Center for Innovative Technology FY2018 Annual Report

Driving Innovation and Entrepreneurship to Create Virginia's New Economy

In accordance with Code of Virginia Section 2.2-2221.1(D), the Center for Innovative Technology is pleased to submit the following annual report describing key programs and their economic performance for the Commonwealth of Virginia.

September 30, 2018

CENTER FOR INNOVATIVE TECHNOLOGY **GENERATING** IMPORTANT BENEFITS FOR THE NEW VIRGINIA ECONOMY

CIT GAP Funds

To date, GAP portfolio companies have created **~1800** high tech jobs all across Virginia and project to create up to **8,000** more jobs over the next 5 years.

$25 Million GAP Investments + **$771 Million** Leveraged Private dollars

For every **$1** of GAP investment into a company, **$30** of private venture capital flows into the company for growth

Commonwealth Research Commercialization Fund

$25.3 Million invested across **306 Awards**

With leveraged dollars of **$66 Million**

CRCF recipients reported in FY18 that they received **$108M** in follow on investment

CIT Broadband

In 2018, CIT assisted **20** localities – partnering with **15** localities to facilitate public-private partnerships.

CIT's methodology, **The Broadband Path**, has been nationally-recognized and is distinctive because it produces **tangible, goal-driven, fiscally achievable** solutions at **no cost** to the locality.

MACH37 Cyber Accelerator

MACH37

Launched **52** new VA Cybersecurity companies in **5 Years**

Fulfilled our committment, now operating solely on **private funding**

CIT Strategic Initiatives

SCITI LABS

EMERGE

Positioned Virginia as a **national leader** in the Smart City industry by partnering to launch the **Smart City Works Actuator**, the **Smart City IoT Innovation (SCITI) Labs**, and the **Emerge Wearable Technology Accelerator**.

Received **$5.3 Million** in federal funding from the Department of Homeland Security to launch the SCITI Labs project.

Federal Support for VA Companies

CIT drove Virginia's #3 National Ranking in SBIR/STTR Funding in 2017

VIRGINIA: **$121,612,569** IN **321 Awards**

Driving Innovation and Entrepreneurship to Create Virginia's New Innovation Economy

The Center for Innovative Technology (CIT) is Virginia's leading resource for innovation-based economic growth strategies and programs. CIT grows and diversifies Virginia's economy by investing in and accelerating innovation commercialization, entrepreneurship and broadband availability. CIT builds public-private initiatives that bring government, industry and universities together to help entrepreneurs create new companies, helps government improve performance, and helps community leaders lay the foundations for their innovation economies. CIT, a not-for-profit corporation, carries out its mission through five service lines: CIT Entrepreneur, CIT R&D, CIT Strategic Initiatives, MACH37 Cyber Accelerator, and CIT Regional and Policy Initiatives. Through these activities, CIT leverages public and private sector investments to develop Virginia's new innovation economy, creating new, high-growth companies and sustainable job growth.

CIT Entrepreneur: Access to Capital

Because the availability of early-stage capital is critical for many emerging technology companies, CIT offers the CIT GAP Funds and Federal Funding Assistance Program. The CIT GAP Funds makes seed-stage equity investments in Virginia-based technology, green technology and life science companies with a high growth potential. The GAP Funds are overseen by CIT and private sector experts – the Investment Advisory Board – who conduct thorough due diligence on the companies before making investments.

CIT R&D: Strategic Investments in Research Commercialization

The CIT R&D team facilitates the commercialization of research and prototype of emerging solutions by identifying strategic opportunities and building and managing public and private sector teams that develop and deploy innovative, marketable solutions. The CIT R&D team manages the Commonwealth Research Commercialization Fund (CRCF), which invests in research and commercialization at Virginia colleges and universities, companies, federal labs and other research institutions in their efforts to advance technology and drive economic growth in the Commonwealth. Aligned with the CRCF is the Commonwealth Research and Technology Strategic Roadmap, a strategic planning tool that identifies key industry sectors with commercial promise that are worthy of institutional focus and economic development for Virginia. Building on the Roadmap, the team provides a snapshot of high-potential innovation and entrepreneurship performance measures through the Innovation and Entrepreneurship Measurement Systems (IEMS). A tool for policy development, the IEMS reports trends in such areas as talent pipeline, R&D and access to capital.

CIT Strategic Initiatives: Positioning the Commonwealth for Future Economic Growth

CIT Strategic Initiatives focus on identifying and advancing solutions and providing initial leadership for the Commonwealth around important emerging areas that impact future economic development. Key initiatives for FY2018 are Smart Communities, access to Broadband, and Autonomous Systems, with additional activities in conjunction with the VITA Innovation Center of Excellence (ICE), Virginia Department of Transportation (VDOT) and other Agencies.

Smart Communities can be defined as jurisdictions that use information and communication technologies to enhance the livability, workability, and sustainability of the community. Fast, extensible, and reliable broadband communications are central to such efforts, and security and privacy controls are fundamental. The Smart Communities initiative integrates ongoing CIT efforts to expand Broadband connectivity throughout the Commonwealth with new activities built around a variety of commercial partners, localities, and State Agencies and realized through a range of programs.

By integrating these efforts in a single conceptual framework CIT will have the capability to address the needs of widely varying communities throughout the Commonwealth and provide a focal point for maturing both commercial and university-developed technologies that are relevant to these communities. A major key to success in this area is the continued evolution of partnerships at the state and national level, and with communities and local governments, universities and private entities throughout the Commonwealth.

Within this framework, the CIT Broadband team works to establish public-private partnerships that expand broadband infrastructure to accelerate the socio-economic growth of Virginia, with a focus on underserved regions and localities. This support aids regions and localities in establishing partnerships with broadband providers for implementation of services for their areas. Our Broadband team continues to support localities in the design and procurement of broadband services. New wireless technologies provide opportunities for underserved communities to finally realize the benefits of reliable, high speed broadband services. The Broadband team assists the evolving set of Broadband stakeholders with new legislative guidance to develop strategic and action plans for broadband deployment in the Commonwealth.

The Autonomous Systems Center of Excellence was established to create UMS-driven economic development opportunities in Virginia. Virginia is home to a vast array of autonomy related assets located across the Commonwealth, as well as an FAA test site established in 2013. Virginia is the leader in autonomous systems with industry estimates consistently placing the Commonwealth among the top 10 states positioned to reap the largest economic benefit from the industry's $82B forecasted economic impact through 2025. Through the Center, CIT services as Virginia's primary information resource, a proponent, and point-of-contact on global UMS technology, policy, investment, and trends. The Center is a catalyst for autonomous systems, vehicles, and technologies in Virginia and will promote collaboration with businesses, investors, universities, entrepreneurs and government organizations to build a world-class ecosystem that will create opportunities for every region of the Commonwealth.

MACH37 Cyber Accelerator™: Intensive Program to Launch Cyber Startups

MACH37 Cyber Accelerator™ is America's premier market-centric cybersecurity accelerator. MACH37 is designed to facilitate the creation of the next generation of cybersecurity product companies. MACH37's unique program design places heavy emphasis on the validation of product ideas, building entrepreneurs' ability to grow viable companies and the development of relationships that produce an initial customer base and investment capital.

CIT Regional and Policy Initiatives

CIT Regional and Policy Initiatives support regionally-based priorities and initiatives designed to expand opportunities and build on the strengths and resources that uniquely shape each region. Staff from all of CIT's services lines engage directly in organizations and initiatives as Board members, mentors, investors, trainers, advocates, and partners. CIT supports the creation of a network of regional accelerators and funds – among the focus areas, best practices, resource sharing, and showcasing regional investment opportunities. To aid in achieving this goal, CIT created the Virginia Founders Fund dedicated to providing investment opportunities for underrepresented entrepreneurs in Virginia. In addition, CIT serves on the innovation and proposal review committees for all GO Virginia Regional Councils and on the evaluation committee for the State Council where it advocates funding for innovation programs. CIT also collaborates directly with regions on grants developed to grow innovation and entrepreneurship. CIT's Federal Funding Assistance Program identifies and accelerates opportunities for Virginia's small technology businesses to obtain SBIR, STTR, and other government contracts. And, in partnership with regional stakeholders, CIT develops and advocates for legislative and budget proposals that advance innovation and entrepreneurship in Virginia. CIT works to establish policies and specific programs that maximize intellectual property commercialization, entrepreneurship, and new company formation.

Economic Performance of Key Areas

CIT Entrepreneur: Growth Accelerator Program (GAP)

The GAP Fund was established to meet the early stage capital demands challenging the Commonwealth's most promising science and technology-based start-ups whose funding requirements could not be met by traditional financing means. GAP Fund investments are governed by the goal of developing the next generation of Virginia's science and technology economy and the entrepreneurial ecosystem required to support that economy. To this end, the GAP Fund places equity and convertible debt investments in tech, clean-tech and life science companies at the earliest stages of company formation, in a manner conducive to stimulating significant private investment or "leverage cash" as a result of CIT's deployment of public dollars.

Fundamental to CIT's ability to successfully deliver private capital is that, unlike grant programs, CIT holds an ownership position in the investee company and maintains that ownership for a multi-year holding period of indeterminate length while the company grows in scope of operations and value. CIT recovers GAP Program investments only upon a liquidity event such as a public offering or change of control for the company.

Underwritten by an annual appropriation from the Virginia General Assembly, the GAP Fund Program functions as a double-bottom-line investment fund focused on creating significant economic outcomes for the Commonwealth, entrepreneurs and co-investors, with the goal of recovering investment capital for redeployment. Since inception, the GAP Fund Program has considered investing in over 5,000 companies and has invested $25.2M in 200[i] seed and early stage technology, life science, and energy companies across the Commonwealth of Virginia.

Over the 14-year life of the program, CIT has found that the following metrics most closely align with program objectives:

- Venture and Angel Capital Attracted – Venture and angel capital dollars invested in the GAP Fund Program's portfolio companies as a result of CIT investing dollars appropriated to IEIA and obtained from federal and private sources. CIT calculates its annual leverage factor by dividing the total of venture and angel capital by all GAP Fund Program portfolio companies in a given year by the dollars deployed in new investments in that year.

- GAP Fund Program Return – The ratio of capital returned and anticipated to return to CIT as a result of portfolio companies being acquired, divided by total GAP Fund Program dollars deployed.

Venture and Angel Capital Attracted. For the period FY2018 and inception-to-date, the GAP Fund Program achieved the following leverage cash totals:

- FY2018 – During FY2018, CIT GAP Funds invested $2.2M. In FY2018, CIT attracted $185.3M in angel and venture dollars – inclusive of FY2018 new investments, FY2018 follow-on investments and pre-existing investments in which CIT did not invest in FY2018, for an annual leverage factor of 82.8.

- Inception-to-Date – Since inception, CIT GAP Funds has invested $25.2M. CIT has attracted $770.7M in angel and venture dollars, for an inception-to-date leverage factor of 30.6.

Important to note in these ratios is the impact of economic conditions with respect to the ability of GAP portfolio companies to attract leverage capital. Poor economic conditions may result in a lower capital attraction ratio due to investor withdraw from the early stage asset class which is not a direct reflection of changes or performance in the GAP program structure and operations.

GAP Fund Program Return. By the end of FY2018, CIT had secured and invested a total of $25,174,244 program inception-to-date and had a projected capital return of $31,344,160 on invested funds, resulting in a capital return factor of 1.2. This number indicates that CIT is managing Virginia's GAP Funds Program appropriation consistent with its goal to return funds to preserve the base of funds for future investment in Virginia's early stage companies.

Company Residency Requirements – CIT GAP Funds requires that all companies be headquartered and have substantial business operations in Virginia at the time of investment and for a minimum three-year period thereafter. MACH37 requires that all companies establish a significant presence in the Commonwealth within a 24-month period of graduation from the MACH37 Accelerator. Significant economic penalties – discussed below – apply to companies in breach of these requirements.

CIT Enforcement of GAP Portfolio Company Residency – Over the life of the GAP Program, CIT's policy and practice regarding remedies that invoked as a result of an investee company's departure from the state has evolved, matured and become more specific:

In FY05, with the start of the GAP Fund program, CIT established its initial policy regarding company residency requirements. As at that time all CIT's investments were in the form of a convertible debenture, our loan covenants explicitly addressed this issue. Under that policy, if a portfolio company were to relocate to another state, CIT -- at its option – could invoke one of two remedies: (1) CIT could demand

the immediate payback of all principal and interest; or, (2) upon note conversion to equity, CIT could invoke a deeper discount percentage (50% v the 20% of the initial note).

In FY2013, CIT revisited this policy and added redemption language to address all equity agreements. In FY2014, CIT further refined this language. The current policy and practice, memorialized in CIT GAP Funds transaction covenants, is as follows:

- Equity Investments: If a company relocates its primary business from the Commonwealth within 36-months of CIT investment, CIT retains its equity position in the company and is paid a penalty fee equal to two times CIT's investment. Also within 36-months of CIT's investment, if the Company accepts any direct or indirect funding from a publicly funded economic development or company attraction entity requiring temporary or permanent relocation of the Company's headquarters or any member of the Company's senior management outside of the Commonwealth of Virginia, Company shall be required to pay CIT a penalty equal to two times (2x) CIT's principal investment.

- Convertible Debt Investments: If a company relocates its primary business from the Commonwealth within 36-months of CIT investment, CIT can convert into common shares at a 50% discount or elect to be paid back principle plus interest. If the note has previously been converted, then CIT will be paid a penalty fee equal to CIT's principle investment. Also within 36-months of CIT's investment, if the Company accepts any direct or indirect funding from a publicly funded economic development or company attraction entity requiring temporary or permanent relocation of the Company's headquarters or any member of the Company's senior management outside of the Commonwealth of Virginia, Company shall be required to pay CIT a penalty equal to two times (2x) CIT's principal investment, regardless of whether CIT holds debt or equity in the Company.

All MACH37 Accelerator investments are transacted as $50K common stock equity investments designed to attract or retain cyber startups in Virginia. All companies receiving investments from MACH37 are located at CIT's offices in Herndon, VA for the three-month duration of their acceleration period and then have 24 months to establish a significant presence in Virginia. Covenants call for a full redemption of CIT's investment in the event that companies fail to establish a significant presence in Virginia. Also within 36-months of CIT's investment, if the company accepts any direct or indirect funding from a publicly funded economic development or company attraction entity requiring temporary or permanent relocation of the company's headquarters or any member of the company's senior management outside of the Commonwealth of Virginia, the company shall be required to pay CIT a penalty equal to two times (2x) CIT's principal investment.

The FY2018 activity below is provided in response to Section 126.10.N.2 of the Appropriation Act. Since GAP investments are, by design, seed stage and intended to leverage private investment and stimulate the next generation of new technology companies, job creation and tax revenue impact are longer-term objectives. Six of these companies were formed during FY2018 to participate in MACH37 Cyber Security Accelerator.

I. The number of companies receiving investment from the fund:
    a. FY2018: 25 companies

b. Inception-to-date: 200 companies

II. The state investment and amount of privately leveraged investments per company:
   a. FY2018: CIT invested $2.2M and leveraged $24.1M in angel and venture dollars on FY2018 investments. During FY2018, CIT's inception-to-date investments leveraged $185.3M.
   b. Inception-to-date: CIT has invested $25.2M and has leveraged $770.7M in angel and venture dollars, $185.3M of which was leveraged during FY2018.

III. The estimated number of jobs created or preserved in Virginia:
   a. FY2018: 200 jobs in companies invested in by CIT in FY2018
   b. Inception-to-date: In FY2018, companies reported that 1,860 jobs were created or preserved in FY2018 by companies invested in by CIT in FY2018 or before.

IV. The estimated tax revenue generated:
   a. FY2018 investments:
      i. Estimated 2018 corporate income tax: $158,461[ii]
      ii. Estimated 2018 personal income tax on jobs: $1,437,500[iii]
   b. Inception-to-date:
      i. Estimated 2018 corporate income tax: $4,075,053[iv]
      ii. Estimated 2018 personal income tax on jobs: $13,368,750[v]

V. The number of companies who have received investments from the GAP fund still operating in Virginia
   a. FY2018 investments: 24 out of 25
      i. One has moved from the Commonwealth
         1. One is part of MACH37 and has returned to its place of origin and is working to establish a Virginia presence. CIT maintains a high level of visibility into those companies, including frequent interaction with the CEO and team, Board of Director observation rights and receipt of a required quarterly statue report.

   b. Inception-to-date: 121 out of 200
      i. 13 have moved from the Commonwealth
         1. One moved from Virginia to Connecticut. This company had received a $100K convertible note from CIT – $50K from Commonwealth-appropriated funds and $50K resulting from a grant to CIT by Johnson & Johnson. In June of 2009, CIT elected to be paid back the $50,000 Commonwealth-appropriated funds plus interest and to convert Johnson & Johnson grant-sourced $50,000 principal and interest at a 50% discount.
         2. Two moved from Virginia to other states after the 3 year requirement to be headquartered in Virginia timed out.
         3. Eight are part of MACH37
            a. Seven are part of MACH37 and have returned to their place of origin and are working to establish a Virginia presence. CIT maintains a high level of visibility into those companies, including

frequent interaction with the CEO and team, Board of Director observation rights and receipt of a required quarterly statue report.

b. One is part of MACH37 and has returned to its place of origin and is past the required time horizon to establish a place of business in Virginia. The company has issued CIT a note for the amount of the penalty.

ii. 36 have failed

iii. 32 have been acquired or paid back CIT

VI. Return on investment

a. FY2018 investments: $0

b. Inception-to-date: $5,878,778

VII. The number of investment that failed:

a. FY2018 investments: 0

b. Inception-to-date: 36 failures, $4,136,700 invested

VIII. Number of companies created or expanded and the number of patents filed during FY2018:

a. FY2018:

i. Companies created or expanded: 25 companies

ii. Number of Patents filed: 25

b. Inception-to-date:

i. Companies created or expanded: 200

ii. Number of Patents filed during FY2018 by 134 companies: 74

Program Changes Anticipated in FY2019

The combination of the GAP Funds, MACH37 Seed Fund, and Commonwealth Energy Fund will produce a projected 20 to 30 new investment transactions for Fiscal Year 2019. CIT will continue its work in examining how best to establish one or more private sector regionally-based or sector specific funds to augment financing obtained from the Commonwealth of Virginia for the purpose of investing in early stage companies.

MACH37 will enter its sixth year of accelerator operations in Fiscal Year 2019. The program will continue to conduct two annual cohort sessions, one in the spring and one in the fall. Each cohort session will contain between 5 and 8 companies. In FY2019, MACH37 operations will continue to be self-sustaining through private sector participation.

Portfolio Companies

Attached is a listing of GAP portfolio companies for the prior year and program since inception. CIT's loan and equity covenants contain confidentiality provisions that strictly govern the disposition of company-sensitive information obtained thereunder. CIT obtains information on third-party, private investment from its portfolio companies under the constraints of this confidentiality language. Release of that private information by CIT, and subsequent availability to a third party under the Freedom of Information Act, could be construed as a breach of the confidentiality provisions, exposing CIT and the Commonwealth of

Virginia to legal action by an investee company, its shareholders or other investors. This exclusion is also discussed in § 2.2-3705.6 (3) of Virginia's Freedom of Information Act.

CIT R&D: Commonwealth Research and Commercialization Fund (CRCF)

The CRCF accelerates innovation and drives economic development in the Commonwealth, while solving important state, national, and international problems through technology research, development, and commercialization. Since the inception of the CRCF program in FY2012, 900 applications were submitted from all of the Commonwealth's ten technology regions and nine GO Virginia regions and, from these submissions, 306 awarded projects were announced. These announced awards total more than $25 million, and are being leveraged with more than $66 million in committed matching funds, including federal awards. CRCF projects have covered the following technology sectors: advanced manufacturing, aerospace, communications, cyber security, energy, environment, information technology – including data analytics, life sciences, modeling and simulation, nuclear physics, transportation, and unmanned systems.

One $2.4 million solicitation was offered in FY2018 and included five programs: Commercialization, Eminent Researcher Recruitment, Matching Funds, SBIR Matching Funds, and STTR Matching Funds. Applications were invited from academia, federal labs, other nonprofit research institutions, university research consortia, and the private sector. Six technology sectors were eligible for funding in FY2018: biosciences/medtech, cyber security, energy, environment – with a focus on water quality only, information technology (with a focus on data analytics only), and unmanned systems. In FY2018, CIT received 118 applications. Applicants requested nearly $8 million and spanned all programs, industry sectors, and eight of the Commonwealth's GO Virginia regions. Thirty-four awards were announced for nearly $2.7 million. Awarded projects represented seven GO Virginia regions and all eligible and strategically important industry sectors and they leveraged the Commonwealth's investment with approximately $6 million in matching funds. These CRCF projects are being performed by companies, universities, and research organizations across the state and align with Virginia's key strategic technology priorities as outlined in the Commonwealth Research and Technology Strategic Roadmap.

FY2018 CRCF awards, along with awards made since the program's inception, address a breadth of research areas with high potential for commercialization. Energy-focused projects include technology for cleaner and more efficient power generation systems, while technology focused on water quality aims to improve treatment processes and water quality and reduce costs at municipal water treatment plants. Projects in life sciences range from novel biomaterials to treating alcohol addition and cancer. Cyber security and data analytics technologies also will be validated through FY2018 projects.

CRCF awards were approved by the CIT Board of Directors following a multi-step review process that included funding recommendations made by the Research and Technology Investment Advisory Committee (RTIAC). The RTIAC is a legislatively-established body comprised of representatives drawn from higher education, economic development, research institutes, venture capital firms, and technology corporations.

CIT Strategic Initiatives

Smart City IoT Innovation (SCITI) – In partnership with the US Department of Homeland Security Science and Technology Directorate, the SCITI program builds on the success of the EMERGE program which leveraged business accelerators to speed delivery of innovative wearable technologies to first responders. Part of a larger DHS S&T initiative, the program drives entrepreneurs to innovative ideas that address the unique needs

of the Homeland Security community. Over the course of two years the EMERGE program assisted 28 early stage companies in interaction with the first responder community and evaluated market delivery options, with several now selling products in the market. In FY2018, the launch of SCITI has strategically positioned the Commonwealth of Virginia to assume a national leadership role in the public safety domain as it evolves to face the new opportunities and challenges associated with Smart Communities. SCITI prototypes, pilots, and commercializes unique first responder technologies of interest to the Homeland Security Enterprise.

Smart Communities Initiative – Smart Communities are anticipated to drive approximately $1.5 Trillion of economic activity globally over the next 15 years. The CIT Smart Communities initiative seeks to provide leadership for the Commonwealth to take advantage of this economic opportunity while bringing the Virginia infrastructure into the 21st century. Early in FY2018 the initiative provided leadership to the Governor's Virginia Smart Communities Working Group, which released two policy recommendation reports and is scheduled to release a third roadmap report in the Fall of 2018. Additionally CIT was awarded the DHS SCITI Labs program, looking to bring innovative smart community technologies to the first responder market; the program has selected a dozen technology providers and will continue into 2020. Later in 2018 Virginia was awarded the first statewide award for the Smart City Council Readiness Challenge Grant, and was selected by the National Governor's Association as one of six states to participate in a national Learning Lab focused on smart community issues, policies and legislation. Both of these resulted from CIT efforts, and have positioned the Commonwealth as a national leader in Smart Community activities. With the transition to the Northam administration, CIT is now actively working with the new Chief Data Officer, Chief Broadband Advisor, the new Director of Innovation at VDOT and others in state government to help focus state resources in addressing community priorities in this area.

Within this framework, the CIT Broadband team works to establish and expand broadband infrastructure, accelerating socio-economic growth in Virginia. During FY2018, CIT's Broadband program was funded through a Commonwealth appropriation of $500,000 in addition to $108,391 of remaining rollover funds not used during the short period (March through June) in FY2015, in which CIT's Broadband program was not under federal funding.

CIT's Broadband program is charged with providing broadband technical assistance to underserved localities throughout the Commonwealth. CIT serves as Virginia's leading resource for broadband technical assistance and a repository for broadband-related information and tools. CIT works collaboratively with other state and federal entities including but not limited to: National Telecommunications and Information Administration (NTIA), Department of Housing and Community Development (DHCD), Virginia Tobacco Region Revitalization Commission (TRRC), Virginia Resources Authority (VRA), Virginia Information Technologies Agency (VITA), Virginia Tech's Virginia Geographic Information Network (VGIN), Virginia Planning District Commissions, and others to help close the digital divide in the Commonwealth. CIT also staffs the Broadband Advisory Council in its pursuit in identifying and resolving barriers to broadband deployment. CIT also leverages its methodology, The Broadband Path, to assist Virginia localities in conducting assessments and helps to facilitate public-private partnerships. CIT's Broadband Path has been nationally recognized and is distinctive because it produces tangible, goal-driven, fiscally achievable broadband solutions at no cost to the locality.

The FY2018 activity summarized below, in response to Section 126.1.N.1 of the Appropriation Act, was state funded activity.

I. Broadband technical assistance provided:

a. Delivered six comprehensive assessments.
b. Provided assistance to 20 Virginia localities and many state and federal agencies, associations and legislators.
c. CIT continued to support the Broadband Advisory Council.
d. CIT continued to maintain the Office of Telework Promotion and Broadband Assistance website (wired. virginia.gov), resources and tools used in assessing needs, planning broadband deployments, and raising awareness to increase adoption and utilization.
e. CIT continued to leverage its proven methodology – The Broadband Path – to assist localities by conducting a comprehensive assessment, identifying the locality's unique needs and facilitating public-private partnerships.
f. Provided expertise on broadband-related bills during the 2018 Virginia General Assembly including helping to draft four bills, all of which passed.

II. The estimated number of households and localities with populations lacking wired broadband access:

a. Based on December 2016 data (the most recent FCC Form 477 data available), 9.4% of Virginia localities have 30% or more households that have no fixed broadband access based on the FCC's definition of broadband (25 Mbps download and 3 Mbps upload).
b. 6.2% of households have no access to even basic fixed broadband (10 Mbps download and 1 Mbps upload).

MACH37 Cyber Accelerator

MACH37 is the premier accelerator for cybersecurity entrepreneurs and startups nationally. This unique program goes beyond the traditional model of typical business accelerators by providing innovators with focused mentoring and support from an extensive network of visionaries, practitioners, and successful entrepreneurs in cybersecurity. The Spring and Fall sessions of MACH37's 90-day program are designed to propel graduating companies into the marketplace with validated cyber security concepts and pipelines for accelerated growth.

The program emphasizes the validation of cohort company product concepts and the development of relationships to attract an initial customer base and investment capital. MACH37 employs a tailored approach to address the priority needs of each company, based on their individual strengths and weaknesses.

MACH37 was championed by the Commonwealth's technology community and launched on September 12, 2013 and started its first cohort that same month. Companies selected for the program typically constitute a team of 2 to 4 entrepreneurs and a technical co-founder working to build alpha or prototype cyber security solutions that address the drivers of a demand for innovations in cybersecurity, including:

- New mainstream demand for advanced capabilities;
- Porous network perimeters that are making traditional solutions less relevant;
- Opportunities created from software defined networking; and
- Challenges of a hyper-connected world with an Internet-of-everything.

At the close of the Fall 2018 cohort class, the list of successful graduates included 52 new cyber companies that have been attracted from around the country to grow these critical businesses in Virginia. MACH37 has also attracted applications from companies desiring to launch from the Herndon-based accelerator from 11 countries beyond the United States and Canada.

The FY2018 activity below is provided in response to Section 126.10.N.3 of the Appropriation Act. As in the case of the GAP Fund, MACH37 companies are very early stage and the program is designed to leverage private investment and stimulate the growth of the cyber industry in Virginia. Therefore, there is not sufficient operating history to develop meaningful job creation data or to anticipate equity returns.

I. The number of companies assisted with the cyber accelerator program in:
   a. FY2018: 6 companies
   b. Inception-to-date: 52

II. The number of companies operating in Virginia as a result of the program in:
   a. FY2018: 5 of the 6
   b. Inception-to-date: 30 of the 52
      1. Eight are part of MACH37
         a. Seven are part of MACH37 and have returned to their place of origin and are working to establish a Virginia presence. CIT maintains a high level of visibility into those companies, including frequent interaction with the CEO and team, Board of Director observation rights and receipt of a required quarterly statue report.
         b. One is part of MACH37 and has returned to its place of origin and is past the required time horizon to establish a place of business in Virginia. The company has issued CIT a note for the amount of the penalty.
      iii. 12 have failed
      iv. Two have been acquired or paid back CIT

III. The estimated number of jobs created or preserved in Virginia during FY2018:
   a. FY2018: 23 jobs in companies invested in by MACH37 in FY2018
   b. Inception-to-date: 144

IV. The value of proceeds from the sale of equity in companies that received capital support from the program:
   a. One MACH37 graduate company has been acquired since inception of this program.

V. The number of state investments that failed and the state investment associated with failed investments:
   a. 12 MACH37 graduate companies have failed since inception of this program; $574,000 state investment

VI. Number of companies created or expanded and the number of patents filed:

a. FY2018:

i. Companies created or expanded: 6

ii. Number of Patents filed: 0

b. Inception-to-date:

i. Companies created or expanded: 52

ii. Number of Patents filed by inception-to-date by FY2018 portfolio: 5

Where Innovation Accelerates – Building the Innovation Economy

CIT programs stimulate economic growth for all Virginians. This is achieved by attracting private sector investment in Virginia companies, commercializing early stage university and private sector research, working with regionally-based initiatives to grow innovation, establishing footholds for new industry verticals such as Cyber Security, Unmanned Systems, Smart Cities, and working with localities to build public private partnerships, assess new technologies, and develop strategies for expanding broadband access.

Corporations and the federal government are shifting innovation strategies away from internal initiatives toward investment in startups through funds, incubators, and accelerators. CIT is focused on growing that critical sector of Virginia's economy through existing programs and sharing our staff expertise, mentor networks, investor networks, and access to markets with initiatives in every region of the Commonwealth. We are also working directly with GO Virginia regions to help them build successful innovation programs. FY2019 represents a transformative period for CIT that enhances our role as the Commonwealth's agent in the acceleration of innovation-based economic growth. CIT's priorities in FY2019 include:

1. Expand regional and underserved community engagement to develop ecosystems
2. Identify and fund innovators and entrepreneurs at a greater rate
3. Create strategies with universities to boost commercialization success
4. Position Virginia as a leader in Smart Communities and expand Broadband access
5. Champion the expansion of the Autonomous Systems industry in the Commonwealth

Please visit us at www.cit.org for help in advancing your technology initiative.

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[i] CIT has placed initial investments in 200 companies. Two of these companies Xydina and Tau Therapeutics merged forming Cavion, resulting in net total of 199 companies. In 2016 CIT exited Invincea. As a result of the exit, CIT received shares in 26 Labs a company spun-out of Invincea at the time of exit. This brought the net total back to 200.

[ii] Based on company actual revenue in CY2018 Q1 and Q2 and estimated revenue in Q3 and Q4, assumes a 25% profit.

[iii] Assumes an average salary of $125K per Virginia employee.

[iv] Based on company actual revenue in CY2018 Q1 and Q2 and estimated revenue in Q3 and Q4, assumes a 25% profit.

[v] Assumes an average salary of $125K per Virginia employee.