Initiative one - Emphasize programs and tools that enable all citizens to interact with government safely and securely, and when, how and where they want to interact

Background: As consumers, citizens are increasingly accustomed to being able to access the goods and services they require via a full range of means — walk-in, phone-in or "surf-in" — providing the opportunity to conduct business any time of the day or night anywhere they might be that suits their needs and desires. They expect no less from the public sector — and government has clear efficiency and effectiveness motivations as well for meeting those expectations.

Re-engineered business processes can improve internal operations while providing a more satisfying customer experience. Collaborative applications such as the Governor's Business One-Stop are exemplary of these kinds of customer-centric services. Newer and expanding forms of interaction, such as social media, need to be further explored and applied. With the proliferation of mobile devices, there is a need to articulate and promote a strategic approach to providing services for mobility, while maintaining security.

Initiative two - Improve information-sharing and governance to derive quality information from data already collected

Background: A number of the Commonwealth's Enterprise Strategic Priorities and their associated strategies emphasize increasing the efficiency and effectiveness of government services through improved sharing of information, both across state agency boundaries and among all levels of government and associated non-governmental organizations. Finding and implementing ways to improve data sharing and information flows among existing/legacy systems can significantly improve the effectiveness of such systems, while also extending their useful lives. Critical to this effort is updating the *Code of Virginia* to support, rather than disallow, data sharing, while continuing to ensure the privacy of citizens is maintained and respected.

Equally important, state government needs to build on information gathering and sharing to develop data analytics. Emphasis should be placed on identifying the right analytical tools, information architecture and training to enable agencies to transform existing data (whether internal or shared) into quality and actionable information.

Where improved data flows and data analytics can lead to streamlining processes, opportunities for such improvements to pay for themselves should be explored.

Initiative three - Leverage technology to improve worker productivity and make state employment more attractive to the current and future workforce

Background: As noted above, documented trends show a clear pattern of an aging state government workforce with large percentages at or near retirement eligibility, and increasing difficulties attracting and retaining younger workers to state employment. Virginia's continued robust population growth and diversity, and the corresponding increasing demands for state services inevitably will place additional workload pressures on the state workforce.

A more "millennial-friendly" work environment will help state government compete with private sector organizations already instituting such changes. In addition to keeping current with such trends as telework, uses of consumer technology and supporting a mobile workforce, improvements in various administrative systems state workers use daily also could enhance their workday experience. A concerted focus on leveraging cost-effective, productivity-enhancing technologies that encourage collaboration can increase the effectiveness of state workers while providing a more fulfilling and satisfying work environment —thereby contributing to improved customer service.

In keeping with the millennial's desire to make a difference, it is imperative to document and promote the direct role of commonwealth employees in making a difference in the lives of citizens. Publicizing that Virginia's state agencies and institutions develop strategic plans and key objectives that support the higher-level, long-term goals stated by the Council on Virginia's Future, such as being a national leader in the preservation and enhancement of our economy and recognized as the best-managed state in the nation, can help. In addition to providing the opportunity to make a difference, state government offers

a wide variety of challenges in many different lines of business, which addresses the millennial's desire for personal and professional growth.

Initiative four - Support educational attainment initiatives — key to achieving state economic development and quality of life goals

Background: A broad range of the quality-of-life indicators in the Council on Virginia's Future's long-term goals reference the positive impacts of educational attainment, including achieving industry-recognized credentials. Strategies that support those priorities can be enhanced by technologies that improve communication, collaboration and information-sharing among participating entities — state, regional and local.

Of increasing interest is the potential impact of online learning through public and private organizations, and the role of technology in supporting home schooling. To help citizens navigate the emerging, and at times confusing, "e-learning" environment, the state should bring to bear technology and data to support education and credential achievement where and when citizens want it. This activity is an essential component for achieving the Council of Virginia's Future goal to elevate the educational preparedness and attainment of Virginia citizens.

Initiative five - Expand technology platforms and productivity tools that support Virginia's goal of remaining the best-managed state

Background: To be recognized as a "best managed" state means that Virginia has identified and measured those business practices that make it best managed. To sustain its leadership, Virginia needs to promote technologies that enable, sustain and enhance these business practices. This requires funding for the implementation of technology solutions and continuing funding to sustain the technology in order to obtain its long-term benefit.

At present, the lack of funding to acquire and sustain current "best practice" technology inhibits technology's role in supporting the goal of remaining a best-managed state. This can be addressed in part by focusing on business opportunities lost as a result of the lack supporting technology.

A good example of an emerging best-practice technology is cloud computing. Cloud computing can provide faster, flexible implementation at lower initial and sustaining cost. It addresses business needs in a timely manner at lower cost. However, protecting the commonwealth's sensitive data is a top priority and cloud computing is not without risk, which is addressed in initiative six.

Initiative six – Support initiatives that will make Virginia the leader in IT security and cybersecurity

All in the commonwealth are acutely aware of the security threats in cyberspace and to the commonwealth's IT infrastructure. Within weeks of coming into office, Governor McAuliffe established the Cyber Security Commission to maximize Virginia's potential contribution to cybersecurity. In its August 2015 report, "Threats and Opportunities," the commission proposed "29 specific recommendations to expand Virginia's cyber leadership by improving educational opportunities, increasing cyber related jobs through initiatives focused on new areas of manufacturing and automation, enhancing security of Virginia's critical infrastructure (private and public), making government more effective in achieving its own cybersecurity, strengthening Virginia's laws against cybercrime, and increasing public awareness and availability of resources related to cybersecurity."

Several of these recommendations focus on strengthening the commonwealth's IT infrastructure. At a time when requests for personally identifiable information are increasing, it is imperative that such requests be supported with appropriate IT security to maintain citizen confidence and comfort. This will require agencies to make investments to remedy identified security inadequacies and to maintain their security infrastructure in the face of evolving threats. However, investing in security currently comes at the expense of other budgeted IT activities. The commonwealth needs to develop a funding model that supports both IT expansion and ongoing security efforts.

Becoming a leader in IT security is a necessary step toward becoming a leader in the use of IT to proactively address business issues and meet citizen needs.

Initiative seven – Expand and support enterprise and collaborative IT services to implement business focused approach to IT services

A characteristic of well-managed organizations is they develop and deploy enterprise-wide services that are a cost-effective and an efficient means to address business needs across the entire organization. The Commonwealth Strategic Plan for Information Technology recognizes the benefits of this approach in the “enterprise shared services” technology trend. That trend calls for continuing “to support, and where appropriate, extend the model of enterprise shared services to improve efficiency and effectiveness in commonwealth operations where business functions and data cross departmental boundaries.”

Implementation of new enterprise or collaborative shared services is an important tool for addressing multiple executive branch agency business needs while managing long-term technology costs. The start of the IT infrastructure services sourcing effort provides a timely and significant opportunity to enhance the contribution shared services can make to a long-term IT solution that delivers the best and most agile business-focused IT services.

Implementing enterprise or collaborative services is not new to the commonwealth, as executive branch agencies have participated in enterprise shared IT services for several years through the Virginia Information Technologies Agency (VITA) oversight of the infrastructure services contract with Northrop Grumman, Cardinal, PMIS and enterprise-wide procurements. The IT infrastructure services sourcing effort draws on that participation, as it is an expansive activity, requiring time and energy commitments from a wide variety of IT and agency leaders and staff across the executive branch.

6. RECOMMENDED ACTION STEPS FOR PLAN IMPLEMENTATION

The commonwealth has had a statutory requirement for a statewide strategic IT plan in place, in one form or another, for the past two decades. In the corporate world, such an IT plan would be based on a commensurate corporate-wide strategic business plan.

In the new Commonwealth Enterprise Strategic Priorities, the state now has a state government counterpart to such a corporate-wide strategic business plan. This Commonwealth Technology Business Plan and the seven initiatives therein, provided a logical link to and a business-based launching platform for the Commonwealth Strategic Plan for IT: 2012-2018 version of that statewide strategic IT plan.

To launch that strategic IT planning effort, the chief information officer of the commonwealth:

- Used ITAC Technology Business Plan initiatives as starting point
- Identified emerging technology trends that support the ITAC initiatives
- Developed commonwealth goals and strategic directions to guide and govern deployment of technology trends
- Reviewed the plan draft with business leadership
- Published the plan as a website to enable timely updates and allow the plan to remain current and responsive to changes in commonwealth and agency business needs

To provide ongoing business oversight and communications with ITAC and ensure that IT in the commonwealth is supporting the appropriate investments as dictated in the Commonwealth Strategic Plan for Information Technology, the Commonwealth Technology Business Plan is to be updated every two years.

Additional recommended action steps include the following:

- Incorporate the findings of this plan into the next update of the Commonwealth Strategic Plan for Information Technology
- Develop and execute a communication plan to promote the plan update and implement the recommended actions
- Recognizing that many agency staff have gained knowledge, expertise, and experience in the technologies that support the above initiatives, implement mechanisms for those staff to share their knowledge, expertise and experience with co-workers in agencies seeking to adopt the technologies (Such mechanisms should include an accessible employee “skill set” database where employees can post their knowledge, expertise and experience.)
- Select one technology of significant interest to agencies and develop a model competency center to determine if this mechanism is effective in supporting agency adoption.
- While recognizing the significant impact the IT infrastructure services sourcing effort will have on agency technology and business plans, seek and promote input from executive branch agency business and IT leaders to ensure the needs of agencies and the enterprise are met before IT sourcing contracts are signed