BUILDING A DIGITAL FOUNDATION

REPORTING BACK TO THE COMMONWEALTH OF VIRGINIA

FROM THE HONORABLE EUGENE J. HUANG
SECRETARY OF TECHNOLOGY

NOVEMBER 2005

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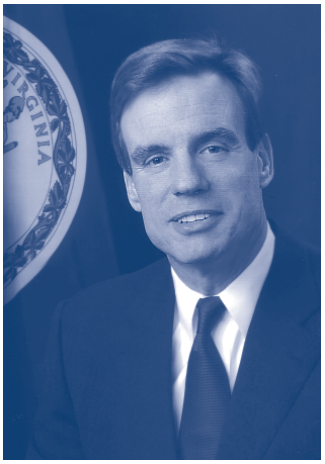


Governor Mark R. Warner

When we developed Virginia's first statewide technology strategic plan in 2002, our goal was to create a comprehensive blueprint that would guide the Commonwealth's approach to technology in its many forms. As a driving force of our strong economy, a means for Virginians to access information and services with greater ease, and an opportunity for state government to serve as a better steward of taxpayer dollars, the benefits and uses of technology are almost limitless.

The title of the strategic plan, "Virginia in the Global Digital Economy," has taken on increased significance in the three years that have passed since that document was released. As I have witnessed on recent trade missions to China and India, Virginia must now compete on a global level to remain economically competitive and at the forefront of innovation. For the Commonwealth to continue as a leader in the realm of technology, we must always innovate, and our work during my term has been motivated by this belief.

We have worked tirelessly to encourage the growth of emerging technologies. Through the Governor's Commission on Biotechnology and the Chesapeake Nanotechnology Initiative, we have worked to position the Commonwealth and our region as leaders in these areas. To increase research capabilities at our colleges and universities, we partnered with neighboring states to bring National Lambda Rail, a next generation data communications network, to Virginia.

Through our efforts to expand broadband access across the state, we are allowing Virginians in every region of our Commonwealth to take advantage of opportunities in the knowledge-based economy. With the Regional Backbone Initiative (RBI), we are creating a network that will connect five cities, 20 counties, and more than 50 industrial parks across Southside Virginia and offer high-speed accessibility to an estimated 700,000 residents and 19,000 businesses.

We have also been committed to ensuring that our state government uses information technology as efficiently and effectively as possible, including developing an integrated, enterprise approach to our IT projects and assets. The result of these efforts, the Virginia Information Technologies Agency (VITA), represents the consolidation and transfer of 90 separate agencies' independent IT divisions. VITA has begun to realize cost savings in excess of $138 million over the long term and has attracted great interest from states across the country. When the Government Performance Project ranked Virginia the nation's best managed state earlier this year, it highlighted our commitment to IT reform and the business-like approach to long-term IT planning that we have adopted over the last four years.

Guided by our strategic plan, we have made great strides to make technology work for all of Virginia's residents. I hope that you will continue to partner with us as we reach new heights and work to ensure that our Commonwealth remains a leader in innovation.

Mark R Warner

Governor Mark R. Warner

Eugene J. Huang, Secretary Of Technology

A MESSAGE FROM THE SECRETARY OF TECHNOLOGY

During the past four years, Governor Mark R. Warner's Administration has been distinguished by landmark accomplishments in technology. Virginia has established itself as a leader in digital government and maintained a commitment to ensuring that the Commonwealth remains at the forefront of innovation.

We have promoted the efficient and effective use of information technology, cultivated emerging technologies such as nanotechnology and biotechnology, developed strategies for the deployment of broadband communications and supported continued growth in Virginia's dynamic technology industry. We have worked to find better ways to serve the needs of residents and bolster our economy through a variety of initiatives, which seek not only to grow new technology businesses but also to improve the quality of life throughout the Commonwealth.

Two agencies have been indispensable in our work. Virginia's Center for Innovative Technology (CIT), responsible for encouraging innovation and technology-based economic development, has made great strides toward increasing federal research and development funding, the commercialization of intellectual property, and statewide broadband deployment. The Virginia Information Technologies Agency (VITA) has overseen the technical infrastructure and strategic direction of the Commonwealth's information technology (IT) assets. VITA, in only two years of operation, has revolutionized service delivery for Virginia's residents; consolidated IT infrastructure; planned, budgeted and tracked IT expenditures; and brought industry-recognized best practices to IT procurement.

We have made great strides during this Administration, and I am confident that Virginia is well positioned for advances to come. However, technology is always moving forward, often at a pace that outstrips the ability of government to keep up. Virginia has served as an example for how government can embrace technology, and I believe that we must continue challenging ourselves to develop innovative approaches for delivering government services efficiently and effectively.

It is my hope that this report will serve as both an account of where we have been and a blueprint upon which future administrations might build. Together with the statewide strategic plan first released in 2002, this report represents a vision for Virginia's high-tech future.

Finally, I would like to thank Governor Warner; members of this Administration, particularly my predecessor, former Secretary of Technology George C. Newstrom; business leaders; our dedicated state workforce; and the many Virginians who have helped guide and implement the innovative initiatives detailed in this report. With the sustained involvement of individuals of this caliber, I am confident that Virginia will continue to serve as a model for the successful and innovative use of technology in our digital economy.

Eugene J. Huang, Secretary Of Technology

INTRODUCTION

During Governor Warner's Administration, Virginia has capitalized on its many strengths in technology to provide better services and greater economic opportunity for its residents. With the statewide strategic plan for technology developed in 2002, the Governor set forth a series of aggressive goals that focused on establishing a comprehensive, multi-faceted campaign to improve technology in the Commonwealth, attracting additional investments in our growing technology-based economy, revolutionizing government service delivery to customers, and providing significant cost savings to Virginia taxpayers.

The Secretary of Technology has served as the key point of contact within the Governor's Cabinet for technology matters, working to implement the recommendations of the strategic plan as well as overseeing the application of technology to the business of government and coordinating strategy among government, academia, and the private sector to enhance the growth of the technology industry. Secretary Huang has focused particular attention on emerging technologies such as nanotechnology and biotechnology and the deployment of broadband communications services to all parts of Virginia. The Secretary has also guided state government's strategic investment in information technology and played an integral role in advising companies on their research and development initiatives, bringing an increasingly critical perspective to the Cabinet.

For many years Virginia has served as a leader in the use of information technology by state government, and Governor Warner has maintained a strong commitment to ensuring that IT is used to enhance the operations of state government and the delivery of state services to the residents of the Commonwealth. Virginia was recently ranked the nation's best-managed state, in part due to the Administration's innovative approaches in the area of information technology.

Faced with a significant budget shortfall at the beginning of his term, Governor Warner saw an opportunity to rethink and improve the way in which the Commonwealth handled its many information technology assets. In 2003, the Warner Administration streamlined state IT services and procurement through a first-of-its-kind reorganization and consolidation of both IT agencies and resources into the Virginia Information Technologies Agency (VITA).

Governor Warner has also been committed to growing and attracting technology-based jobs and businesses to the Commonwealth. Virginia's Center for Innovative Technology provides the only statewide suite of programs and services for technology researchers, technology entrepreneurs and small technology businesses across the Commonwealth and continues to provide a significant return on the state's investment. Through the Governor's Commission on Biotechnology and the Chesapeake Nanotechnology Initiative, a current joint partnership with the State of Maryland and the District of Columbia, Governor Warner's Administration has taken steps to cultivate these important sectors and allow them to expand in the Commonwealth and our region.

This Administration hands to the next a Virginia that is a major player on not only the regional and national levels but also the international stage. This report highlights both our past successes and a compelling vision for the future, as our research, business and technological endeavors continue to place Virginia at the forefront of progress and opportunity.

"Laws and institutions must go hand in hand with the progress of the human mind. As that becomes more developed, more enlightened, as new discoveries are made, new truths disclosed…, institutions must advance also, and keep pace with the times." — Thomas Jefferson

STRATEGIC GOALS: VIRGINIA'S TECHNOLOGICAL FOUNDATION

At the start of his administration, Governor Warner identified the following three guiding principles to shape Virginia's Technology strategic planning effort:

1. Develop the role of the Chief Information Officer of Virginia so that the Commonwealth's technology resources are most effective, efficient, and meet the needs of our customers – the citizens of the Commonwealth of Virginia
2. Ensure all of Virginia shares in the growth and success of our participation in the global market of the future.
3. Help develop Virginia as a major entity in the global economic marketplace of the future.

With these three principles in mind, former Secretary of Technology George C. Newstrom identified eight initiatives that have guided the majority of the accomplishments during this administration. They are:

1. **Revolutionize service delivery to our customers** through implementation of a customer-facing Internet portal and increasing the quantity, quality, and adoption of online services, particularly in the area of online licensure and interactive forms.
2. **Consolidate IT infrastructure and provide centralized services** as a technology utility. The plan also calls for developing a comprehensive, statewide information security program and for overhauling state administrative systems in the area of finance, planning and budgeting, and human resources.
3. **Plan, budget, and track IT expenditures** by developing a capital planning and funding process for IT, developing a comprehensive technology management policy, and improving systems to track IT expenditures.
4. **Manage IT procurement** by developing and implementing a best practice model for effective and timely IT procurements.
5. **Increase federal research and development funding** to industry and Virginia's colleges and universities, including historically black colleges and universities (HBCUs).
6. **Increase commercialization of intellectual property** from Virginia's labs, entrepreneurs, and institutions of higher education, and grow entrepreneurial companies.
7. **Increase statewide broadband deployment**, especially in Virginia's rural areas, to enhance economic development.
8. **Promote technology-based economic development** in Virginia by growing technology companies.

The Virginia Information Technologies Agency (VITA) has addressed the first four initiatives, while the Center for Innovative Technology (CIT) has implemented many programs to further the last four.

KEY AWARDS AND RECOGNITION

The Commonwealth has received numerous accolades over the past four years for its achievements in the realm of technology.

Some highlights include:

- **June 2002** Virginia ranks #1 in Social Services delivered to citizens through information technologies and digital government.[1]
- **July 2002** Virginia launches the nation's first "wireless portal," My Mobile Virginia.
- **Sept. 2002** Virginia's State Portal is selected as #1 US State Government Internet Portal.[2]
- **Dec. 2002** Virginia's State Board of Elections is recognized for Virginia's suite of online voter and election services.[3]
- **June 2003** Virginia's electronic procurement system, eVA, is recognized with the 2003 State Government Innovator Award as one of the nations "Best in Breed" technology projects for 2002.[4]
- **Sept. 2003** Virginia receives the 2003 NASCIO Award for "State Information Technology Management Initiative,"recognizing Virginia for its innovative IT transformation initiative and the creation of VITA.[5]
- **Nov. 2003** Virginia agencies win the 2003 Cost Effectiveness Through Government Awards. Winners were: VEC's "Online Unemployment Claims Filing Service," VIPNet's "Live Help" Online Real-Time Customer Service, Tax Department's "VATAX Public-Private Partnership Project" and DGS's "eVA," the Commonwealth's electronic procurement system.[6]
- **April 2004** VITA and the Virginia State Police are both awarded Medals of Achievement for visionary use of information technology.[7]
- **July 2004** Virginia ranks #3 in the nation in the use of information technology in running 21st century government, improving on its November 2002 ranking of 6th in this category.[8]
- **Sept. 2004** Two Virginia projects receive 2004 Recognition Awards from the National Association of State CIOs. Virginia's E-911 Deployment Project and Virginia's Base Mapping Program were given awards based on IT initiatives that best assist government officials in innovatively executing their duties and providing cost-effective service to citizens.[9]
- **Jan. 2005** Virginia is the only state to receive straight A's in the Government Performance Project's "05 Grading the States" in all four categories: money, people, infrastructure, and information.[10]
- **Aug. 2005** VITA and the Commonwealth of Virginia wins a Customer Award from Meridian KSI for "Best Launch of the Knowledge Center." The VITA KC Implementation was identified as a model for other states to follow.[11]

1 Progressive Policy Institute, New Economy Index
2 Best of the Web, Center for Digital Government
3 2002 Grace Hooper Government Technology Leadership Award, Government Executive Magazine
4 Massachusetts Institute of Technology (MIT)
5 NASCIO
6 National Electronic Commerce Coordinating Council (NECCC)
7 Milken Institute, 2004 State Technology and Science Index
8 Center for Digital Government
9 NASCIO 2004 Recognition Awards
10 Government Performance Project's "05 Grading the States"
11 Meridian KSI

I. IT REFORM: THE VIRGINIA INFORMATION TECHNOLOGIES AGENCY

EXECUTIVE SUMMARY

The Commonwealth of Virginia's information technology transformation initiative is one of the nation's most aggressive and comprehensive reforms of information technology (IT) in state government. Previously highly decentralized, Virginia has consolidated IT infrastructure and services and IT employees from 90 executive branch agencies into a single agency, the Virginia Information Technologies Agency (VITA). More information on VITA can be found at: www.vita.virginia.gov.

VITA opened its doors as the state's consolidated IT agency on July 1, 2003, and completed the integration of 90 executive branch agencies in December 2004. In just over two years, VITA has made significant progress towards achieving its four stated goals:

- Revolutionize service delivery to our customers.
- Consolidate IT infrastructure and provide centralized services.
- Plan, budget, and track IT expenditures.
- Manage IT procurement.

As the Commonwealth's IT "utility," VITA is now responsible for the provision of IT infrastructure services, centralized procurement for IT-related goods and services, and the governance and oversight of major IT projects throughout the Commonwealth. VITA is one of the Commonwealth's best examples of the impact, growth and return that IT reforms in state government can have. Through these reforms, along with the consolidation and leveraging of the Commonwealth's purchasing power for technology products and services, over $60 million in savings and cost avoidance have been achieved with a further $49 million projected for FY 06.

The organizational and cultural changes to the structure and function of state government have also resulted in numerous benefits, including:

- Creating greater accountability and transparency for the funding and implementation of technology projects.
- Improving services to residents, businesses, state agencies, and localities.
- Improving governance and IT oversight.
- Leveraging the Commonwealth's significant IT buying power.
- Investing in future technology projects.
- Pursuing enterprise solutions and opportunities.
- Generating long-term cost savings.

"People all over the country are looking to see what we are doing here in Virginia, and I am confident the work by VITA will serve as a blueprint for other states in the months and years to come." — Governor Mark R. Warner

- Providing unparalleled employment and professional development opportunities for IT employees.
- Streamlining government structure and increasing efficiencies.

As a result of the IT transformation initiative, Virginia:

- Eliminated major IT project failures.
- Minimized duplicative systems investments.
- Effected behavioral and cultural change to place emphasis on citizen-centric approaches to service delivery.
- Enabled the strategic redesign of business processes in state government, supporting transformations in other common operations.
- Is positioned to leverage technology investments to support economic development and the creation of new jobs in the Commonwealth.

BUILDING ON VITA ACCOMPLISHMENTS

The creation of VITA led to the fulfillment of the first four strategic goals:

- **Revolutionize service delivery to our customers** through implementation of a customer-facing Internet portal and increasing the quantity, quality, and adoption of online services, particularly in the area of online licensure and interactive forms.
- **Consolidate IT infrastructure and provide centralized services** as a technology utility. The plan also calls for developing a comprehensive, statewide information security program and for overhauling state administrative systems in the area of finance, planning and budgeting, and human resources.
- **Plan, budget, and track IT expenditures** by developing a capital planning and funding process for IT, developing a comprehensive technology management policy, and improving systems to track IT expenditures.
- **Manage IT procurement** by developing and implementing a best practice model for effective and timely IT procurements.

VITA has experienced major successes in each of these areas over the past two years and the following sections detail accomplishments thus far. These reforms have:

- Successfully implemented IT reform legislation.
- Provided increased opportunities for state IT employees.
- Established a new governance structure for IT.
- Expanded project planning, implementation, and management activities.
- Promoted an integrated, enterprise approach to IT.
- Launched the Procurement Reform (ProReform) project & centralized procurement activities.
- Facilitated stakeholder participation through collaboration groups.
- Implemented a customer-facing internet portal, Virginia.gov.
- Initiated enterprise activities.
- Developed mechanisms to invest in future technology.

"[VITA]...represents one of the more comprehensive transformations of information technology in the nation and firmly establishes Virginia as a leader in the use of technology in government service and information." — Cathilea Robinett, Executive Director, Center for Digital Government

The legislation creating VITA mandated a phased consolidation of agency assets and staff from 90 Executive branch agencies to VITA over an 18-month period in three phases: small agencies (fewer than 100 employees) by January 1, 2004; medium agencies (between 100 and 400 employees) by July 1, 2004; and large agencies (more than 400 employees) by January 1, 2005.

"I think this is the boldest plan I've seen around when it comes to top to bottom fundamental reorganization of a state's IT apparatus." — Robert Atkinson, Vice President and Director of technology and new economy projects at the Progressive Policy Institute

SUCCESSFULLY IMPLEMENTED IT REFORM LEGISLATION

The Virginia Information Technologies Agency (VITA) opened its doors on July 1, 2003, as an Executive branch agency within the Technology Secretariat. Three agencies, as well as the independent IT divisions of 90 Executive branch agencies, were consolidated into VITA over an eighteen-month period. Rather than building systems and infrastructure 90 different ways 90 times, VITA reduces redundancy and deploys flexible, standards-based systems and tools that can be used, adapted, and re-used throughout the Commonwealth.

In Virginia's previously highly decentralized IT environment, this task was extremely complicated, particularly as 90 percent of the state's IT resources transitioned in the final six months of the integration process.

VITA Scope Statistics

	7/1/03 Baseline	1/1/04 Small	7/1/04 Medium*	1/1/05 to Today
Supported Organizations	3	37	56	90
Locations	5	87	543	1,497
PCs and Laptops	600	1,436	15,932	67,223
Servers	300	409	986	3,078
Employees**	383	388	616	1,076

* Includes VDOT transition statistics, VDOT, a large agency, transitioned early.
** Reflects FTE classified positions.

Despite the enormous complexity of the task, VITA self-funded and completed all agency transitions successfully,meeting the January 1, 2005, deadline over a month early. All commitments made by the Governor and the Secretary of Technology were met, including:

- "Do no harm" and maintain continuity of services throughout the transition process.
- Ensure as smooth and seamless a transition as possible for agencies and employees.
- No net layoffs of IT employees as a result of creating VITA.
- Invite and facilitate stakeholder-driven solutions.
- Learn from and avoid past mistakes.

The implementation of this IT reform legislation has directly resulted in multiple accomplishments included in the remainder of this section.

PROVIDED INCREASED OPPORTUNITIES FOR STATE IT EMPLOYEES

The creation of VITA provides increased opportunities for state IT employees, including opportunities for training and retraining in areas of mutual benefit to the employees and VITA and unparalleled advancement opportunities in state government not possible in a decentralized environment.

VITA developed and deployed the Commonwealth Project Manager Development Program (PMDP) to provide information, resources, and affordable training opportunities to project managers throughout the Commonwealth.

An example of the increased opportunities for state IT employees is the Learning Management System (LMS). The enterprise LMS, branded as the Commonwealth of Virginia Knowledge Center (CoVA KC), enables access to online learning opportunities with training, resources, expertise from peers and other professionals, and collaborative knowledge for all state employees. Employees can develop new skills, polish up existing skills, and even pursue various certification opportunities. Currently, eight agencies, including VITA, are participating in this enterprise system. The vision is for all state agencies to use the CoVA KC for their online learning needs.

AVAILABLE RESOURCES

- 1065 total online courses are freely available for VITA employees.
- 3792 total online books from leading technical publishers are freely available for VITA employees

VITA KC USAGE

- 891 VITA employees have accessed the VITA KC 2 or more times since its March 1, 2005 launch date.

COURSE USAGE

- Since March 1, 2005, 100% of VITA employees have launched one or more customized online training course.

VITA launched CoVA KC on March 1, 2005; it offers employees 24/7 access to nationally-recognized online technical and business training courses and online reference books. This investment in workforce development is strengthening the knowledge base and sharpening the skills of all VITA employees. During the KC's first quarter, VITA employees accessed more than 430 online courses in topic areas such as customer service, desktop and network applications, and general management. Also during the quarter, VITA deployed a customized customer service training course for more than 1,000 employees who are geographically dispersed throughout the Commonwealth. By delivering this course online, VITA avoided $20,000 in instructor-led training and travel costs. Meridian KSI honored VITA and the Commonwealth with a Customer award for "Best Implementation of the Knowledge Center" in 2005.

To date, 970 total people have participated in the Project Manager Development Program over the last 2 years. Of those, 653 people have established a Project Manager qualification record with VITA.

ESTABLISHED A NEW GOVERNANCE STRUCTURE FOR IT

The IT Reform legislation created the Information Technology Investment Board, charged with reviewing and prioritizing enterprise-wide technology investments across state government. The legislation also called for the Board to hire a Chief Information Officer (CIO) to serve as VITA's chief administrative officer under a special five-year employment contract to ensure continuity across administrations. Accomplishments in the governance arena include:

- The Board conducted an extensive nationwide search for the Chief Information Officer for the Commonwealth, and hired Lemuel C. Stewart, Jr.
- The Board formed four committees, including the Finance and Audit Committee, IT Project Review Committee, Legislative Review/Liaison Committee, and CIO Evaluation Committee. The IT Project Review Committee was renamed the Strategic Planning and Review Committee in July 2005 to better reflect its forward-facing responsibilities.
- Board oversight of Commonwealth IT investments at the budget, project planning, and project development levels has been implemented.
- The Board reviewed, amended, and approved the FY 05 and FY 06 biennial budget requests for VITA.

As a result of the new governance structure, the VITA Internal Audit Director was hired in early 2005 and is responsible for providing independent, objective assurance and consulting services to add value and improve VITA's operations. The Internal Audit Director works independently at the direction of the Board and CIO of the Commonwealth to develop and implement a flexible, annual audit plan; evaluate and assess significant agency functions services processes, operations, and controls; and evaluate and improve the effectiveness of risk management, control, and governance processes.

EXPANDED PROJECT PLANNING, IMPLEMENTATION, AND MANAGEMENT ACTIVITIES

A Project Management Division within VITA was created to instill best practices for the management and oversight of large-scale IT projects. This Division has, to date:

- Assisted the Secretary of Technology in submitting a list of prioritized technology investment projects for the 2004 – 2006 budget biennium to the IT Investment Board and the General Assembly. This process will repeat itself every biennium with an updated list of vital projects.
- Coordinated the IT strategic planning process across the Commonwealth.
- Developed and promulgated on behalf of the Secretary of Technology the Project Manager Selection and Training Standard to ensure project managers have adequate skills and training.
- Developed and promulgated on behalf of the Secretary of Technology a Commonwealth Project Management Guideline that specifies best practices.
- Developed technical and architectural standards and guidelines and the accompanying policies and procedures that reflect emerging trends and best practices across a spectrum of technologies.
- Implemented a Web-based Project Management Information Clearinghouse to facilitate the exchange of best practices and lessons learned.
- Developed and promulgated on behalf of the CIO the Platform Architecture Report to assist agencies in making decisions related to platform design and acquisition.
- Developed and promulgated on behalf of the CIO the Commonwealth Technology Management Policy to establish a comprehensive and uniform policy for the management of technology investments throughout the Commonwealth.

Read more: http://www.vita.virginia.gov/projects/cpm/cpmDocs/CPMG-SEC1-Final.pdf

The Project Management Division instituted the use of the Commonwealth Major IT Project Status Report Dashboard as the management tool for supporting the oversight of major IT projects at all levels. The IT Project Dashboard presents the CIO, sponsoring Secretariats, and proponent agencies with a timely summary of the status of their major projects. For each meeting of the IT Investment Board, information from the Dashboard is summarized in the ITIB Major IT Project Status Report. Further, each month the status of a project is evaluated by the Chair of the proponent Secretariat Oversight Committee.

As a key refinement in these project oversight activities, the IT Investment Board has directed the development of a more consistent and comprehensive Independent Verification and Validation (IV&V) program for major IT projects. VITA retained CACI, Inc. to assist with development of the procedures and templates for the IV&V program. During the summer of 2005, the program templates and guidance were published, and VITA will implement the program during FY 2006. All major projects initiated since January 2005 have been required to contract with IV&V providers using the Advance IT Services contract and to conduct IV&V reviews as specified in the Commonwealth Project Management Standard (GOV2004-02.3.2).

PROMOTED AN INTEGRATED, ENTERPRISE APPROACH TO IT

The creation of VITA provides a framework of coordination and consistency to develop and deploy fully integrated systems and services based on standards, best practices, and clear methodologies. VITA will oversee the enterprise architecture of state government to ensure all the "pieces" fit together and support the mission and business of government agencies.

At the direction of the IT Investment Board, VITA published the Enterprise Business Architecture (EBA) in April 2005 to gain a better understanding of the business of the Commonwealth and ensure that IT investments effectively support critical business needs. The EBA is a valuable tool for decision-makers to not only align technology with critical business needs but also to identify and pursue opportunities for overall transformation of state government services to citizens and businesses.

The EBA contains a broad range of information on the state's IT environment and serves as an important baseline tool for gauging the merits of future IT investments. It provides a clear picture of the "as is" environment, helping Executive branch agencies develop their strategic business plans. In 2005, this process was formalized by folding the IT strategic planning into the agency strategic business planning required by the Department of Planning and Budget. Along with the EBA, the data submissions that accompany agency strategic plans help the ITIB develop recommendations for prioritization of major IT projects delivered to the Governor and General Assembly.

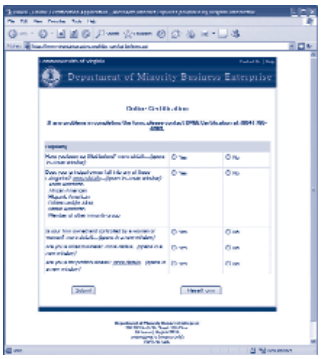
Read more: http://www.vita.virginia.gov/ITIB/docs/050413/EBAFullReport04-13-2005.pdf

LAUNCHED PROCUREMENT REFORM (PROREFORM) PROJECT & CENTRALIZED PROCUREMENT ACTIVITIES

The Procurement Reform (ProReform) Project has developed and implemented industry best practices for technology procurement, leveraged the Commonwealth's substantial buying power, and improved industry partner relations. By enabling the Commonwealth to consolidate and leverage its purchasing power for technology products and services, over $60 million in savings and cost avoidance have been reported in FY 04 and FY 05. Another $49 million is expected for FY 06 for a total of over $109 million in 3 years.

To date, the Office of the Secretary of Technology and VITA have:

- Published *Buying Smarter, Faster & Better: VITA's Guide to Technology Procurement*, which outlines a best practices business model for delivery of technology procurement and contracts.
- Supported the Virginia Partners in Procurement initiative and helped negotiate some of the most aggressive prices in the industry.
- Taken proactive steps to implement the Virginia Administrative Dispute Resolution Act (VADRA) as a means for resolving potential conflicts.
- Implemented a solutions-based approach oriented to value, not strictly price. Additionally, to ensure equity, there were limited terms and conditions.
- Improved asset management through centralized eVA ordering.
- Launched a small-, women- and minority-owned business (SWAM) initiative in information technology to provide more access and opportunities. Read more: https://www.virginiainteractive.org/mbe_cert/cgi-bin/intro.cgi
- Lowered costs by leveraging buying power.



VITA has been able to provide *value-add* to its customer agencies, localities, and the public by generating cost savings, ensuring continuity of service, and improving information security. Specific accomplishments include:

- Negotiating with a private sector business partner to reduce by more than $500,000 annual telecommunications charges. The Department of Social Services was the primary beneficiary.
- Assisting the Department of Health and the Department of Social Services with their respective moves by providing the latest technology in telecommunications, Voice Over IP.
- Helping the Virginia Retirement System convert a payroll application to an automated system, saving resources and improving reliability.

Through April, FY 05, the Commonwealth saved $12.9 million on hardware, $1.4 million on software, and over $1.1 million on storage-related and miscellaneous information technology procurements as a result of these contracts.

- Protecting the Commonwealth from harmful computer viruses through careful monitoring, prevention activities and security advisories with countermeasures to agencies and localities, resulting in decreased exposure and recovery costs, estimated at $500 per computer for the MyDoom worm alone.
- Working with the Secretary of Finance and DPB to return $3.8 million to the budgets of small and medium agencies.
- Providing customer agencies 100 percent availability of all Unisys, IBM, and Unix mainframes and servers since October 2003, and 99.98 percent availability of Windows servers.
- Procuring an enterprise agreement for continuity of operations planning software, templates, tools, and training and expertise, saving the Commonwealth $194,500 by negotiating volume discounts.
- Creating a Web-based tool for telecommunications customers to assess their cellular phone plans for the most cost-effective plan, at an estimated savings of $100,000 per month, or $1.3 million this year.
- Reducing the impact on technology infrastructure resulting from moves associated with the Capitol Complex Renovation project, VITA has provided a central, secure location for all agency servers and associated IT equipment and the staff that supports them. As a result, cost avoidances will result from equipment moving only one time and reductions to the amount of space required by agencies during the renovations. (see above)

VITA has implemented 11 cost-savings initiatives and two cost-avoidance initiatives to date, resulting in the following realized projected savings:

Savings Report (in $1,000s)

	FY 04	FY 05	FY 06 Est
Savings	$15,858	$30,023	$31,878
Cost Avoidance	875	13,455	17,395
Total	$16,733	$43,478	$49,273

Source: VITA Quarterly Report 7/05

VITA also launched 15 "Quick Win" initiatives, the savings of which were returned to agencies to offset the 5.52% administrative fee in FY 2005, which was estimated at a total of $6.7 million.

FACILITATED STAKEHOLDER PARTICIPATION THROUGH COLLABORATION GROUPS

The IT Investment Board and VITA encourage and value broad participation of stakeholders. VITA has established a number of formal and informal groups since the agency was formed in 2003 to facilitate stakeholder participation. Examples of collaboration groups are:

- The Finance Council – provides a forum for communication among agency fiscal officers concerning VITA financial and supply chain issues and assistance with providing solutions.
- The Information Security Officers group – addresses enterprise security and governance issues and provides input into statewide policies and standards.
- Community of Interest (CoIns) groups – formed in areas such as networking and servers, to address operational and strategic/standardization issues.

In future quarters, VITA plans to establish "centers of excellence" throughout the Commonwealth in areas such as geographic information systems (GIS).

To increase this awareness and use of VITA contracts and services by local government entities and other out-of-scope customers, a monthly e-mail/web-enabled marketing program, the *VITA Service Bulletin*, was launched in July 2005. A specific customer service process was created to handle and track inquiries, and both quantitative and qualitative results will be utilized to optimize the program. Part of the effort to increase out-of-scope utilization of VITA services included outreach to the presidents of organizations representing localities, such as the Virginia Municipal League, the Virginia Association of Counties, and others.

ESTABLISHED SERVICES AND SUPPORTING FUNCTIONS

VITA has defined the services it provides and has established foundational, supporting functions, including:

- The VITA Customer Care Center, a central customer service center for all agency IT-related incidents, service orders, and information.
- The VITA Information Center, a centralized system monitoring projects for managing infrastructure and systems centrally.
- Unified e-mail, to provide standards-based e-mail capability to the Commonwealth.
- Consolidation of data centers.
- Server consolidation.
- The Commonwealth of Virginia Network (COVANET) Contract to provide an array of voice and data services, saving the Commonwealth an estimated $12 million over four years.
- A revised rate methodology to ensure VITA services are priced competitively and fairly and are affordable for customer agencies.

To better support its customers, VITA launched a customer satisfaction program in May 2005, which is operating on three parallel tracks:

- VITA has engaged the University of Virginia's Center for Survey Research to develop an independent customer satisfaction survey. The survey will initially target in-scope agencies and will be expanded in future iterations to include other stakeholders, such as potential customers.
- All VITA employees completed a customer service basics course, with advance training planned for the coming quarter.
- VITA initiated a customer satisfaction charter with initial focus on internal customer satisfaction. The goal is to improve customer service to internal customers, thereby promoting excellent service to external customers.

IMPLEMENTED A CUSTOMER-FACING INTERNET PORTAL, WWW.VIRGINIA.GOV

The virginia.gov initiative re-branded Virginia state government online resources to provide significant new access and emphasize a new, unified face in the global digital marketplace. As a technological development, service delivery to customers was revolutionized with the implementation of the customer-facing Internet portal, which strongly focuses on the needs of citizens and businesses. Additionally, the Commonwealth's portal and all state agencies are working toward having websites that are intuitive, easy to use and accessible.

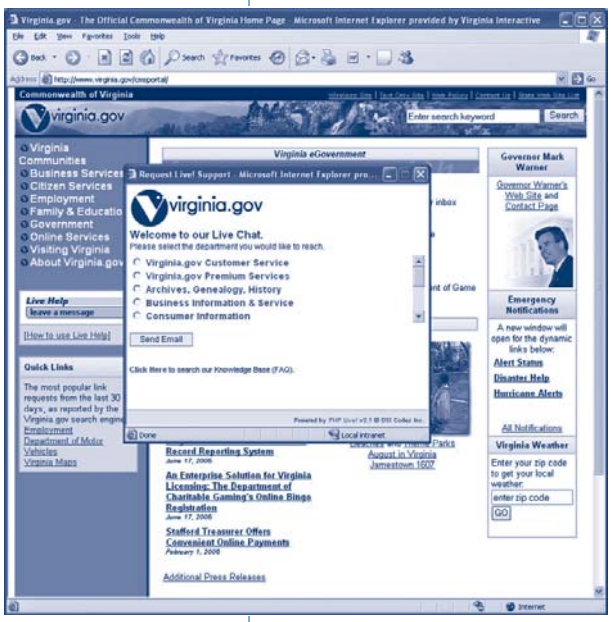
The Virginia Government Internet Domain Naming Standard was developed to help agencies and localities implement statewide electronic directories, reduce overhead and administrative costs, improve customer service, and lay the groundwork for a future e-mail consolidation project.

Thus far, thirteen Internet "templates or tools" have been implemented by VITA for enterprise use by Commonwealth agencies:

- Enterprise Payment Portal
- Content management
- Google search engine
- Web-based security training
- Live Help on portal
- Privacy compliance
- Constituent Notification Service
- Online Store
- Activities calendar service
- Wireless enabled service
- Conference registration service
- Online payment of moving violations
- Agency evaluation tool for projecting and measuring cost savings

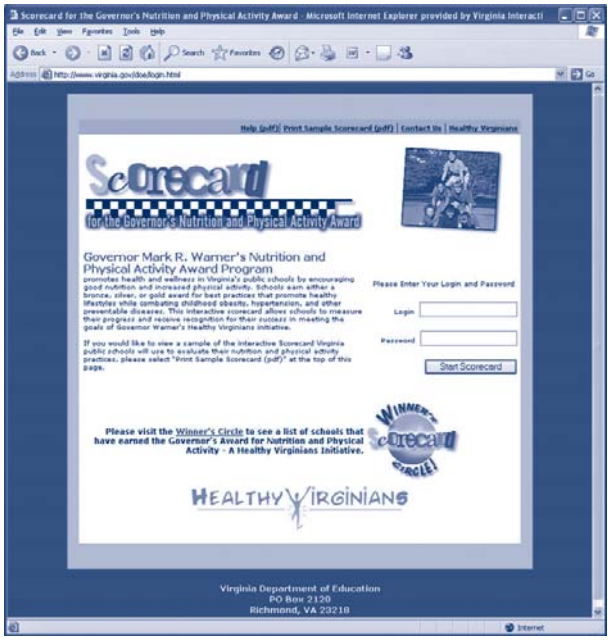
"I want to thank the Warner Administration for putting so many services online at Virginia.gov. It is nice to know we have a government that can keep up with the times and our demands." — Kathryn C. Kearns, Prince William County music teacher

The Warner Administration has worked to increase the quantity, quality and adoption of online services. To this end, several Internet services are now available for direct use by citizens. Government interaction with the public has become more convenient. More services are anticipated in the future and the following services are currently available though a partnership with VITA and a number of agencies and localities:



- Virginia Excels online performance metrics
- Healthy Virginians scorecard
- Virginia Corps volunteer organization search capability
- Governor's Office for Substance Abuse Prevention online social indicators
- Kids Commonwealth site
- Discounted online PC purchasing for Virginia's teachers
- Boat registration renewal service
- Hunting and fishing licenses, as well as point-of-sale service offered at more than 75 Wal-Mart stores
- State Bar Association Lawyer Inquiry Form
- Job registration renewal service

A complete list of all online services is found at: http://www.virginia.gov/cmsportal/services_869/services_1111/index.html



CURRENT ENTERPRISE INITIATIVES

VITA and the ITIB are initiating enterprise opportunities in partnership with agencies that provide robust, flexible systems that can be developed once and deployed many times. As a result of these partnerships, agencies and localities that cannot afford to buy or build systems can have access to affordable service options. Ongoing initiatives include:

- Geographic Information Systems (GIS)
- Government to Government (G2G) Systems Interface (GESI).
- Professional Licensing.

GEOGRAPHIC INFORMATION SYSTEMS

Enterprise GIS service development is being pursued via three parallel tracks:

- Establishing a collaborative enterprise partnership across state agencies through a managed governance process;
- Managing ongoing local support through existing local government partners' collaborative network;
- Developing, marketing, and deploying geospatial enterprise services.

The Virginia Geographic Information Network (VGIN) has held regional GIS workgroup meetings across Virginia with local government partners to build a seamless, consistent, statewide digital road centerline and address file and provide for ongoing updates. VGIN has also installed a state-of-the-art enterprise GIS technology platform at VITA. The platform supports comprehensive enterprise services including the Virginia metadata clearinghouse, the Virginia geospatial data library/archive and exchange services, Internet map services, system support services, and production services. VGIN will deliver the initial implementation of the Virginia Readiness, Response, and Recovery GIS (VR3); the geocoding (addressing) component of the Commonwealth's Voter Election and Registration Information System (VERIS); and the statewide digital road centerlines and address file for the Wireless 911 Service Board's 137 public safety answering points.

GOVERNMENT TO GOVERNMENT SYSTEMS INTERFACE

VITA continues its collaboration with localities and the Department of Social Services (DSS) in order to provide the G2G and GESI—a secure server environment and technical infrastructure in which to host shared applications that facilitate data exchanges between localities and multiple state systems. The service was implemented in March 2005 in Arlington County, making the Commonwealth the first state in the nation to implement, launch, and host this service, projected to save more

"Increasingly VITA is looking like a success every governor from Mark Warner forward will claim." — Doug Koelemay, Bacon's Rebellion

than $20 million in worker time and paper costs annually. The service will also provide for substantial improvements in the quality and speed of service to social services recipients and increases to data quality and integrity.

VITA and Virginia Interactive continue to work with the Department of Professional and Occupational Regulation (DPOR) and other interested agencies on an enterprise licensing solution. Within the Commonwealth, there are 32 state regulatory entities tasked with providing professional/occupational licensing, permitting, certification, and/or registration services to approximately 1.5 million customers. Currently, only three agencies offer online licensing solutions. DPOR was the first agency to begin development, with a projected Summer 2006 implementation. The Department of Charitable Gaming (DCG) was the first agency to launch an online registration system through the enterprise contract for bingo callers and managers.

THE FUTURE OF THE COMMONWEALTH: OPPORTUNITIES THROUGH COLLABORATION

VITA and the IT reform initiative have positioned Virginia to meet the demands of a technology-based service environment. In addition to creating a culture of excellence in service delivery, reliability and transparency, the IT Reform effort is viewed by other states as a model for state government reform efforts – not only in IT but also in areas such as human resources, finances, procurement and other functions typically handled on an agency-by-agency basis. Furthermore, the IT transformation initiative positions Virginia to deliver citizen services more effectively over the next decade as more and more people access government services online.

While Virginia can take pride in these early successes, much work remains to be done to truly transform the business of government and service delivery by leveraging the infrastructure, moving to a shared services model and engaging in substantial business process reengineering.

The most immediate future development is the evaluation of private sector partner proposals. VITA is currently evaluating four proposals of private sector partners through the Public Private Education Facilities and Infrastructure Act of 2002 (PPEA) to share in the risks and the rewards of implementing major infrastructure and enterprise applications initiatives. The four proposals have been divided into two categories or tracks: Infrastructure (proposals submitted by IBM and Northrop Grumman) and Enterprise Applications (proposals submitted by IBM and CGI-AMS). VITA is the primary coordinating agency for both tracks.

INFRASTRUCTURE PPEA

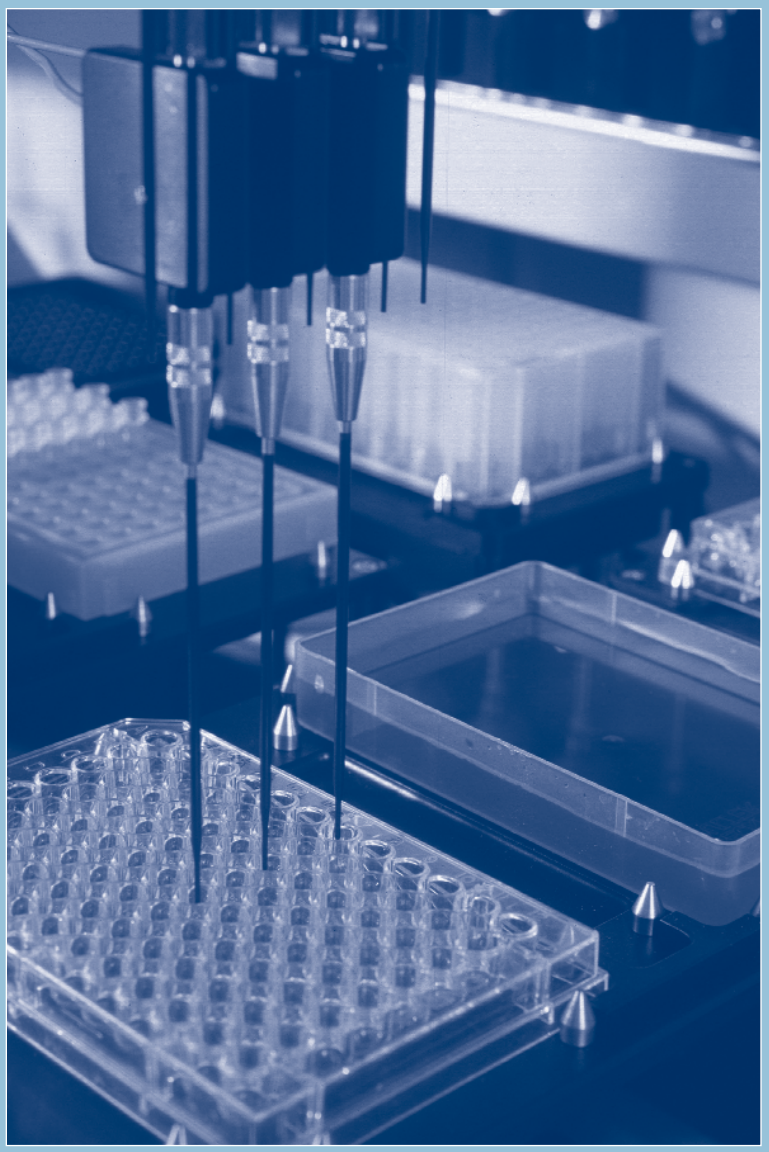
During a Detailed Review Phase for the Infrastructure PPEA proposals, IBM and Northrop Grumman teamed with functional and technical subject matter experts within VITA to document the baseline operations of the agency. Working in a cooperative partnership, the team established the "as-is" environment across eleven "towers," or potential service categories. Internally, VITA developed a preliminary version of the Comprehensive Agreement (CA) that includes Statements of Work (SOWs) and Service Level Requirements (SLRs) for the services that VITA may choose to procure from its partner(s), as well as the terms and conditions that will govern the partnership. VITA was assisted in this effort by several well-known industry sourcing consultants, including Gartner, Gordon & Glickson and CN Johnson Associates.

The base-lining effort and development of the draft SOW/SLR/terms and conditions was completed in mid-April 2005. IBM and Northrop Grumman used these documents to develop their Detailed Proposals, which were submitted to VITA on June 20, 2005. A broad cross-section of stakeholders and subject matter experts commenced an intensive review of the proposals. Oral presentations from the proposal teams began on June 27th. The PPEA Infrastructure Steering Committee developed recommendations for next steps, based on input from the evaluation teams, in late July. On August 10th, the Steering Committee recommended negotiations with both of the offerors. Those negotiations are continuing into early Fall.

ENTERPRISE APPLICATIONS PPEA

The Secretaries of Administration and Finance (the Commonwealth's business owners), in coordination with the Secretary of Technology and VITA, are responsible for the Enterprise Applications (EA) PPEA initiative. While there are significant differences between the scope and focus of the Enterprise Applications PPEA and Infrastructure PPEA tracks, the review processes are similar. An EA Steering Committee was established comprised of senior Executive branch leaders to provide guidance to the project team and to review and approve the approach and results of the team's efforts.

As with the Infrastructure PPEA Detailed Proposal process, the vendors for the EA PPEA—CGI-AMS and IBM—conducted a base-lining effort, or due diligence, to capture the "as is" status of the Commonwealth's business processes. Using the Enterprise Business Architecture as the foundation of their efforts, a joint team identified 19 discrete business processes that represented four "towers," or groupings of business functions, as the focus of review, including administrative management, financial management, human resources management, and supply chain management. Based on these definitions, the joint team developed a detailed, Web-based survey of "as-is" practices that was completed by 46 agencies. Detailed proposals were due to the Commonwealth on August 5. Currently, a review and negotiation process similar to that followed by the Infrastructure PPEA team is underway.



II. ACCELERATING INNOVATION: THE CENTER FOR INNOVATIVE TECHNOLOGY

EXECUTIVE SUMMARY

The impact of the Center for Innovative Technology (CIT) during the Warner Administration builds on a 20-year legacy of creating technology-based economic development opportunities to foster innovation in the Commonwealth. CIT has maintained responsibility for addressing four of the goals in the technology strategic plan:

- Increase federal research and development funding.
- Increase commercialization of intellectual property.
- Increase statewide broadband deployment.
- Promote technology-based economic development.

Virginia's Center for Innovative Technology

As CIT's mission has expanded to pursue federal opportunities and private equity, it has helped to define the Commonwealth as a leader in the advancement of technology-based economic development. Over the past twenty years, new industries that serve as the backbone for the Commonwealth's economy have emerged, including information and software technologies, telecommunications, modeling and simulation, sensors and sensor systems, biotechnologies, microelectronics and nanotechnologies.

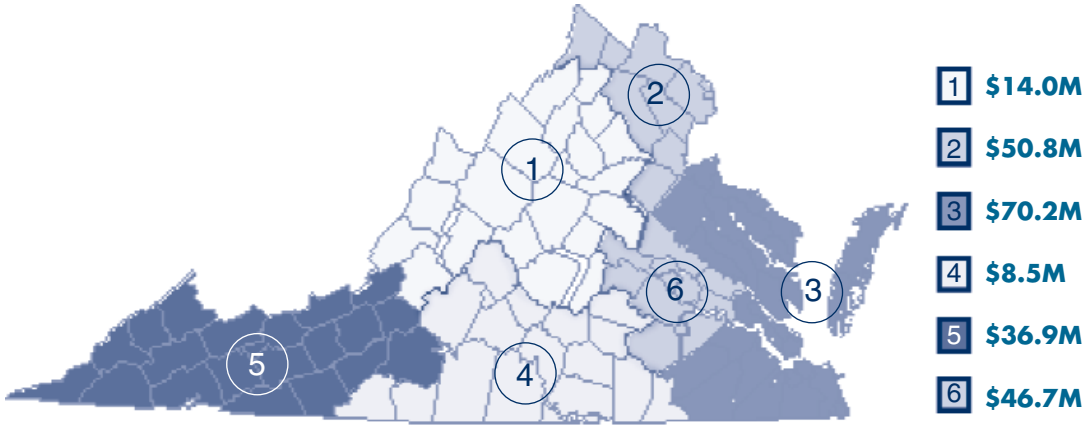
During the first three years of the Warner Administration, CIT activity generated over $748.6 million in economic value to the Commonwealth; in 2005, the value is projected to be nearly $125 million, for an estimated total value of $873.6 million. Moreover, CIT helped nearly 1,200 small and emerging business owners innovate, create jobs and generate new wealth in every region of Virginia. Direct Commonwealth investment in CIT in those years has been roughly $34.7 million in General Assembly appropriations. Measured against the economic value of $873.6 million created by CIT, the Commonwealth of Virginia has seen a very healthy return on investment.

The overall economic value of $873.6 million dollars to Virginia companies translates into these beneficial activities for emerging technology companies:

- Increased federal research investment for company research.
- New sales channels for company growth.
- Cost reductions for company competitiveness and profitability.
- Private investment for company expansion.

"The investment from CIT will enable us to complete development of our first product, the Mobile Alert Network." — Tom Stroup, Chief Executive Officer of SquareLoop, regarding gap funding

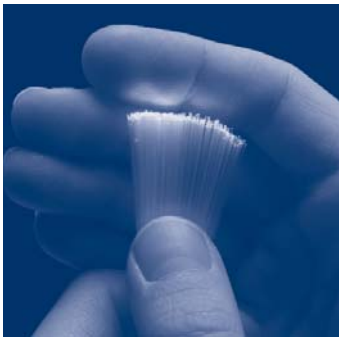
CIT's contributions to the economic growth of the Commonwealth reach all areas of Virginia. In 2004, $227 million of economic impact was distributed throughout Virginia as detailed in figure 1.0 below.



In addition to allocating state funds to accelerate entrepreneurial technology ventures, CIT secures federal and private sector funds for mission operations.

Pursuit of federal contracts for CIT's own program activity, as well as for universities and businesses in Virginia, has added $8 million to CIT's revenue in the past three years.

CELEBRATING TWENTY YEARS OF CIT AND INNOVATION IN THE COMMONWEALTH



Celebrating its 20th anniversary this year, CIT has contributed to fostering research and innovation investments that led to the exponential growth in technology-based economies throughout the Commonwealth. It has performed its mission as envisioned by the General Assembly when it established the Innovative Technology Authority based on recommendations from the 1983 Governor's Task Force on Science and Technology. On July 1, 1984, CIT, the private, non-profit corporation that serves as the operating arm of the ITA, was formally incorporated.

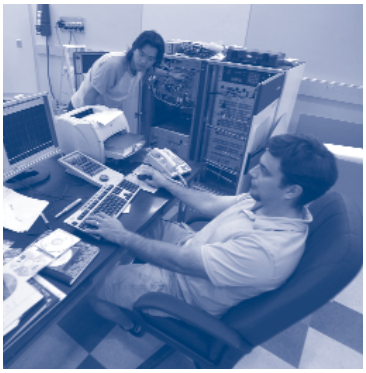
In declaring CIT's public purpose and its use of public funds, the General Assembly charged CIT with pivotal roles in policy and performance to advance the Commonwealth's technology economy. CIT's original mission was to promote economic growth by enhancing the ability of Virginia universities to develop and transfer technology to industry. CIT accomplished this mission primarily by co-sponsoring research projects with industry.

From 1985-1992, CIT funded more than 600 projects involving more than 550 companies, 460 university professors and 1,000 students. From 1986 to 2002, CIT also invested $28.2 million in 16 Virginia university research centers to attract leading researchers and work with companies in advanced, application-oriented research, and to develop and commercialize intellectual property.

Of the total appropriations from 1985-2002, $110.6 million, or 60%, was distributed throughout the state as awards and contracts to Virginia's colleges and universities for the foundation of technology-specific research centers and as co-sponsorship for industry projects conducted by university researchers.

The Center for Power Electronics Systems (CPES), established by CIT in 1988 at Virginia Tech, is now a National Science Foundation Engineering Research Center. CIT's funding of $3 million for CPES has helped create 762 jobs and $51.7 million in increased competitiveness for Virginia companies.

The Internet Technology Innovation Center was established by CIT in 1998 as a partnership among Christopher Newport University, George Mason University, the University of Virginia and Virginia Tech. CIT funding of $1.2 million funding over three years has leveraged another $29 million in federal and private funds for research, development, commercialization and distribution of Internet-related technologies, products and services in Virginia. Similarly, CIT's program management of federal R&D projects both solves national and regional technological and economic challenges and engages Virginia's colleges, universities and small technology businesses as partners and beneficiaries of increased federal funding.



CLOSING THE INNOVATION GAPS: CIT IN THE WARNER ADMINISTRATION, CREATING TECHNOLOGY-BASED ECONOMIC GROWTH

Not since the founding of CIT more than 20 years ago has its mission been more critical. Organizations as diverse as the Council on Competitiveness, the General Assembly's Joint Committee on Technology and Science, and the U.S. Congress have all noted the decline of innovation in America. China has overtaken the U.S. as the leader in foreign direct investment, and federal R&D dollars are on the decline. If Virginia is to retain its place as a leader in innovation, it must find new sources of funding for R&D and leverage existing dollars to the greatest degree possible. During the Warner Administration, CIT has retooled its mission to do just that and has had remarkable success.

Recognizing the need to strengthen the Commonwealth's competitive position, the Warner administration worked to create additional educational opportunities for Virginia's students and to give every community the tools it needs to compete in the knowledge-based economy. As part of this effort, CIT continues to work on solutions in several areas that can help close the innovation gap in Virginia by:

- Filling the significant void in angel and venture investment for seed-stage technology firms.
- Meeting the increased need for technological solutions in defense and homeland security by creating opportunities for technology researchers and businesses and using their proximity to the federal government as a competitive advantage.
- Identifying and pursuing specialized market segments to capitalize on emerging fields and industry drivers, such as nanotechnology and life sciences.
- Increasing access to affordable broadband to speed new economic development opportunities for rural communities.
- Attracting more federal dollars to R&D funding for small businesses to gain both a non-diluting source of capital and validation for early-stage innovation.
- Bridging the innovation gap between innovative emerging companies and large-scale technology consumers by matching consumer requirements with innovative solutions.

To address these trends, CIT leadership has been executing a four-part plan of action:

1) **Create new industry clusters in Virginia.** CIT assists in the creation of the next generation of Virginia's economy by studying fields of advanced technology that will replace declining industries and recommending a strategic direction for advanced technology development in Virginia. These strategic initiatives are accomplished through education, advocacy and investment.

During the Warner Administration, CIT implemented programs to accelerate development of the Commonwealth's nanotechnology and biotechnology industries. The Virginia Nanotechnology Initiative (VNI) was initiated in 2002 as INanoVA with funding from CIT. VNI works with Virginia's universities, federal laboratories, state agencies and industrial partners to promote collaborative nanotechnology research, workforce development, technology transfer and commercialization. In 2004, the collaborative VNI model was expanded by CIT to include Maryland and the District of Columbia. Subsequently, on June 1, 2005, Governors Warner and Ehrlich (Maryland) and Mayor Anthony Williams (District of Columbia) signed an agreement to create the Chesapeake Nanotechnology Initiative (CNI) to bring together Maryland, Virginia and the District of Columbia to pursue joint research and development (R&D) opportunities. The creation of nanotechnology industry clusters in the Commonwealth will generate billions of dollars of economic value for Virginia.

In addition to nanotechnology, CIT proposed the establishment of SmartBio industry clusters. These clusters capitalize on the biotechnology and computer science expertise resident in the Commonwealth's institutions to create a hybrid bio-info industry segment. Like nanotechnology clusters, the creation of SmartBio industry clusters is projected to generate billions of dollars of economic value.

Additional information on efforts to create new industry clusters can be found in section nine.

2) Make Virginia a global leader in the development of entrepreneurial technology ventures. The creation of new technology companies serves as the foundation for future economic growth and employment opportunities for Virginians.

CIT studies and monitors the development stages of entrepreneurial technology initiatives with the intention of identifying gaps in the development process. Gaps that are significant enough to prevent an entrepreneur from starting a new company in Virginia, or that prevent an existing start-up from growing, become challenges for CIT to solve.

In 2003, CIT identified start-up funding for very early stage companies as a severe constraint to new company creation. An external study of funding in Virginia identified significantly depressed levels of investment for early stage companies. To resolve this innovation gap, CIT launched its Growth Acceleration Program (the GAP Fund). The program serves to attract early stage investors by providing investment grade information on an entrepreneurial company, as well as making an investment of up to $100,000 in the company. CIT company investments are only considered when the investment can be used to secure additional outside investment. GAP Fund investments are structured as convertible debt which provides the foundation for this program to become self-funding within 5 years. The GAP Fund had invested in seven innovative Virginia companies as of September 1, 2005, and helped leverage an additional $4 million in private equity for those companies. The GAP program is targeted to generate $20 million a year of new investment from early stage investors by 2007.

"Attracting additional capital to our young company will help us move to the next level and we are grateful for the investment by CIT's GAP Fund." — Guillermo Sohnlein, CEO of MPowerplayer

In addition to stimulating private investment in new companies, CIT conducts education and support programs that facilitate a new company's ability to secure federal research investment through the SBIR, STTR and ATP programs. These programs provide an excellent source of funding for research and early stage development projects with applicability to US government agency missions. During the Warner Administration, Virginia ranked 3rd in the United States for awards in the SBIR program, with awards totaling $89.7 million in 2002 (according to the latest SBA data).

3) **Solve national and regional technological challenges through world-class R&D programs**. Stimulating research and development serves to facilitate the growth of university and company research capabilities, ultimately leading to advances in technology innovation and the creation of new industry in the Commonwealth.

   During 2002, the Warner Administration set a goal for Virginia to achieve $1 billion in university research by 2010. To facilitate increased university and company research, CIT created the Institute for Defense and Homeland Security (IDHS) with a mission to increase the amount of defense- and homeland security-related research the Commonwealth performed. IDHS has identified three research initiatives of significance to the Commonwealth and the nation that have been funded by the federal government: Red Cell, an early warning cellular system; Remote Presence, an unmanned aerial vehicle; and Wild Canary, a biohazard integrated network. Each of these projects is expected to grow to over $50 million for full-scale national deployment

   In addition to defense and homeland security research, CIT conducts R&D services for oceanic observation and broadband deployment. During the Warner Administration, CIT secured $3.3 million dollars from the federal government and conducted research designed to advance coastal weather and marine observation. CIT's role in advancing this research has provided research funds to Old Dominion University and 10 small businesses.

   CIT continues to be a leader in carrying broadband across the Commonwealth and is the only resource in the Commonwealth to offer assistance on both the "supply" and "demand" sides of the broadband equation. Over the last two years, CIT has been able to leverage a $350,000 state appropriation into $30.3 million in total funds for broadband expansion in the Commonwealth. Virginia's high-speed lines have grown from 292,722 to 998,261 in the four years of the Warner Administration.

   Additional information on IDHS can be found in section four. Additional information on broadband development efforts can be found in section three.

4) **Deliver innovation, identification and assimilation services**. In 2004, CIT initiated a project designed to map innovative technology companies in Virginia to federal government mission requirements. The project was conducted as a program with a federal agency and resulted in a consulting contract award to CIT. To date the program has successfully mapped emerging technology companies and has a projected sales impact of over $25 million dollars for the new technology companies.

For 2005, CIT expanded the innovation mapping service to include companies outside of the Commonwealth whose innovation is relevant to the federal government. By matching companies outside the Commonwealth to federal consumers, CIT can stimulate the establishment of new branch offices and company relocation to the Commonwealth. In addition to stimulating growth and relocation, the innovation mapping service raises the profile of emerging technology companies by accelerating their growth, making them attractive to potential employees and stimulating potential entrepreneurs to create new companies. This service is provided as a consulting service to large-scale federal and private sector consumers of advanced technology; as such, it is projected to be a fully self-funded service line by 2009. This new service will accelerate adoption of new technologies on a national scale and diversify CIT's revenue base.

CIT's current leadership team has taken the most dramatic steps in the enterprise's history to diversify its funding sources and contribute to closing the innovation gap in the Commonwealth. As noted earlier, the economic impact – and economic opportunities for innovation, wealth and growth – of these CIT activities during the Warner Administration is roughly $873.6 million.

THE FUTURE OF INNOVATION IN THE COMMONWEALTH: THE NEED FOR CONTINUED INVESTMENTS IN TECHNOLOGY-BASED OPPORTUNITIES

In FY 2005, the Center for Innovative Technology reached its 20-year milestone as a national leader in technology-based economic development. The contributions of 20 years have built the foundations for many of Virginia's technology companies and research facilities. Virginia remains committed to the development of its high-tech industries and has invested in CIT to serve as the Commonwealth's accelerator for technology-based economic development.

Continued acceleration of technological advances ensures that the Commonwealth will secure new economic engines to replace declining industries. By better understanding the cycles of research, innovation, commercialization and new industry generation, the Commonwealth can improve the creation and survival rate of new industries. New industry development creates the employment opportunities and tax revenues of the future.

CIT's FY 2006 operating plan reflects the Warner Administration's commitment to innovation and technology-based economic development and continues the tradition of high-value return on the Commonwealth's investment.


CAT

III. BROADBAND COMMUNICATION SERVICES

EXECUTIVE SUMMARY

Broadband has grown into an indispensable service to government and citizens alike. Governor Warner's administration has particularly emphasized the need to deploy affordable high-speed networks and increase statewide broadband deployment in rural and underserved areas of the state in order to spark private-sector investment. Over $25 million has been invested by the state to support this deployment. With the support of the General Assembly, CIT continues as a leader in promoting broadband across the Commonwealth. CIT is the only resource in the Commonwealth to offer assistance on both the "supply" and "demand" sides of the broadband equation. In the first year of its broadband program, CIT was able to turn a $250,000 appropriation into $2.8 million in leveraged funding for the Commonwealth.

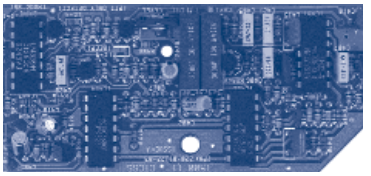
One of the most exciting developments in broadband during the Warner Administration has been the extension of National Lambda Rail (NLR) to the Commonwealth. NLR is connecting Virginia's research institutions of higher education to others around the country and allowing researchers to communicate at speeds thousands of times greater than today's Internet permits. This initiative will greatly enhance the competitiveness of our research universities and contribute to generating continued growth in research funding.

Virginia's standard high-speed lines have also grown exponentially, as shown in the most recent FCC data. When Governor Warner took office, Virginia has just over 292,722 lines. When his administration concludes, the Commonwealth of Virginia will have over 998,261 lines. In The State Broadband Index, a study conducted by Technet[12], Virginia ranked 8th for "showing leadership in clearing roadblocks to broadband deployment and adopting innovative policies that foster demand for the benefit of their citizens and industry."[13]

Virginia's continued economic competitiveness is dependent in large part upon the availability of affordable, high-speed Internet access for:

- Government (state and local)
- Educational institutions and their students
- Entrepreneurial ventures
- Investors
- Corporations (large and small)
- Virginia's workforce

"We urgently need to eliminate the digital divide that exists between our urban and rural communities." — Governor Warner



"Access to quality, affordable technology is essential to create new jobs, train a highly-skilled workforce, increase educational opportunities, and support telemedicine capabilities." — Michael J. Schewel, Secretary of Commerce and Trade

[12] TechNet is a national network of more than 200 CEOs and senior executives in the high technology and biotechnology industries.

[13] Quote from TechNet's President and CEO Rick White, referring to the states at the top of the Broadband Index.

"Bringing broadband telecommunications to Appalachian Virginia is about commerce, education, and quality of life." — Governor Warner

Governor Warner and Secretary Huang have stayed actively engaged in broadband usage and deployment across the Commonwealth by helping universities, municipalities, and businesses meet their connectivity needs. These broadband initiatives have improved the quality of life for all Virginians. Access to broadband connectivity has offered benefits such as:

- Increased availability of learning, research and cultural opportunities.
- Access to world-class medical treatment through telemedicine.
- Improved workforce opportunities through telecommuting.
- New opportunities for community interaction and involvement.
- Increased economic competitiveness.

The Warner Administration has made tremendous progress toward its goal of making affordable broadband equally available throughout Virginia, but future governors must maintain this commitment.

The Virginia Tobacco Commission and the Appalachian Regional Commission have actively supported broadband deployment in Southside and Southwest Virginia, which are well on the way to having a strong, open-access broadband environment in which local service providers can compete and flourish. To further promote this goal, CIT is holding a series of broadband outreach events in Southwest and Southside Virginia communities including Bristol, Abingdon, Lebanon, Richlands, Marion, Patrick County, Rocky Mount, and Gate City this Fall. Similar events are being planned for Spring 2006 in other communities.

As a result of the combined leadership of state and local officials and Virginia's business community, broadband continues to spread across the Commonwealth, improving every community it touches. With continued support from these important groups, widespread broadband access will allow every region of the state to be competitive in the increasingly global digital economy.

VIRGINIA'S BROADBAND RESOURCES AND CIT

During the 2002 General Assembly session, CIT was assigned responsibility for delivering a study on advancing affordable, high-bandwidth electronic networks in rural Virginia (HJ163). As a result, CIT's mission was expanded in the 2003 session (by budget amendment) to include "supporting efforts of public and quasi-public bodies within the Commonwealth to enhance or facilitate the prompt availability of and access to advanced electronic communication services, commonly known as broadband, throughout the Commonwealth, monitoring trends and advances in advanced electronic communications technology to plan and forecast future needs for such technology, and identify funding options."

As a result, CIT is the only resource in the Commonwealth to offer assistance on both the "supply" and "demand" sides of the broadband equation. By facilitating developments on both sides of the equation, CIT is working to ensure that there is not only infrastructure but also users to take advantage of the networks that are being built. This holistic approach to solving the digital divide sets Virginia apart from most state assistance programs that concentrate solely on the deployment of infrastructure. In addition to one-to-one services, CIT regularly provides topical information as well as opportunities for funding, contracting, and partnerships through its e-mail-based Broadband Information Group.

To expand the services of its broadband program beyond the consulting and expertise provided by CIT staff, two primary outreach mechanisms are in place to provide extended educational opportunities and technical assistance. These two programs are the e-Business Villages and Electronic Commerce Forums.

E-BUSINESS VILLAGES

e-Business Villages (EBV) are the e-commerce assistance arm of CIT's Broadband Demand Development program and its primary vehicle for generating broadband demand. Through this program, small businesses, local governments, and regional economic development agencies can experiment with electronic commerce techniques and technologies in a vendor-neutral, education-oriented environment.[14] Regionally oriented, the villages themselves are virtual entities. The Virginia Electronic Commerce Technology Center (VECTEC) in Newport News and VECTEC-West in Lebanon[15] provide technical support for this program.

vectec
The Virginia Electronic Commerce Technology Center
at
Christopher Newport University

ELECTRONIC COMMERCE FORUMS

Electronic Commerce Forums (EC forums) are regionally-based, vendor-neutral educational groups that encourage and support electronic commerce and broadband awareness, education, and commitment across Virginia. The forums also encourage the cultivation of e-relationships among Virginia businesses by providing a venue through which companies interested in e-commerce can become acquainted. Topics that have been successfully presented in the forums include Security, Cyber-Law, Search Engine Positioning, Broadband 101, and Customer Service.

CIT is currently compiling a comprehensive report on broadband in the Commonwealth, which is expected to be available by the end of 2005 at www.cit.org.

"CIT works to drive both demand and supply in its plan to help Virginia achieve the highest percentage of broadband deployment among states in the U.S. Educating business customers about the benefits of using high-speed telecommunications generates increased demand for service, which accelerates the attraction of service providers into underserved rural markets." —
Pete Jobse,
CIT President

[14] Services include (but are not limited to) web site design and development, back-office automation, graphic design, search engine optimization, catalog and shopping cart design and implementation.

[15] In Southwest Virginia, VECTEC-West has partnered with Southwest Virginia Community College and Mountain Empire Community College to serve as the local service points for the two EBV's in the region.

"Our ability to create high-wage jobs in rural areas is still greatly assisted by targeted government interests."— Jonathan Whitt, Executive Director of the Region 2000 Technology Council

For FY 2004, CIT's Broadband Program received $250,000 in funding to provide assistance to communities across the Commonwealth with both supply- and demand-oriented activities. Through strategic partnering and leveraging federal investments being made in the Commonwealth for broadband planning and deployment, CIT was able to participate in more than 15 broadband-related initiatives across the state. Additionally, the same $250,000 returned $2.8 million in leveraged funding to the Commonwealth.

THE STATISTICS OF BROADBAND IN VIRGINIA

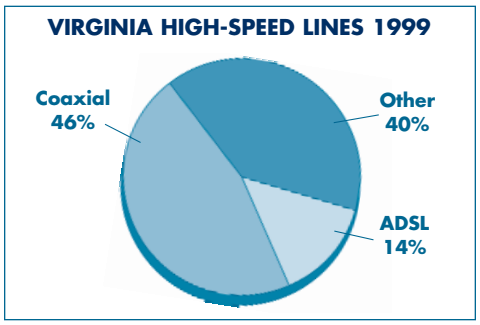
Broadband deployment represents an investment of over $25 million by the Warner administration. Virginia's broadband resources are divided into two distinct categories established by the FCC:

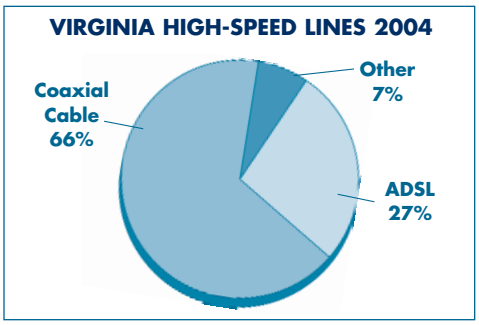
High-speed lines – lines that deliver services at speeds exceeding 200 kilobits per second (kbps) in at least one direction.

Advanced service lines – lines that provide services at speeds exceeding 200 kbps in both directions.

Lines that are not high speed are not reported.

From 1999 to 2004, the number of high-speed lines in Virginia rose from 51,305 to 998,261. The following charts show a breakdown of Virginia's high-speed lines by technology for 1999 and 2004, respectively:





According to the latest FCC data, the total (reported) number of high-speed lines connecting homes and businesses to the Internet increased by 17% during the second half of 2004, from 32.5 million to 37.9 million lines (or wireless channels). Of the 37.9 million, 28.9 million provided advanced services of all technology types, which represents an increase of 42%. During this period, the technology showing the greatest high-speed line increase was asymmetric digital subscriber line (ADSL), which increased 45%, from 9.5 million to 13.8 million lines. Second was coaxial cable (cable modem) with an increase of 30%. The remaining 2.7 million high-speed connections are accounted for by wireline technologies other than ADSL, wireless, satellite or terrestrial wireless and fiber high-speed connections.

Since the release of the Commonwealth's 2002 broadband report, Verizon has more than tripled the number of DSL-equipped central office sites deployed in Virginia. In addition to 340 central office sites, Verizon also equipped more than 550 remote sites, bringing the total number of DSL-equipped Verizon sites to 891. During that same timeframe, Ntelos of Waynesboro has equipped more than 25 markets for DSL and has launched a portable broadband solution that allows users to access broadband-level connectivity without being tethered to a phone/cable connection or wireless hot spot. Ntelos is 90% DSL capable within their ILEC territories as a result of their DSL remotes and wireless broadband capabilities. Sprint has 86 Central Offices equipped with High Speed Internet (HSI), or DSL. The national average has HSI coverage available to almost 75% of the access lines.

Using the FCC data as the benchmark, Virginia compares to its neighbors as follows:

High-Speed Lines by State (over 200 kbps in one direction)

State	Dec-99	Dec-00	Dec-01	Dec-02	Dec-03	Dec-04
North Carolina	57,881	136,703	357,906	594,039	842,130	1,120,611
Virginia	51,305	139,915	292,772	463,455	716,839	998,261
Maryland	52,749	124,465	260,634	391,397	578,004	796,110
Tennessee	66,307	122,391	237,401	369,370	471,341	630,308

[16]The data collected by the FCC represents only those services with over 200 kilobits per second in at least one direction.

BUILDING A BETTER INFORMATION SUPER HIGHWAY

In order to remain competitive, Virginia's universities must be equipped to participate in national research activities. To achieve this goal the Warner Administration has sought to establish partnerships that increase both statewide broadband deployment and federal research and development funding.

Governor Warner, during his term as chairman of the Southern Governor's Association, helped to strengthen the region's broadband infrastructure through participation in National Lambda Rail. This initiative will benefit the entire Southeast by spreading access to nationwide research endeavors, improving economic development opportunities, and helping to spread commercial broadband access. By pooling the region's collective resources, states are able to flourish despite diminishing federal dollars for research and development and to prove that states can also participate in "big science" through collaboration.

The National Lambda Rail (NLR)

When the original proposed architecture for NLR was unveiled, not a single network access point was located in the southeastern United States. Fearing that research institutions of higher education would fall further behind in efforts to bolster cutting edge research in science and engineering disciplines, Governor Warner proposed that the Southern Governors' Association (SGA) pursue the Southern eCorridors project to extend NLR throughout the Southeast. In his role as chairman, Governor Warner proposed at the SGA Annual Meeting in New Orleans in August 2002 that the SGA partner with the Southeastern Universities Research Association (SURA) to support the establishment of high-capacity, fiber-optic computer networks throughout the southeastern United States.

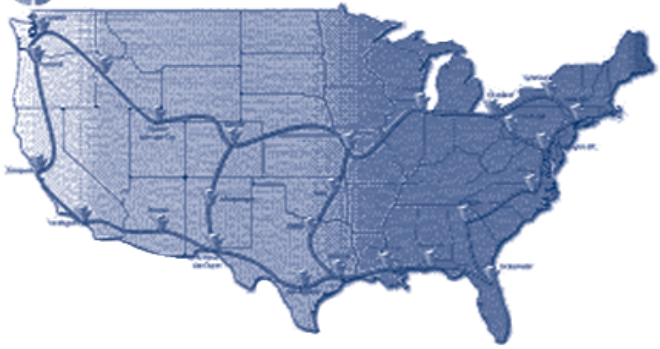
The Mid-Atlantic Terascale Partnership (MATP) and the Virginia Optical Research Technology Exchange (VORTEX) represent a unique public-private partnership that brought the National Lambda Rail (NLR) network to Virginia and neighboring states in the mid-Atlantic and southeastern United States. This partnership, bringing together state governments, institutions of higher education, and private sector communications providers, has helped to develop a next generation data communications network using individual light waves within an optical fiber to communicate at the speed of light (at speeds significantly faster than Internet 2). An example of NLR's potential in Virginia is the ability to provide distributed access to the System X supercomputer located at Virginia Tech to researchers at other schools on the NLR backbone.

MATP was able to establish a regional NLR node through a $5 million initial investment provided by the Virginia Tech Foundation (VTF) on behalf of MATP. VTF licenses network access rights to MATP, and each MATP member contributes a cost share amount of $500,000 spread over five years ($100,000 per year) towards the $5 million NLR investment. The network began operations on May 12, 2004. In Virginia, Governor Warner included $2.4 million in the 2004 state budget to assist with the costs of connecting the state's institutions of higher education to MATP.

VORTEX is a multi-faceted approach featuring a strategic alliance with Verizon and other communications providers to foster development of a new statewide fiber infrastructure coupled with customer-owned last mile fiber and dark fiber leasing. Rather than building a single purpose, state-owned fiber optic network solely for research, Virginia is leveraging Network Virginia to collaborate with other communications providers to build a new, statewide Dense Wave Division Multiplexing-based (DWDM) system to support both research and economic development interests. DWDM is the fiber technology used by NLR.

The costs of VORTEX are divided among participating institutions, state government, and private investment. Verizon and other providers are making a significant, multi-million dollar investment in excess of the amounts contributed by MATP members and the state for construction and operation of the network.

National LambdaRail Architecture



The efforts undertaken by Virginia to develop MATP and VORTEX have resulted in a number of benefits and opportunities. These include:

- **Increased Broadband Access. Working in partnership with Verizon and building upon existing state initiatives, Virginia has been able to increase broadband access to rural communities and provide new IP-based and Ethernet services to existing academic institutions and private sector entities.**
- **Low-cost Research Facilities for Higher Education. MATP members are able to connect to NLR using 10 Gbps fiber optic channels purchased at cost.**
- **Economic Development. Access to NLR was critical to Lockheed Martin investing $30 million in a new Center for Innovation in Suffolk that will create 50 jobs.**

"The Rural Backbone Initiative will provide a powerful, long-term economic revitalization initiative to promote economic development, attract technology-based industries, and create new jobs." — Governor Warner

The investment in MATP and VORTEX is already benefiting Virginia's economic development initiatives. Governor Warner announced in April 2005 the Virginia Modeling and Simulation Initiative (VIMSIM), an aggressive plan to promote the high-tech modeling and simulation industry in the Hampton Roads region, centered around Old Dominion University in Norfolk. VIMSIM was announced concurrently with the opening of Lockheed Martin's Center for Innovation in Suffolk, a $30 million investment that will create 50 modeling and simulation jobs.

The collaboration between VIMSIM and VORTEX is just one of a number of efforts underway in the Commonwealth of Virginia to leverage NLR for the benefit of Virginia's economic development initiatives and the competitiveness of research initiatives at Virginia's institutions of higher education.

COMMUNITY INITIATIVES

CIT's Broadband Program is assisting communities across the state that are planning network deployments and also increasing statewide broadband deployment. From the Northern Neck to far Southwest Virginia, CIT is bringing expertise and resources to broadband projects in all stages of development. In Southside Virginia, CIT is coordinating with Planning District Commissions and the Mid-Atlantic Broadband Cooperative to provide demand aggregation and e-commerce training services to the communities along the e-58 corridor. These activities are the result of a $140,000 grant awarded to CIT by the federal Economic Development Administration to complement the infrastructure project that was already underway.

Across the Commonwealth, deployments of broadband technology are occurring at all community levels. Regional partnerships, planning districts, counties and even individual towns are pursuing affordable broadband connectivity as a means of developing parity between their rural communities and urban counterparts.

Currently, there are three major open-access fiber network initiatives underway in Virginia:

- In Southside, the Mid-Atlantic Broadband Cooperative has begun building a regional business-class network.
- In Southwest, both LENOWISCO and the Cumberland Plateau Planning Districts have made progress with the development of local and regional network initiatives.

Once completed, these three networks alone will provide a competitive landscape for last-mile service provision in more than 25 of Virginia's rural counties. These programs account for tens of millions of dollars worth of investment by federal, state, and local authorities and bring not only economic benefits but a new vision for communities throughout Southwest and Southside Virginia.

CIT has also implemented a model for identifying the "last mile connectivity" options for the Southside Planning District Commission. CIT is working in tandem with the Commission to ensure the success of this project by teaming to apply for funding, survey potential users, manage the bidding process for feasibility studies and engineering design, and promote the project through various avenues of outreach including group meetings and individual consultation. Additionally, CIT has been actively pursuing a project with Gate City, in conjunction with Congressman Boucher's office and the Virginia Economic Bridge, to complete a broadband and workforce assessment.

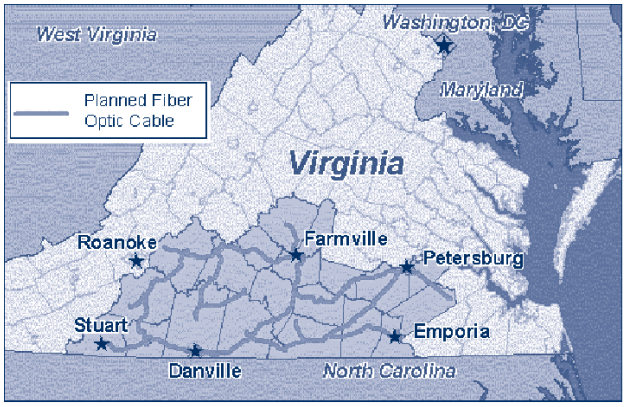
In addition to fiber backbone, communities are beginning to implement alternative solutions such as wireless (licensed and unlicensed) and broadband over power lines (BPL) to solve their needs.

THE MID-ATLANTIC BROADBAND COOPERATIVE

With $6 million from the Virginia Tobacco Commission and an equal matching grant from the federal Economic Development Administration, the Mid-Atlantic Broadband Cooperative (MBC) is overseeing the construction and operation of an advanced fiber-optic backbone project–the Regional Backbone Initiative—to connect all 56 industrial parks in Southside Virginia, carrier central office locations, hospitals, higher educational facilities and other connectivity points. Once completed, the network will cover more than 700 miles across 20 counties and five cities. Additionally, a $15 million network operations center is being built in South Boston.

The projected user base includes almost 700,000 citizens and 19,000 businesses. The backbone system is expected to go live in early 2006.

According to estimates from EDA, the projected economic benefits from the MBC project include 1,560 new jobs, $70.2 million in new wages and $143 million in new investment for the Southside region.



"This is what the General Assembly meant when we charged CIT with enhancing and facilitating access to broadband in the Commonwealth." — Senator Charles Hawkins, Chairman of the Virginia Tobacco Indemnification and Community Revitalization Commission, which recently announced plans for the fiber network throughout Southside

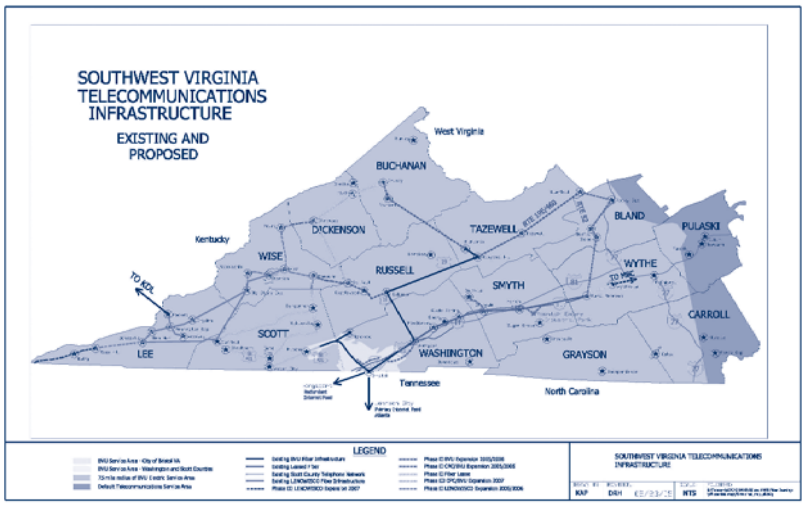
"By tapping into [Ethernet Access], LENOWISCO will attract new employers that will expand the tax base. Current businesses will better serve their customers while expanding into new markets. Residents will have greater control over their communication options while receiving next-generation services, such as telemedicine and eLearning. This network is about quality of life." — Dave Curry, President and CEO of World Wide Packets

LEE, NORTON, WISE & SCOTT (LENOWISCO) PLANNING DISTRICT

The LENOWISCO Planning District is leading the charge for extending world-class broadband services to residents in Southwest Virginia. Preliminary estimates for the completion of the entire network are in the $6 million range. Primary funding for the network has come from local resources and the Virginia Tobacco Commission. Since 2002, the Virginia Tobacco Commission has contributed in excess of $2.5 million to the project. Additional last mile planning and project funding in the amount of $61,668 has been provided by CIT.

Through the LENOWISCO Rural Area Network project, the Planning District is proposing to put the world's most advanced communications infrastructure within reach of every business and citizen in the LENOWISCO area within 10 years, while providing extremely high-speed, reliable broadband network infrastructure at a fraction of currently available prices, which will act as a catalyst to create substantial economic, educational and health care enhancements for residents and a distinct competitive advantage for its businesses (current and future). This infrastructure is private sector-based to ensure its sustainability and economic viability, and it will enable the emergence of a communications and network industry in Southwest Virginia. This new industry, still in its infancy, combines leading-edge optical technologies with very high capacity wireless networks and advanced features of the Internet Protocol to enable an extraordinary advantage in cost and communications power.

The third phase of the project, which is nearly complete, includes 92 miles of fiber being installed with both underground conduit and conventional overhead construction techniques being utilized. Connectivity is now in place between Pocket, Jonesville, Pennington Gap, and Woodway in Lee County; Duffield in Scott County; and Big Stone Gap, Norton, and Esserville in Wise County. To date, LENOWISCO has deployed their network to approximately thirty small business and residential customers.



The Virginia Coalfield Economic Development Authority recently awarded a $75,000 grant to the Wise County Industrial Development Authority for LENOWISCO, Inc. to provide last-mile funding for a redundant fiber-optic link between downtown Norton and the Esserville Industrial Park that will support both an expanded employer and a new employer that requires high-speed broadband for business processes.

DICKENSON COUNTY

Dickenson County Wireless Integrated Network (DCWIN) blankets approximately 200 square miles of Dickenson County and parts of Wise and Buchanan Counties with wireless broadband telecommunication services. In addition to supporting Dickenson County's municipal and e-911 communication systems, DCWIN provides fast, affordable broadband services to business and residential customers[17] throughout the coverage area.

In 2003, Dickenson became the first county in Virginia to begin installing a completely wireless (backbone and last-mile) countywide network. Five towers and $600,000 later, Dickenson County now operates a model rural network that supports more than 100 customers. Recognizing the success of DCWIN and its leadership role in the deployment of rural wireless broadband connectivity, CIT became DCWIN's first "outside" investor by contributing $25,000 toward additional tower construction.

DCWIN is proving that wireless technology offers an affordable and reliable alternative to fiber for both last-mile and backbone applications. The project shows that affordable broadband can be delivered in the most rugged of terrains, where not only the topology, but also the demographics continue to daunt commercial providers.

NETWORK DANVILLE

The City of Danville is constructing Network Danville (nDanville), a sophisticated fiber-optic broadband network over which digital data, voice and video signals can be transmitted point-to-point in Danville at very high speeds[18] as well as to and from worldwide locations via the Internet. The network is being built in phases with help from World Wide Packets, a Spokane, Wash. company specializing in municipal networks. The expected cost for the complete deployment is $37.5 million.

VIRGINIA ELECTRONIC COMMERCE TECHNOLOGY CENTER

The Virginia Electronic Commerce Technology Center (VECTEC), a non-profit e-commerce center established in 1994 at Christopher Newport University, helps small to medium-size businesses, nonprofit organizations, local governments and regional agencies throughout Virginia with a variety of e-commerce services including Web site design, shopping systems and custom database development, search engine optimization, business research and educational programs.

VECTEC is currently working with more than 170 companies, state and local governments, and regional agencies throughout Virginia. Of these 170 organizations, more than 90 are located in the Hampton Roads region; 63 are in Southwest Virginia[19], and the rest are located in other areas of the Commonwealth.

[17] DCWIN rates are as follows: $39.95 for residential (1540 kb/sec), $69.95 for SOHO (1540 kb/sec, 5 networked computers, one static IP address), and $399.95 for commercial grade connectivity (3080 kb/sec).

[18] Danville is a business class fiber optic network offering speeds up to one gigabit in both directions (more than 1,000 times faster than typical DSL).

[19] VECTEC officially established a field office in April 2002, in Lebanon, Virginia. VECTEC "West" provides e-commerce support to rural communities in Southwest Virginia.

"Our economic development strategic plan, One Virginia, One Future, emphasizes the importance of technology to Virginia's economic growth." — Governor Warner

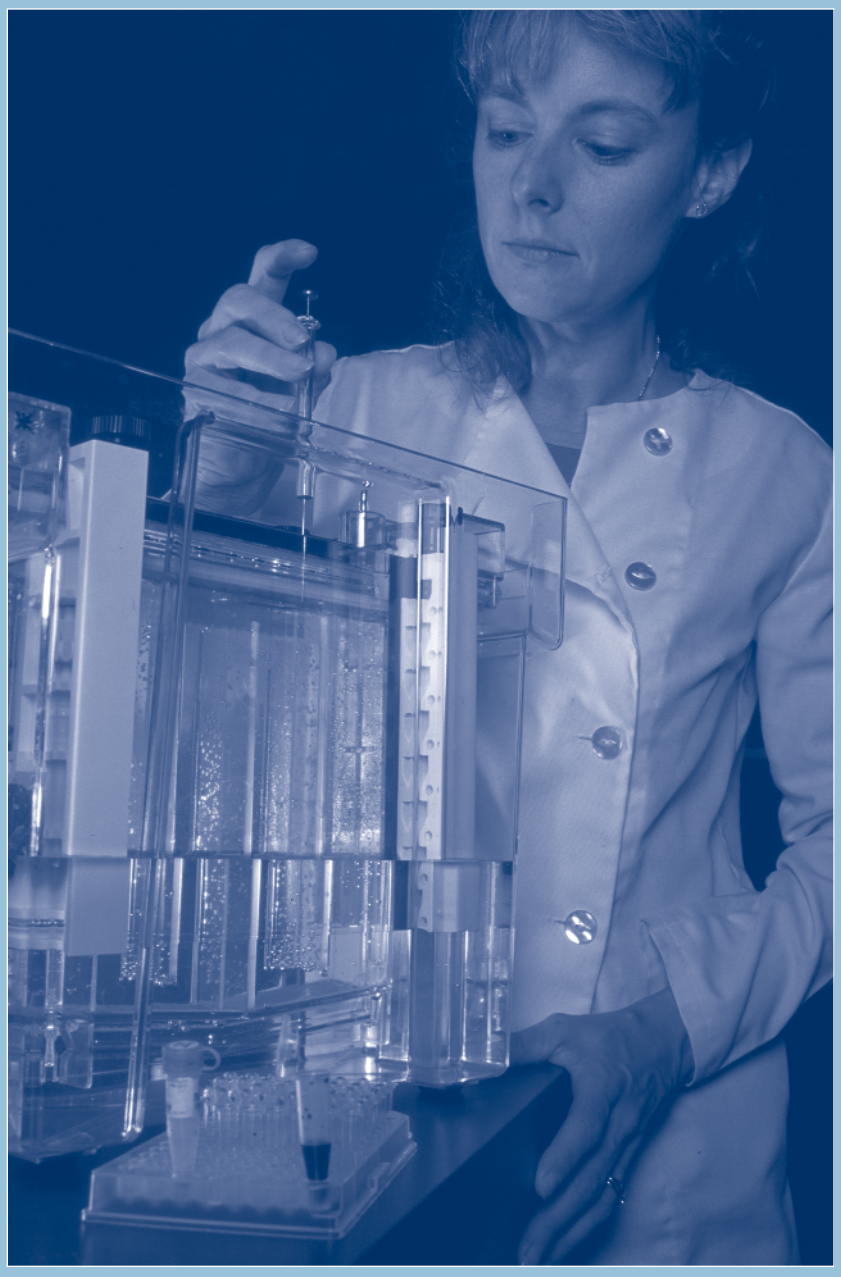
THE FUTURE OF THE COMMONWEALTH: OPPORTUNITIES THROUGH BROADBAND

Virginia has taken bold steps to ensure that the backbone telecommunications infrastructure necessary to support the delivery of affordable last-mile broadband services is deployed. "One Virginia" became the broadband rallying cry for communities in underserved regions.

Virginia must continue its commitment to funding for last-mile access and training for localities and businesses in the use of electronic commerce and broadband technologies to ensure that the vision of "One Virginia" is realized. CIT will continue to seek funding dedicated to the expansion of its Broadband Outreach program. Proposed activities include:

- Establishing a broadband fund to provide match, planning and/or limited last-mile infrastructure assistance to underserved communities.
- Expanding the outreach mechanism to improve access to broadband and application-oriented training.
- Deploying additional technical resources to assist communities with broadband strategy development and demand aggregation.
- Developing an application-oriented vision that focuses Virginia's definition of broadband success on the use of broadband technologies rather than having the most high-speed lines in place.
- Providing e-commerce training through enhanced VECTEC activities.

The Commonwealth's $25 million down payment will help to create a technological environment where all Virginians will reap the rewards of a 21st century information economy.



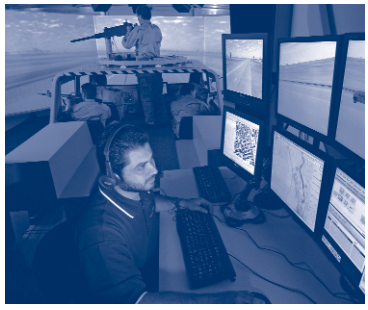
IV. RESEARCH AND DEVELOPMENT PRIORITIES

Virginia's Center for Innovative Technology (CIT), in conjunction with the Virginia Research and Technology Advisory Commission (VRTAC) and the Virginia Biotechnology Commission, has focused on accelerating the development of three specific areas of research and development (R&D) and subsequent high-tech industry creation. These areas are:

NANOTECHNOLOGY

LIFE SCIENCES

DEFENSE AND HOMELAND SECURITY



Major accomplishments have been made in each of these areas to fulfill three of the Warner Administration's strategic goals:

- Increase federal research and development funding.
- Increase commercialization of intellectual property.
- Promote technology-based economic development.

The next three sections of this report will provide detailed information on past achievements and a vision for an increasingly successful future for each research area.

"Virginia has achieved national recognition in nanotechnology, as the Commonwealth's leading research universities, national laboratories, and small businesses continue to produce groundbreaking work in the field." — Governor Warner

A. NANOTECHNOLOGY

EXECUTIVE SUMMARY

Nanotechnology, which is defined as research and technology at the atomic, molecular, and macromolecular levels, is expected to be the next significant enabling technology, affecting nearly every industry. The ability to control and manipulate material properties at this scale will dramatically transform technology sectors such as defense, communications, electronics, energy, health care, manufacturing, transportation and many others.

Virginia is actively working to become a national and international leader in nanomanufacturing, utilizing its existing strengths in research and technology as well as its intellectual and university assets. The Commonwealth's ultimate goal is to develop significant long-term economic benefits through fostering the creation and development of this new and promising industry. Virginia has many competitive advantages including a skilled workforce, a solid research foundation, and a broad industrial base of users of nanotechnology. Through strategic investments in this promising technology, Virginia can anticipate tens of thousands of new jobs in both rural and urban areas of the state.

Virginia continues to develop its already strong nanoscience research community in part through the Virginia Nanotechnology Initiative (VNI). VNI helps bring together the various stakeholders in nanotechnology to foster the continued growth and advancement of the technology. Virginia's institutions of higher education are also committed to furthering nanotechnology with eleven institutions engaging in active research. Collaboration between the various institutions and various federal and industry labs is high.

Virginia is also home to important start-up companies as well as a broad range of industries that are or will be users of nanotechnology in order to be competitive. Virginia is positioning itself as a leader in the field of nanotechnology through collaboration between industry startups and state government on matters from economic development to leveraging the most from federal research dollars.

A regional approach to this issue is being advanced through the creation of the Chesapeake Nanotechnology Initiative (CNI). Collaboration with Maryland and Washington, D.C. will allow each partner to leverage increased "local" resources, creating an environment that is conducive to growth and innovation.

As nanotechnology becomes an increasingly important industry sector, following the trend that made the integrated circuit a ubiquitous part of daily life and silicon a catchword for technology, Virginia will be ready to capitalize on that innovation and lead both nationally and internationally.

CREATING THE VIRGINIA NANOTECHNOLOGY INITIATIVE (VNI)

In FY 2002, CIT created the Virginia Nanotechnology Initiative (VNI). Previously the Initiative for Nanotechnology in Virginia, VNI is an alliance of interests from academia, industry and the public sector serving the nanotechnology community across the Commonwealth. VNI facilitates collaboration to advance Virginia's nanotechnology research, creates conditions to accelerate technology transfer to industry, furthers educational and workforce training programs in nanotechnology, and seeks to position Virginia at the forefront of nanotechnology innovation. VNI assists with increasing the flow of federal research funding into Virginia and builds a coordinated nanotechnology community. CIT has invested $477,000 in VNI, with $147,000 of that amount invested in FY 2005.

In May 2003, the Virginia Research and Technology Advisory Commission (VRTAC) asked CIT to develop a vision for nanotechnology research in Virginia. CIT and VNI recommended nanomanufacturing as the area in which Virginia should establish leadership. In September 2003, VRTAC endorsed nanomanufacturing as the Commonwealth's strategic priority within nanotechnology.

At VRTAC's direction, CIT developed strategic initiatives to position Virginia as a leader in nanomanufacturing and achieve a unified vision for nanotechnology.

Key activities for CIT and VNI in FY 2005 included:

- Profiling the domestic and international competitive landscape.
- Identifying Virginia's nano-related technical facilities and assets.
- Developing a roadmap to develop a nanotechnology cluster(s) in Virginia.
- Conducting regular education and awareness programs with Virginia's corporate, government and academic decision makers.

"That discoveries from Virginia Tech's labs are among Luna's resources shows how basic research can lead to important technologies that support commercial partnerships." — Jim Blair, Interim Vice Provost for Research at Virginia Tech and Director of the Board of Virginia Tech Intellectual Properties (VTIP) Inc.

UNIVERSITY RESEARCH AND COLLABORATION: NANOTECHNOLOGY IN VIRGINIA

Virginia's educational institutions continue to place a high priority on nanotechnology research. Eleven universities in Virginia are now active in nanotechnology research and education, and substantial collaboration continues to develop between the universities, industry and federal labs in Virginia. Examples include:

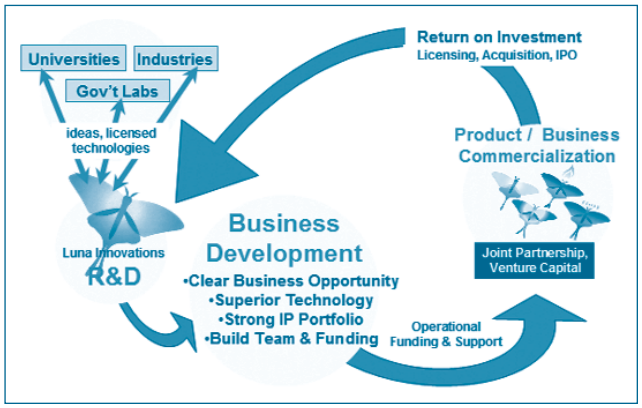
- Researchers at Virginia Tech discovered a process for an entirely new class of carbon fullerenes encapsulating various metal and rare earth elements. Luna Innovations, Inc., based in Blacksburg, has the exclusive rights to these unique nanomaterials, which show promise for improving communication devices, producing energy, increasing the sensitivity of magnetic-resonance imaging (MRI) scans and simultaneously identifying and attacking individual cancer cells.
- NanoSonic, Inc. of Blacksburg was created in 1998, in cooperation with Virginia Tech and the Commonwealth of Virginia. Most recently, NanoSonic signed a large-scale contract with Lockheed Martin to develop nanotechnology materials and coatings.
- George Mason University and GEO-CENTERS, INC. entered into a research partnership in April 2004. GEO-CENTERS, INC. has brought new jobs to Virginia and is located in Prince William County's INNOVATION at Prince William Technology Business Park. The two focus on scientific research, technology development, engineering, field-testing, and project management, with specific expertise in chemistry, biotechnology, mechanical engineering, toxicology, materials science, chem/biosensors, nanotechnology, human factors performance and engineering, training and sustainment, and software development.

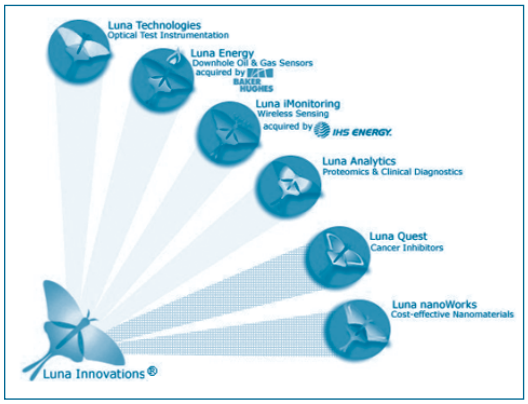
- The College of William & Mary has developed a laser process for significantly increasing the quality and the production rate of carbon nanotubes and is working with the Free Electron Laser at the Thomas Jefferson National Accelerator Facility to scale up the process.

- Old Dominion University is actively contributing to nanotechnology efforts in the Hampton Roads region with their Technology Applications Center, the Entrepreneurial Center, the wind tunnel at NASA Langley and the Virginia Modeling, Analysis and Simulation Center. NASA Langley Research Center has also developed an approach for controlling the deposition and alignment of carbon nanotubes for electronic applications.
- The University of Virginia is host to a prestigious National Science Foundation Materials Research Science & Engineering Center, the Center for Nanoscopic Materials Design. With the passage of the November 2002 bond referendum for higher education, along with significant private giving, the University of Virginia received a new Materials Science Engineering and Nanotechnology Building for further research.

BUSINESS AND ECONOMIC GROWTH IN NANOTECHNOLOGY

Intellectual property created by Virginia's universities continues to spur business applications of nanotechnology, creating jobs and economic benefits. Luna nanoWorks — a new division of Luna Innovations established in Danville in November 2004 — is investing $6.4 million with its collaborative partners from the federal, state, local and private arena. The company is expected to employ more than 50 people in its Danville location by 2006.





In June 2005, Maryland, Virginia and the District of Columbia created the **Chesapeake Nanotechnology Initiative** (CNI), a cooperative designed to accelerate research, development and the establishment of new nanotechnology companies in the region. CNI is another example of the positive results possible through regional collaboration. Like the Mid-Atlantic Broadband Cooperative, CNI will provide benefits to its member entities not possible if they acted independently of each other. By capitalizing on existing resources such as federal labs, higher education and the private sector, CNI will allow the region to take advantage of economies of scale. Under joint regional guidance it will identify ways to further capitalize on existing regional assets, review and identify additional areas of technical competence in nanotechnology science, and define best practices in the nanotechnology industry.

"Nanotechnology will play a vital role in our military's future, and I'm delighted that Danville will help lead the development of this industry in America. This project reinforces Virginia's position as the center of America's military and technology sectors." —
U.S. Senator John Warner

THE FUTURE OF THE COMMONWEALTH: OPPORTUNITIES THROUGH NANOTECHNOLOGY

Nanotechnology is projected to be a trillion-dollar global industry within a decade, and Virginia is uniquely positioned to thrive in this growing sector of the economy. Nanotechnology will transform a wide range of industries from defense and homeland security to health care and transportation. In order to achieve the advances that will position Virginia at the forefront of nanotechnology and lead to cluster development, the Commonwealth must maintain its commitment to strategic investments in this promising area. Although the federal government remains the primary funding source for nanotechnology, the federal government expects and often requires leverage for its investment from state commitments.

Continued investment by the Commonwealth will also help to ensure that the intellectual property created in Virginia remains here. Virginia can create a critical mass of intellectual capital by attracting and retaining the most promising graduate researchers, postdoctoral fellows, and the professors who guide their studies. The Commonwealth's reputation as a leader in this field will continue to grow and will be crucial to attracting new nanotechnology companies and the jobs that accompany them. Furthermore, an acceleration of the fundamental understanding of the properties, characteristics, and production of nanomaterials, along with a visible track record in this field for the Commonwealth, will provide for additional opportunities to capture federal research funding for Virginia's colleges and universities.

In the future, Virginia is positioned to realize millions in research and economic return and, as a result, must continue its work to foster a business and academic environment where these advances can thrive and grow.

B. LIFE SCIENCES

EXECUTIVE SUMMARY

Virginia's strongest IT industry advances are occuring in life sciences. As a national leader, Virginia recognizes the research and economic benefits found at the intersection of biosciences and information technology. Governor Warner and Secretary Huang have worked diligently to keep Virginia at the forefront of the life sciences industries. Shortly after Governor Warner's first year in office, Virginia experienced an increase of 1,070 new jobs in the biotech industry, and $478 million in investment, totaling close to $1 billion ($978 million) in 16 months.

"Advances in IT today are not being driven by computer scientists. They're being driven by biologists." — Secretary Eugene J. Huang

Virginia is at the forefront of new technology applications in the life sciences in applications such as gene sequencing, imaging data, clinical trial data and community health data. These areas are found at many state facilities that use genomics, proteomics, bioinformatics, systems biology, medical imaging, clinical decision support and disease outbreak surveillance.

The Virginia Biotechnology Association (VaBIO) has identified more than 200 bioscience firms in Virginia, employing over 7,000 workers and contributing more than $2.5 billion annually to the state's economy. VaBIO's research indicates that 29% of those firms will be expanding in the next two years and that their employment will grow 13%. CIT has done a tremendous job supporting the development of targeted innovative technology industry clusters and provided innovative funding mechanisms to accelerate the growth of new biotech ventures.

Similar to other areas like broadband and nanotechnology, the Warner administration has been able to make great strides by bringing together experts from industry, our highly ranked research institutions, and state government. Together, these groups have developed an initiative to help commercialize emerging technologies and contribute to workforce development and industry growth through SmartBio Partnerships. Virginia's colleges and universities are also advancing research in this area. Perhaps more importantly, they are developing the degree programs and workforce development training to serve the needs of the industry and increasing Virginia's competitive advantages by creating a more highly skilled workforce.

Virginia must seize the economic opportunities presented by the intersection of life sciences and IT. This market is estimated at $176 billion in size worldwide in 2005 and is expected to grow to more than $240 billion by 2010.[20] Research funding in the bio-IT intersection is growing, with an estimated $6.8 billion spent worldwide in 2005, growing to $16 billion by 2010.[21] U.S. federal funding for bio-IT research totaled roughly $1.39 billion in the final FY 2005 budget and is

20 Bioinformation Market Study for Washington Technology Center, 2003, Alta Biomedical Group

21 Ibid.

"We are very excited to see Virginia move into the top five in high-tech employment. While Virginia suffered as a result of the bursting of the high-tech bubble in 2000, the state remains focused on providing highly educated workers who are the lifeblood of the tech industry, and this focus has paid off." — Greg Poersch, Executive Director, American Electronics Association's Potomac Council

expected to be $1.44 billion for FY 2006.[22] Companies integrating IT and life sciences disciplines are beginning to grow in Virginia. The fastest growing category of the biotechnology workforce is that of bio-IT computer specialists, which were recently measured at 6.2% of the biotech workforce and growing at 22% annually.[23] These are high-paying jobs with starting annual salaries ranging from $65,000 to $90,000.

INTEGRATING TECHNOLOGIES WITH SMARTBIO

Virginia has sought to leverage existing research and commercialization strengths in life sciences and IT under the Commonwealth's SmartBio initiative. SmartBio integrates Virginia's core technology competencies with staff and financial support to bridge the commercialization gap separating research discoveries from their development into products and companies. In 2003, the Governor's Commission on Biotechnology, comprised of representatives of the state's biotechnology industry, academia, and government, developed a plan for SmartBio Partnerships (SBPs) that focuses on:

- Research to better understand complex biological systems.
- Commercialization support to accelerate research results into practical, beneficial products and companies in human health, veterinary medicine, agriculture, public safety and environmental stewardship.
- Future workforce development to support a sustainable cluster of SmartBio industry in Virginia.

Effective collaboration among the Commission's leadership—the Secretary of Commerce and Trade, the Chair of the Virginia Biotechnology Association (VaBIO), and the Secretary of Technology—has proven essential in developing and advancing this bold initiative.

Virginia's strong IT industry—5th in high-tech employment[24] among the states—provides SmartBio-relevant strengths in:

- Data integration/fusion.
- Data mining and analysis.
- Intelligence decision support.
- Modeling and simulation.
- Networking and Internet technologies.
- Information security and privacy.

[22] CIT analysis of Bio-IT R&D research in federal agencies based on AAAS Report XXX: R&D FY 2006

[23] U.S. Department of Commerce, 2003. A Survey on the Use of Biotechnology in U.S. Industry, pp.81-84

[24] American Electronics Association's CyberStates 2003

The Commission's plan recommends a three-year SmartBio Partnership Program to create one or more SBPs. In the plan, each SBP is expected to conduct a program of research, commercialization and workforce development. Examples of existing Virginia research strengths in which proposals could be requested are:

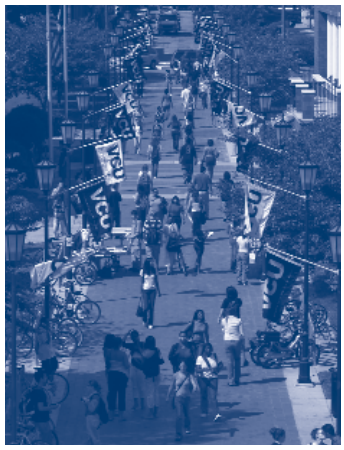
- "Smart" data integration for personalized medicine.
- "Smart" analytical tools for complex biosystems.
- "Smart" biothreat detection and identification.
- "Smart" food production and environment optimization.

The SBPs have the potential to drive innovative SmartBio-related research, including university-matched recruitment of "star" researchers who will expand research funding and training efforts as well as provide additional visibility and leadership. These integrated partnerships are designed to work with their regional academic institutions, universities, four-year colleges and community colleges to develop curriculum and training to meet the future workforce needs of their nascent SmartBio industry clusters.

UNIVERSITY RESEARCH AND COLLABORATION: LIFE SCIENCES IN VIRGINIA

Virginia's leadership in life sciences also stems from aggressive research initiatives at institutions of higher education throughout the Commonwealth. Virginia ranks 17th among the states in combined life science, math and computer science R&D expenditures at its institutions of higher education.[25] SmartBio research and educational assets in Virginia include:

- Virginia Tech's Virginia Bioinformatics Institute (VBI).
- The University of Virginia's Computational Biology program.
- VCU Life Science's Center for the Study of Biological Complexity.
- George Mason University's Centers in Biomedical Genomics and BioDefense.
- The College of William & Mary's Biological Mathematics program.
- Eastern Virginia Medical School's Center for Biomedical Proteomics.



[25] National Science Foundation, Academic Research and Development Expenditures: Fiscal Year 2002, NSF 04-330, 2004

Virginia's four-year institutions and community colleges have been actively developing innovative new degree programs and workforce training in biotechnology, biomanufacturing, systems biology and bioinformatics. The Commonwealth's research universities and colleges have made significant contributions to the science, application, and commercialization of biotechnologies. Highlights of investments include:

- Virginia's leading research institutions, including the University of Virginia, Virginia Tech, and Virginia Commonwealth University, account for over $700 million in research expenditures (more than $370 million in life science R&D) according to the most recent National Science Foundation data.
- In 2002, Virginians passed a $900 million higher education bond referendum including over $230 million focused on life sciences research and education infrastructure.
- The Commonwealth has outstanding biotech-related academic research programs. The Virginia Bioinformatics Institute at Virginia Tech has quickly developed into a leading national bioinformatics research center that now has over $40 million in research grants.
- The University of Virginia consistently ranks among U.S. News & World Reports' top public universities, with highly ranked medical research specialties in Endocrinology/Diabetes (5th) and Biomedical Engineering (15th).
- George Mason University has pioneered new ground in developing its new national Center for Biodefense, led by the former head of the Soviet Union's biological warfare program and now focused on means to counteract biological pathogens.
- Additional SmartBio-relevant research strengths reside in Virginia's federal and state government laboratories and non-profit research institutions such as the Carilion Biomedical Institute in Roanoke.

BUSINESS AND ECONOMIC GROWTH IN LIFE SCIENCES

Virginia has experienced enormous returns on life science investments. Since 2002, Virginia has successfully competed for nearly $900 million in investments by pharmaceutical and bioscience firms. The economic impact of these investments in biotech will be significant and will further Virginia's reputation as a leader in the field.

In the first year of the Warner Administration in December 2002, a $1.5 million investment was made with the location of EnVirtue Biotechnologies, Inc., in the City of Winchester. EnVirtue has trained Virginians to develop and advance technologies for addressing environmental challenges in ecological, environmental and agricultural sciences.

Other significant investments include Boehringer Ingelheim's expansion of its pharmaceuticals manufacturing facility in Petersburg, the Incogen bioinformatics firm moving to Williamsburg, the creation of the National Bioinformatics Center at Virginia Tech, and Mediatech's presence in Prince William County. The Incogen bioinformatics investment resulted in new employment, Phase I and II SBIR awards, and R&D collaborations with VBI, the College of William & Mary, Eastern Virginia Medical School, Duke University and Johns Hopkins University. Eli Lilly's planned manufacturing facility in Prince William County will bring more than 700 highly-skilled jobs to the state and ranks as one of the 10 largest economic development investments in the state's history.

In April 2005, Philip Morris announced that it would construct a new $300 million, 450,000 square foot R&D facility in the Virginia Biotechnology Research Park. This development will nearly double the company's research space, as well as employ an additional 500 scientists, engineers and support staff.

In July 2005, Governor Warner announced that Princeton BioMeditech Corporation (PBM) would invest $7 million to build a manufacturing facility in Albemarle County and create 115 new jobs. The company has entered into an exclusive marketing and manufacturing agreement with ContraVac, Inc., a privately held biotechnology company. August 2005 marked an announcement by Governor Warner that Merit Medical Systems, Inc. will invest $5 million to open a manufacturing facility in Chesterfield County, creating 200 new jobs. The new facility will assemble and distribute kits for the medical industry worldwide

In 2006, Howard Hughes Medical Institute will open a new $500 million Janelia Farms campus in Northern Virginia that is expected to employ over 300 world-class researchers and staff, and provide world class research discoveries. The complex will offer more than 140,000 square feet of retail shops, medical and professional offices and commercial biotechnology R&D lab space. Howard Hughes Medical Institute is another strong testament to the strategic position and opportunity that Virginia has for the future of biotech industries.

"Virginia's reputation as a leader in biotechnology research and development continues to grow. By choosing to revitalize this historic building in Old Town Winchester, EnVirtue proves that biotech companies can locate anywhere in the Commonwealth and benefit from a high quality of life." — Governor Warner

Howard Hughes Medical Center: "This is a significant moment in the Institute's 50-year history of support for innovative biomedical research." — Hanna H. Gray, Chairman of HHMI's Board of Trustees

THE FUTURE OF THE COMMONWEALTH: OPPORTUNITIES THROUGH LIFE SCIENCES

With a strong commitment from state government leaders, Virginia will continue to be a leader in biotechnology. In this highly competitive field, the Commonwealth must further develop its research capacity and maintain its commitment to strategic investments in promising opportunities to remain at the forefront.

Virginia's SmartBio Partnership is designed to help increase recognition of the Commonwealth's standing in this field and help aid in the recruitment of top research talent from the undergraduate level through professors and industry specialists. It may also facilitate increased external funding and the accelerated creation of intellectual property and job-creating companies founded on those innovations. By 2010, Bio/IT is projected to be a $243 billion industry, and the SmartBio Partnership will work to increase Virginia's share of this lucrative market and the jobs that accompany it.

The recommendations of the Governor's Commission on Biotechnology form the core of the "Virginia Biotech: Vision 2010" document published by VaBIO in 2005. This document is educating leaders in communities throughout the state on the importance of this industry to Virginia and can be found online: http://www.vabio.org/Vision2010-home.htm.

Historically, Virginia's investments in biotech since the 1990s have lead to dramatic returns on investment. Continued investments made by future administrations can continue this trend and help maintain Virginia's leadership position in this expanding field.

C. DEFENSE AND HOMELAND SECURITY

EXECUTIVE SUMMARY

Virginia, with its close proximity to the nation's capital and the defense establishment as well as its stellar research institutions of higher education, has significant competitive advantages when compared with competing states. During Governor Warner's term, critical strides have been made in leveraging those advantages to increase Virginia's share of defense- and homeland security-related industries and federal dollars. The Commonwealth is able to achieve significant cost savings compared to other states while still maintaining its competitive position because of these factors.

Despite the natural advantages enjoyed by Virginia, statistics show that Virginia universities receive less defense research funding per capita than peer states like Maryland and Pennsylvania. At the same time, Virginia ranks third nationally in total federal research and development funding[26].

To increase Virginia's share of this funding, Governor Warner announced the creation of the Institute for Defense and Homeland Security (IDHS) in February 2003. IDHS is consortium of university, industry and federal R&D partners dedicated to delivering science and technology solutions in response to national defense and homeland security requirements. Underwritten by CIT, IDHS has positioned the Commonwealth as a leader in defense and homeland security R&D and technology transfer by developing Virginia assets into world-class defense research and development hubs. IDHS predicts that research funding in Virginia in these areas could grow by as much as $100 million. IDHS is located in Herndon with CIT in close proximity to federal defense agencies.

IDHS is promoting research in multiple areas such as civilian uses for unmanned aerial drones currently used for military reconnaissance, bioterrorism detection, robotics, and crisis alert systems.

One of Virginia's emerging strengths is in modeling and simulation technology, an area growing in importance in the military and focused in southeastern Virginia around the U.S. Joint Forces Command. With the expansion of this technology into the civilian arena, Governor Warner established the Virginia Modeling and Simulation Initiative (VIMSIM) to help support the growth of this cutting-edge industry and ensure Virginia stays at the leading edge of innovation.

26 "Federal Research and Development in the FY 2004 Budget," Kei Koizumi, American Association for the Advancement of Science, Governor's Higher Education Research Summit, May 1, 2003, Newport News, Virginia.

"Virginia is host to a large number of federal agencies and an extensive defense and security industry. The geographic proximity of these agencies and companies as well as their integration with Virginia universities enables the IDHS to accelerate technology innovation from concept to commercialization, allowing a more rapid deployment of high quality end products for our nation." — Governor Warner

ESTABLISHMENT OF THE INSTITUTE FOR DEFENSE AND HOMELAND SECURITY (IDHS)

IDHS management works directly with defense and homeland security program directors to discover their research priorities, identify funding availability, and unite university and industry entities to develop strong solutions.

IDHS has fueled the Commonwealth's defense research and development growth by developing programs that leverage existing federal research and enhancing that research to solve new or different problems. The Institute is engaged in the development of five research programs. The process began by identifying areas of research that are important to either defense or homeland security. The following programs are in the initial stages of definition and funding:

RED CELL

Red Cell is an emergency alert system that leverages existing sensor and network research and development for real-time detection of chemical, biological, radiological and nuclear incidents. In FY 2006, IDHS' Red Cell program team is developing a concept of operations for a sensor and cellular communications infrastructure to enable comprehensive incident management by coupling state-of-the-art detection and dispersion modeling technologies to national cellular wireless networks. The Red Cell system will be able to selectively warn affected areas with populations in the event of terrorism or other emergencies, such as Amber Alerts and tornado warnings.

REMOTE PRESENCE

The Remote Presence program leverages existing DOD unmanned vehicle technologies for advanced military and first responder applications. In FY 2006, IDHS' Remote Presence program team will develop new payloads, extend endurance parameters and develop new concepts of operations for military service, homeland defense, homeland security and civilian applications. The program will focus on systems that are effective and affordable for first responders.

ENVIRONMENTAL BIOTERRORISM

The Environmental Bioterrorism Detection (EBD) program is a wildlife-disease monitoring network that collects and analyzes clinical data from wildlife hospitals, wildlife rehabilitation organizations, veterinarians and individuals. In FY 2006, IDHS' Environmental Bioterrorism program team will develop plans to couple the EBD network to a federal Epidemic Outbreak Surveillance network currently in development for human disease to provide a more complete bio-surveillance system. The program is designed to exploit emerging defense medical technology to allow rapid pathogen identification and national alerts. In addition, Wild Canary is the use of DOD investments in human syndromic surveillance in wildlife for the prediction, warning and tracking of biosecurity and bioterrorist threats.

CENTER OF EXCELLENCE IN ROBOTICS

The Center of Excellence in Robotics program supports the Office of Naval Research with a series of R&D studies designed to address the direction of national robotics programs. These studies will assist the Navy in developing a technology research plan, operational employment policies, requirements documentation and acquisition strategies for robotics that meet current and emerging naval mission areas. In FY 2006, IDHS will foster research with the Potomac Institute for Policy Studies in Arlington in support of the Navy's robotics program awarded to the Potomac Institute.

NAVCIITI

IDHS, in conjunction with Virginia Tech, secured a $3.5 million research funding extension for Virginia Tech's Navy Collaborative Integrated Information Technology Initiative (NAVCIITI) research program. The NAVCIITI extension will focus on research in the areas of advanced wireless networks, networking and communications technologies, including software reconfigurable radios, smart antennas and ultra-wideband systems. IDHS's efforts in extension of the NAVCIITI program will enable Virginia Tech researchers to continue current research while pursuing additional funding sources for these areas.

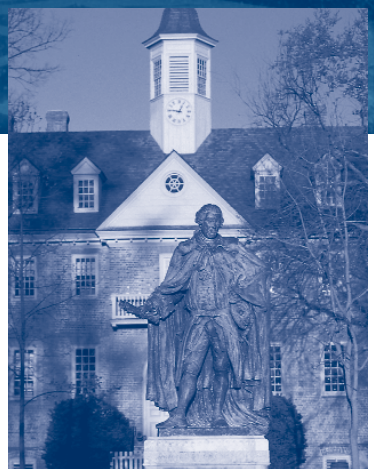
The focus of IDHS allows the Institute to further concentrate on applied research projects that advance to large-scale R&D programs involving Virginia universities, companies and federal labs.

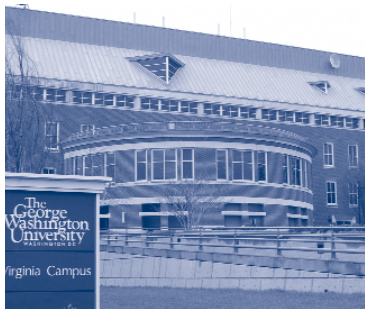
UNIVERSITY RESEARCH AND COLLABORATION: SECURITY IN VIRGINIA

Universities and research institutions are key suppliers of innovation that contribute to solutions for the challenges faced by defense and homeland security communities. The following Commonwealth research universities are founding members of IDHS:

- The College of William & Mary
- Eastern Virginia Medical School
- George Mason University
- George Washington University
- Hampton University
- James Madison University
- Norfolk State University
- Old Dominion University
- Shenandoah University
- University of Virginia
- Virginia Commonwealth University
- Virginia Military Institute
- Virginia Polytechnic Institute and State University
- Virginia State University

A focus on defense and homeland security research and development will allow the Commonwealth to greatly increase the amount of research funding Virginia's institutions receive from the federal government, which will serve as an economic stimulus for universities and their communities.





BUSINESS AND ECONOMIC GROWTH IN SECURITY

IDHS currently has 70 industry affiliate members. Partners range in size and focus from innovative technology startups to large-scale defense integrators. Industry affiliates will be engaged in collaborative applied R&D programs with partner universities and federal laboratories, leading to product commercialization.

The Institute is engaged in the development of programs that will leverage existing federal R&D expenditures. IDHS has proposed alternative-use solutions for programs in the fields of environmental biodefense, surveillance and early warning communication systems. The FY 2004 federal defense budget contains more than $3.5 million of program funds for programs initiated by IDHS, and the FY 2005 federal defense appropriations bill contains an additional $2.7 million of program funds for programs initiated by IDHS. If these programs meet their current delivery and funding goals, they will produce in excess of $75 million in new R&D opportunities for Commonwealth entities during the next five years.

Other security businesses have chosen to locate in the Commonwealth because of its strategic assets. In November 2004, Governor Warner announced that 11,115 jobs would be created by four major companies already doing business in Virginia that provide services to the federal government:

- Science Applications International Corporation (SAIC) created 4,515 jobs in various locations throughout Virginia by way of a $96 million investment.
- SRA International hired 1,400 new employees and invested $50 million in Arlington and Fairfax Counties.
- PricewaterhouseCoopers created 600 jobs in Fairfax County through a $72 million investment.

- Booz Allen Hamilton created up to 4,600 jobs in Fairfax County and Norfolk through a $133 million investment.

The total investment exceeded $351 million. These jobs pay an average salary of $76,000.

During May 2004, Microwave Circuits, Inc., relocated its headquarters from Washington, D.C. to the City of Lynchburg. Their move was a $2.1 million investment that created 200 new, high-paying jobs. Microwave is manufacturing new technologies for use in homeland security and Department of Defense application. In February 2004, Governor Warner announced that Executive Protection Systems (EPS) would be expanding in Winchester, where it would be providing Weapons of Mass Destruction (WMD) protective equipment, training and consulting services. Through a $250,000 investment, the company will create 30 new jobs. MZM, Inc. selected the City of Martinsville in November 2003 for a database and information operation that provides IT services to the federal defense and intelligence community. The project was a $4.4 million investment over three years, with an additional 150 new jobs with high starting salaries. In May 2005, BAE Systems announced it will be expanding operations in Virginia by creating an information technology work center in Fairfax. This $25 million investment will create 700 new high-tech jobs for the state and adds to the 30 facilities already operated by BAE in the Commonwealth.

The Virginia Modeling And Simulation Initiative

In April 2005, Governor Warner announced the Virginia Modeling and Simulation Initiative (VIMSIM) during the opening of Lockheed Martin's Center for Innovation in Suffolk. VIMSIM includes the creation of an Institute for Homeland Security and Crisis Management. This Institute is a partnership between Old Dominion University (ODU) and private contractors, and will cultivate emerging non-military simulation and modeling activities. The opening of Lockheed Martin's center signaled a $30 million investment and 50 jobs. Hampton Roads has traditionally been a home for cutting-edge technologies and promises to be an excellent location for further modeling and simulation developments. VIMSIM will also bring National Lambda Rail to ODU's existing Virginia Modeling and Simulation Center (VMASC) and the U.S. Joint Forces Command. Modeling and Simulation contributes more than $412 million a year to the economy of the Hampton Roads region through these two organizations.

THE FUTURE OF THE COMMONWEALTH: OPPORTUNITIES THROUGH SECURITY

Currently, CIT invests $680,000 in the operations of IDHS annually, as well as providing facilities and administrative support services. The Institute has a goal of increasing Commonwealth research funding from defense and homeland security to $100 million by 2007. After 21 months of operations, IDHS reports that it is on track to achieve this objective, on the assumption that federal research investments will remain at the FY 2003 level. IDHS projects that its five research projects—Red Cell, Remote Presence, Environmental Bio-terrorism, Center of Excellence in Robotics and NAVCIITI—will generate $40 million of research funds for the Institute to allocate as grants to entities in the Commonwealth. Additionally, these programs are projected to generate another $60 million in new research funding directly to research entities in the Commonwealth. This combined increase of $100 million of research funding will represent a 200% increase in defense research obligations over the levels reported in Virginia in FY 2001.

Virginia has successful research programs that can deliver solutions to national defense and homeland security challenges. The Commonwealth has a geographic advantage over other states in the pursuit of these areas. Continued investments in IDHS will further establish the Commonwealth as a national leader in defense and homeland security research.

"Virginia, and Fairfax County in particular, has a strong, pro-business climate, an educated workforce, an excellent communications infrastructure and is in close proximity to our major customers. Governor Warner's efforts for fiscal stability and tax reform for the Commonwealth were additional incentives for BAE Systems." — Information Technology President Bill Shernit, explaining BAE Systems' rationale for choosing Virginia

V. CONCLUSION

The Warner Administration entered office in 2002 with a strong belief in the ability of technology to impact substantially both the functioning of state government and the future of the Commonwealth's economy. However, technology, like any other tool, is only as effective as its implementation. For that reason the Administration has championed the IT reforms detailed in this report, leading to the adoption of industry-approved best practices for the use of technology. This combination of a belief in technology's ability to transform government services and a strategic, business-driven approach to implementation helped lead the non-partisan Government Performance Project (GPP) to rank Virginia the nation's best-managed state earlier this year. The GPP specifically cited IT reform and many of the best practices adopted, such as performance management, in its report as reasons for Virginia's top ranking.

In addition to the reform of state government services, a cornerstone of the Warner Administration has been a commitment to encouraging the development of emerging technologies such as those highlighted in this report. Nanotechnology, modeling and simulation, and biotech all have the potential to dramatically alter the economic landscape of Virginia in coming years.

The future success of the Commonwealth is fundamentally tied to the continued growth and achievements of technology industries based here. Governor Warner has recognized that connection and acted to provide a supportive environment for their growth and development. The people of the Commonwealth and the technology community, in particular, must ensure that future Governors and legislative leaders realize the enormous promise of these initiatives and maintain our investments in them. Virginia is on the path toward an even more promising future but must maintain its drive and focus to reach its full potential. With a sustained strategic focus that builds on the progress of the last four years, Virginia is well positioned to remain at the forefront of innovation and to continue to serve as the example by which other states set their respective courses.

APPENDIX A: FULL LIST OF AWARDS

June 2002	Virginia receives a **top ten** ranking as a top performing state in the New Economy.[27] Also ranking: 3rd in Workforce Education 5th in # of High-Tech jobs (as a share of total employment) 8th in Venture Capital (invested as a percentage of GSP)
June 2002	Virginia ranks #1 in Social Services delivered to citizens thru information technologies and digital government.[28]
June 2002	Virginia receives international E-Gov 2002 Pioneer Award for VIPNET's Live Help online customer service features.[29]
July 2002	Virginia launches the nation's first "wireless portal", My Mobile Virginia.
July 2002	Virginia's absentee ballot application tracking service receives a 2002 "Best in Breed" award.[30]
Sept. 2002	Virginia's State Portal is selected as the #1 US State Government Internet Portal.[31]
Nov. 2002	Virginia ranks 6th nationally in states' use of information technology in running 21st century government. This represented the greatest improvement by any state.[32]
Dec. 2002	Virginia's State Board of Elections is recognized for Virginia's suite of online voter and election services.[33]
June 2003	Virginia's electronic procurement system, eVA, is recognized with the 2003 State Government Innovator Award as one of the nation's "Best in Breed: technology projects for 2002[34]
Sept. 2003	Virginia receives the 2003 NASCIO Award for "State Information Technology Management Initiative," recognizing Virginia for innovative IT transformation initiative and the creation of VITA.[35]

Nov. 2003 Virginia agencies win the 2003 Cost Effectiveness Through Government Awards. Winners were: VEC's "Online Unemployment Claims Filing Service," VIPNet's "Live Help" Online Real-Time Customer Service, Tax Department's "VATAX Public-Private Partnership Project" and DGS's "eVA', the Commonwealth's electronic procurement system.[36]

April 2004 The Virginia Information Technologies Agency (VITA) and the Virginia State Police, in partnership with VITA, are both awarded Medals of Achievement for visionary use of information technology.[37]

July 2004 Virginia ranks 3rd in the nation in the use of information technology in running 21st century government.[38]

Sept. 2004 Two Virginia projects are selected as 2004 Recognition Awards by the National Association of State CIOs. Virginia's E-911 Deployment Project and Virginia's Base Mapping Program were given awards based on IT initiatives which best assist government officials in innovatively executing their duties and providing cost-effective service to citizens.[39]

Jan. 2005 Virginia receives the top score of A- in management of state government and is the only state to receive straight A's across the board in the Government Performance Project's four categories: money, people, infrastructure, and information.[40]

June 2005 Three Virginia localities are first place winners for their deployment of information technology to better serve citizens. Winners were Fairfax County, Prince William County and Roanoke County.[41]

Aug. 2005 VITA and the Commonwealth of Virginia win a Customer Award from Meridian KSI for "Best Launch of the Knowledge Center." The VITA KC implementation was identified as a model for other states to follow.[42]

27 Progressive Policy Institute, New Economy Index
28 2002 Digital State Survey, Center for Digital Government
29 E-Gov 2002 Conference
30 Center for Digital Government
31 Best of the Web, Center for Digital Government
32 2002 Digital State Survey, Center for Digital Government
33 2002 Grace Hooper Gov't Technology Leadership Award, Government Executive magazine
34 Massachusetts Institute of Technology (MIT)
35 NASCIO
36 National Electronic Commerce Coordinating Council (NECCC)
37 ComputerWorld Honors 2004
38 Center for Digital Government
39 NASCIO 2004 Recognition Awards
40 Government Performance Project's "05 Grading the States"
41 Center for Digital Government
42 Meridian KSI

A Thank You From The Secretary

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BUILDING A DIGITAL FOUNDATION

REPORTING BACK TO
THE COMMONWEALTH OF VIRGINIA

FROM THE HONORABLE EUGENE J. HUANG
SECRETARY OF TECHNOLOGY

NOVEMBER 2005