September 2024

REGIONAL ENTREPRENEUR INITIATIVE

REGION 7 STRATEGY

VIRGINIA INITIATIVE FOR GROWTH & OPPORTUNITY IN EACH REGION

Prepared by
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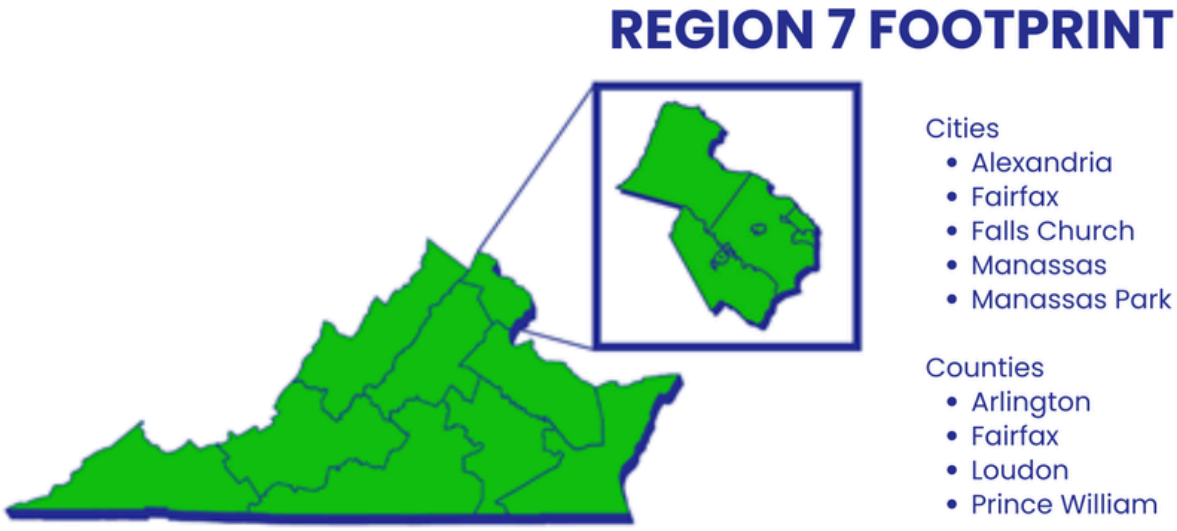
INTRODUCTION

In 2022, Go Virginia Region 7 requested that Mason Enterprise at George Mason University lead the Regional Entrepreneur Initiative, or "REI" to develop a strategy to build the ecosystem in Northern Virginia. Go Virginia's headquarters at DHCD specified a list of projects and a structure to facilitate Northern Virginia organizations in coordination.



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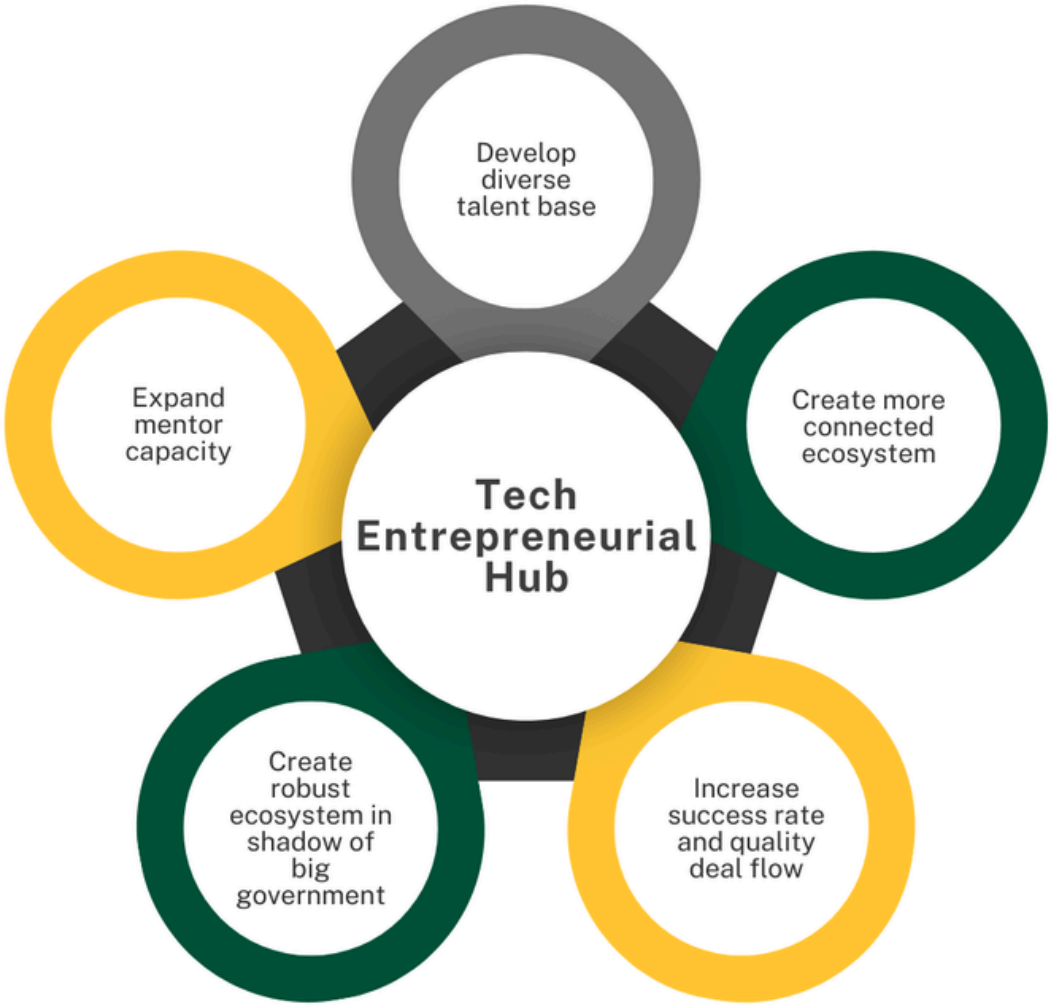
CONTRIBUTORS
More than 70 organizations across the region

EXECUTIVE SUMMARY

Northern Virginia is a region rich in business, community, and academic assets with close access to the federal government and its many technical and financial resources. The Washington, DC metro area is currently ranked fourth in tech talent, fifth in the United States, 12th globally in venture capital, and 11th in start-up ecosystems.

With a heavy reliance on the federal government and contracting, economic leaders intend to diversify the growth sector of the economy by increasing support of early-stage tech-based companies. The desired outcome by the Region 7 Go Virginia Board is to achieve a top three rank in start-up ecosystems. Supported by Go Virginia, George Mason University, and more than seventy business, government and community partners ("the Team") worked over the course of two years to develop a strategy to generate new businesses and employment as part of the Region 7 Regional Entrepreneur Initiative.



Working together in both 44 in-person and remote meetings, over 100 participants identified the challenges and developed an integrated program to address the gaps and constraints to accelerating growth in technology business formation and expanded employment in the Region. The work that follows summarizes the discussions that took place and the conclusions reached by the team over two years.

The work of the team was further informed by discussions regarding building technology ecosystems with the Small Business Administration, the Department of Defense, DARPA, the U.S. Army, U.S. AID, the National Science Foundation, the Economic Development Administration, the National Institute of Health, National Institute of Standards & Technology, and the science writer for the U.S. House of Representatives. Key to the recommended approach is the orchestration of five related activities coordinated by a regional hub. This is designed to both ensure the synergies across these activities are realized and the effort is sustained long enough to realize its goals.

What follows is the report on this effort including detailed recommendations, metrics to track success and a description of the process and participation that led to these outputs. The team has been successful in engaging willing leaders, willing partners, and opportunity to build a *long-term, successful and sustainable* tech ecosystem that increases the competitiveness of Virginia and look forward to executing this exciting vision

PURPOSE

A 2019 report from Teconomy Partners found that Northern Virginia's dependence on the federal government has both suppressed innovation regionally and depressed associated economic growth. Our experience and that of our partners in the region reinforce that finding, and emphasize the need for the intentional development of a complementary set of capabilities to drive growth and innovation in Virginia.

The Teconomy study included these specific recommendations:

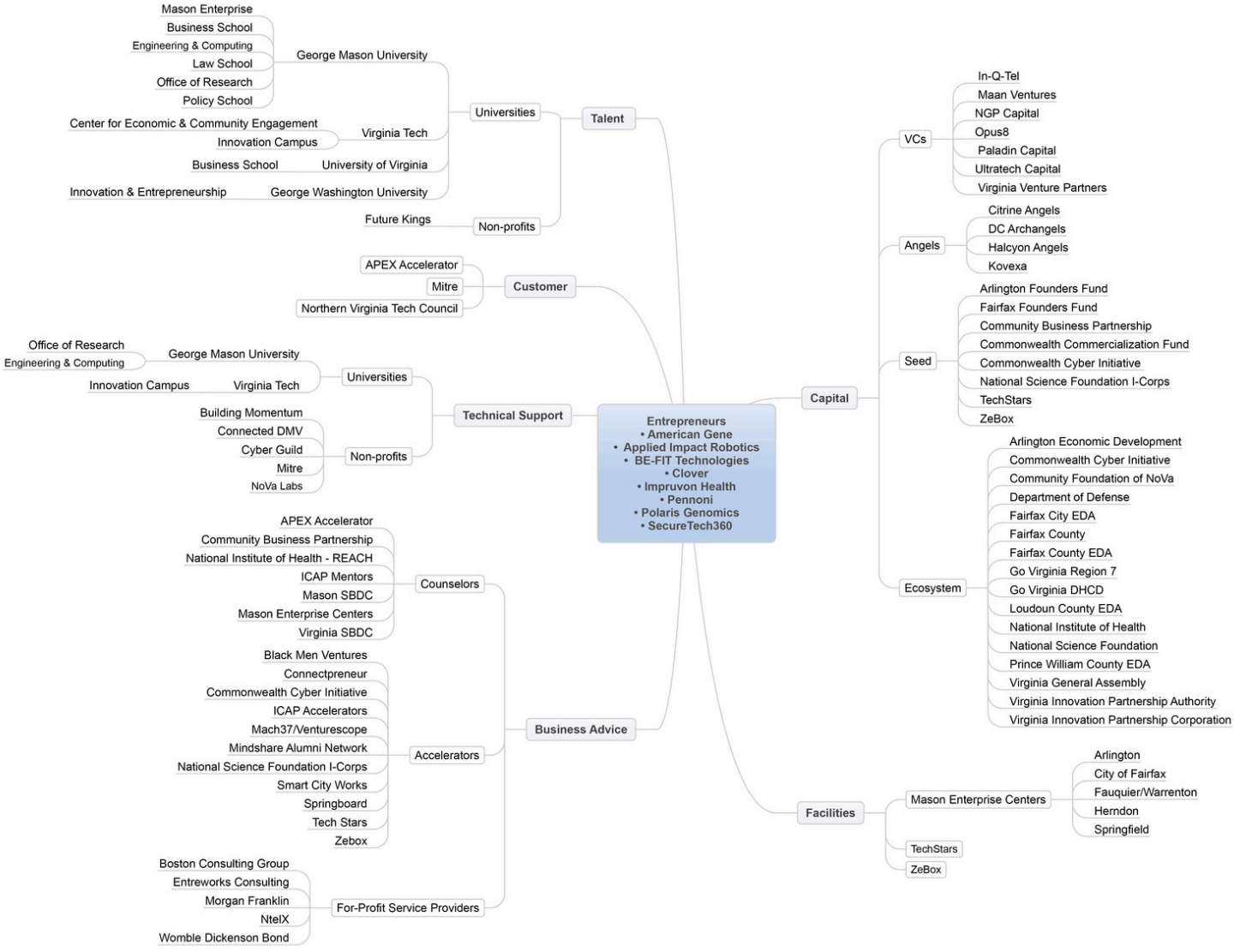
- Take advantage of the strong research growth and emergence of technology transfer and commercialization at GMU and growing research presence of VT and UVA in the region to build a stronger community-wide approach for advancing university-related startups that taps the local entrepreneurial community.
- Identify opportunities and needs for regional entrepreneurial development within traded sector industries.
- Ensure an implementation capacity on priority actions.
- Provide a "front door" for entrepreneurs to receive coordinated services among service providers.

This report's recommendations and the team's other work on innovation and growth and developed a strategic response to the issues raised in this report and related concerns expressed in conversations with GO Virginia and partners. The team confirmed that the dependence on the federal government has limited some activities and many elements of growth in the region.

However, this work also suggests the proximity of this region to the federal government—sometimes referred to as "the world's largest customer"—is also an opportunity that can also become part of a program driving aggressive innovation and regional economic expansion if properly leveraged. Conversations with federal agencies regarding the shrinking of small businesses in Defense Industrial Base, the increased need for companies to develop dual-use products for financial stability, and the interest in modernizing the federal government are examples of opportunities for technical ecosystem advancement in the region.

The team was informed by secondary data, but relied on primary information provided through 44 meetings of detailed brainstorming, discussions, work groups, and interviews by regional practitioners in the region that included: tech entrepreneurs, corporates and consultants in the tech industry, non-profits serving the tech industry, economic development and tech-related government officials, angel and venture investors, and universities (Appendix). Based on work over the past year with over 70 organizational partners, indications are that the region is poised for significant growth and the strategy that follows provides a solid foundation for driving that growth by addressing the largest early-stage tech ecosystem gaps.

The Northern Virginia ecosystem's talented people who provided input into the gaps and potential projects are as shown below:



REGION 7 OVERVIEW

In this section we offer an overview of the economic context for the Region 7 technology focused entrepreneurial ecosystem. Region 7 continues to grow and, in general, has been the driver of economic growth in the Washington, DC metropolitan area. However, the region has been losing some of its competitive edge for several years.

Business Formation Challenges
As the seat of federal government, there are many opportunities for entrepreneurs to access some of the billions of dollars in procurement spending awarded to Region 7 businesses. However, since 2019, Region 7 is no longer keeping up with the state or nation in new business formations. As shown in Figure 1, when indexed to 2010 for comparability, Region 7 used to see year-on-year increases in business formation that was very close to state and national levels. However, since 2019 there has been a notable divergence in performance with Region 7 showing to be less competitive in supporting business formation. Moreover, these firms are generating fewer job opportunities.

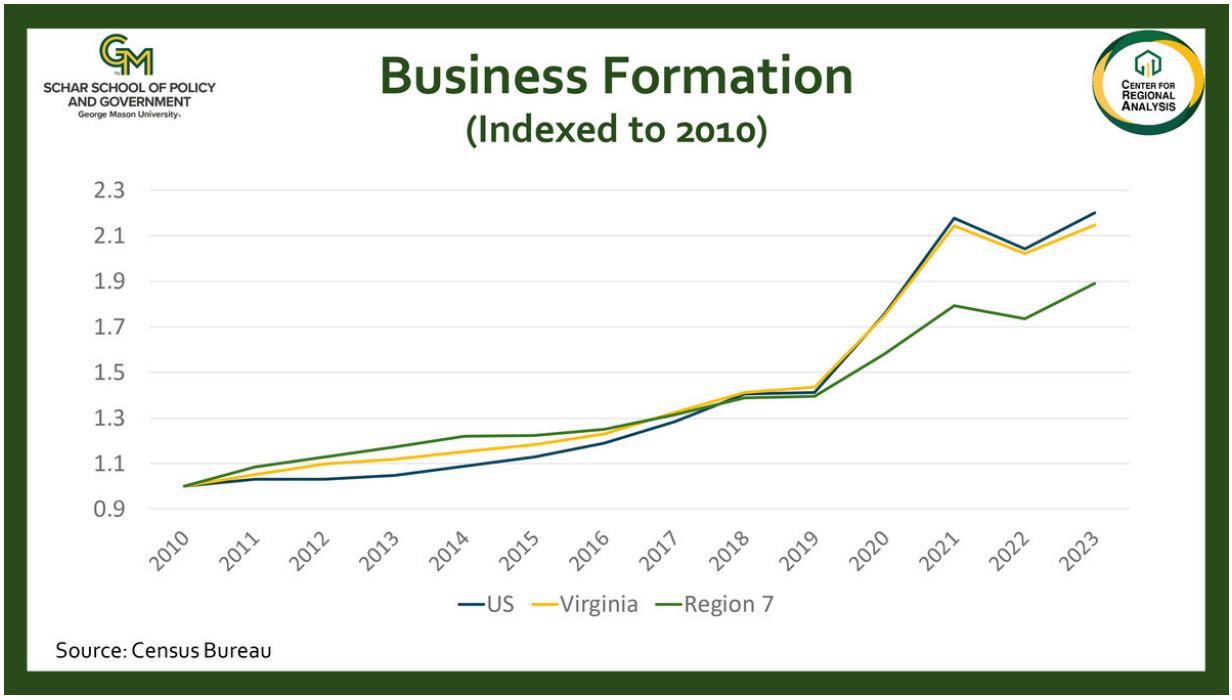


FIGURE 1: Business Information

Despite the importance of small business to overall economic growth in the U.S., emerging enterprises have actually seen a long-run decline in their share of total jobs. As shown in Figure 2, the U.S. secular trend for total job share in young firms (five years or less in business) declined from just under 30% in 1999 to 25.4% in 2013, where it has leveled off. The data for Region 7 is more volatile, which is, in part, an artifact of market size, but has declined more precipitously.

By 2023, young firms in Region 7 accounted for only 22.7% of all jobs. While that is not a huge gap, it clearly shows that younger firms are more challenged in this region. Some of this difference likely reflects the challenge that younger firms have in competing for talent in a very tight labor market. The issue of labor force availability may have some impact on entrepreneur's decision to start a business or how many employees that firm hires.

Capitalization Challenges

At the beginning stages of business development, particularly for technology focused start-ups, Region 7 offers mixed signals of success. The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs of the U.S. Small Business Administration provide funding and advisory support for pre-market stage small businesses on their journey to commercialize emerging technologies. The Virginia Innovation Partnership Corporation coordinates these programs with GENEDGE providing support for manufacturing, engineering, and technology sector firms.

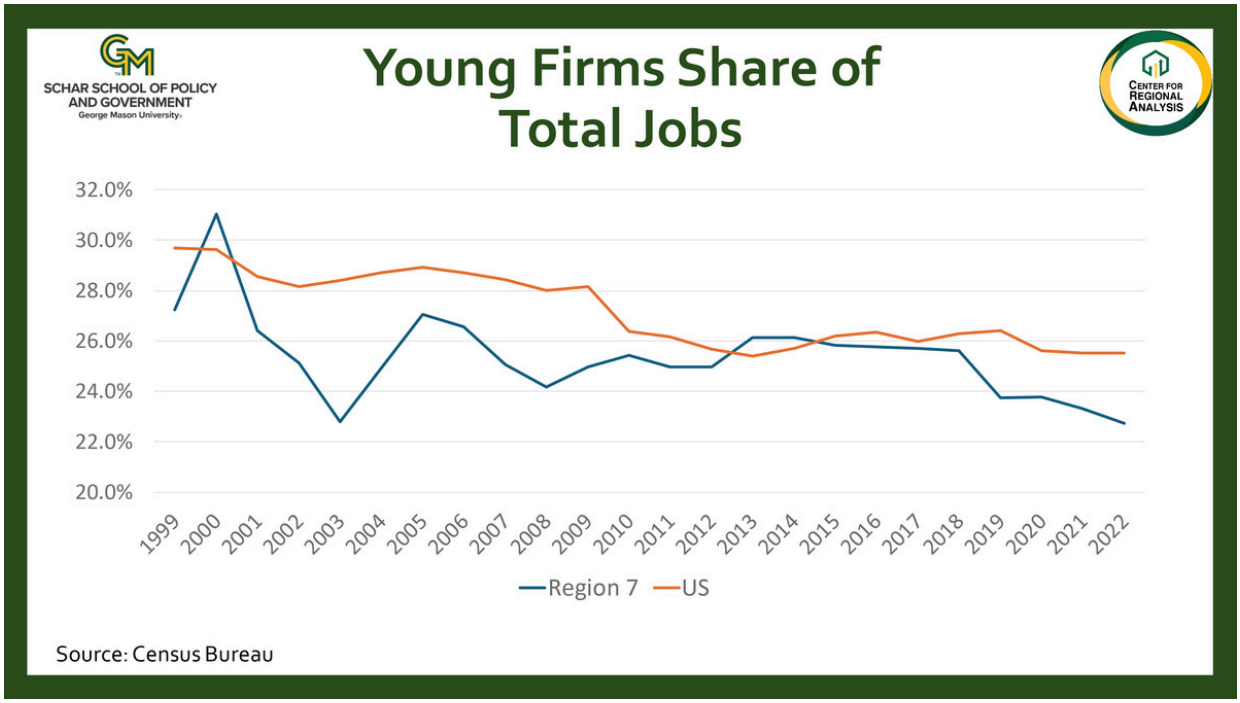


Figure 2: Young Firms Share of Total Jobs

Figure 3 shows that Region 7 is performing well in both number of awards and total funding from SBIR/STTR programs. However, in other measures, such as venture capital, Region 7 has room for improvement.

In the late 1990s and early 2000s, with the growth of internet-based service providers, along with the growth of life sciences associated with John Hopkins and suburban Maryland pharmaceutical sector, the Baltimore-Washington metro area saw notable inflows of venture capital funds. More recently, while the region continues to attract venture funding, we have dropped substantially in our share of national venture capital investments according to data from Pitchbook, absent unusual cases, like the funding received by Juul in 2023 (see Figure 4).

In the following pages, this report lays out the findings of the community driven process that examined Region 7's strengths and weaknesses in supporting its entrepreneurial ecosystem. The rapid growth and change in technology are fundamentally changing the structure of the national and regional economies. The ability of Region 7 to effectively compete in this emerging economy depends, in large measure, on our ability to have an effective and accessible support network the creates the ecosystem where entrepreneurs can grow and succeed.

Research Challenges

Universities as a driver of research and technology are an important feeder into any tech ecosystem. Research expenditures are a function of several factors, including state and donor support, efforts to secure federal

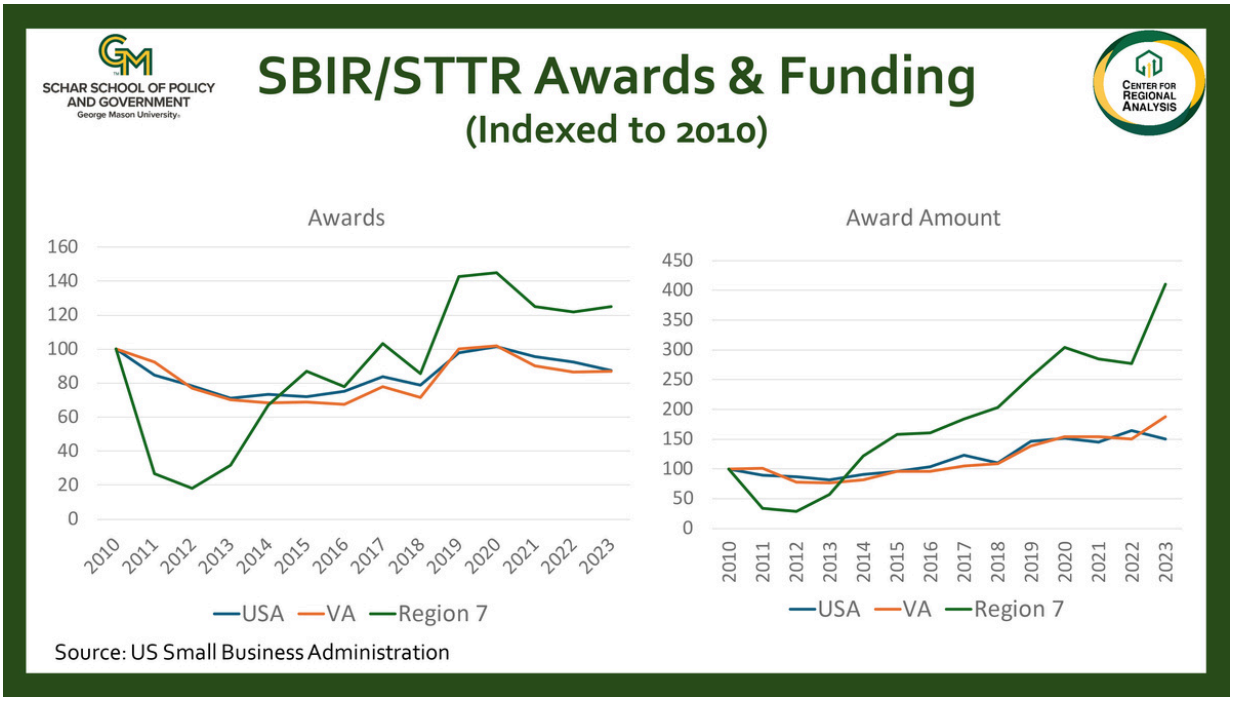


FIGURE 3: Elements of Population Change in the Region 7 Labor Shed

funding, and past success. Increasingly, lab-to-market success plays a role in access to federal research funding as well, which indicates a need for a strong ecosystem to foster the growth and success of technologies leaving universities. In recent years, several Virginia universities have experienced growth in research, though none are ranked in the top 45 nationally, while states bordering to the north and south have top ten research institutions. In 2021 Mason was ranked the fastest growing public research university in the country, and was the youngest university to achieve R-1 status. However, in national

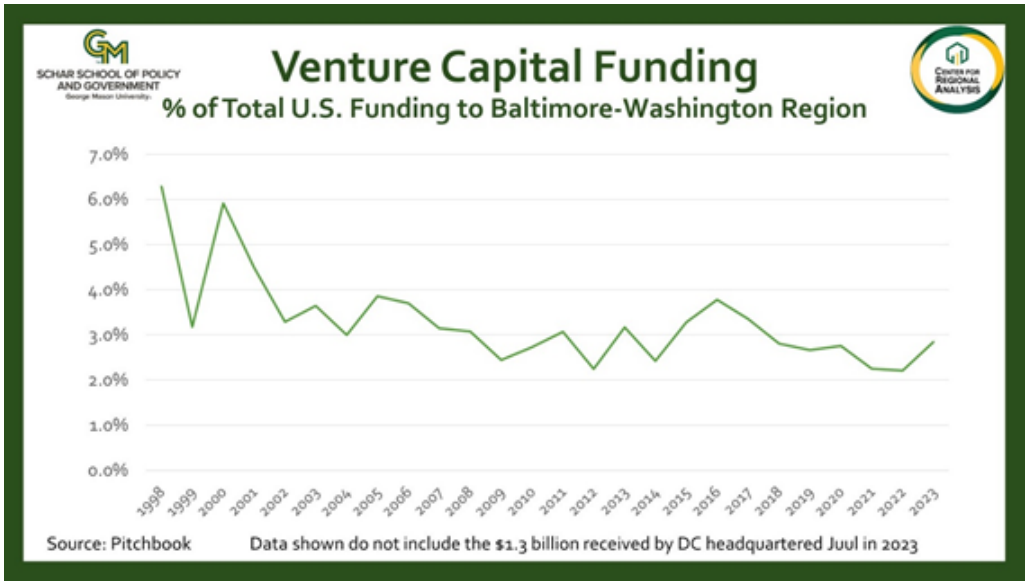


FIGURE 4: Venture Capital Funding

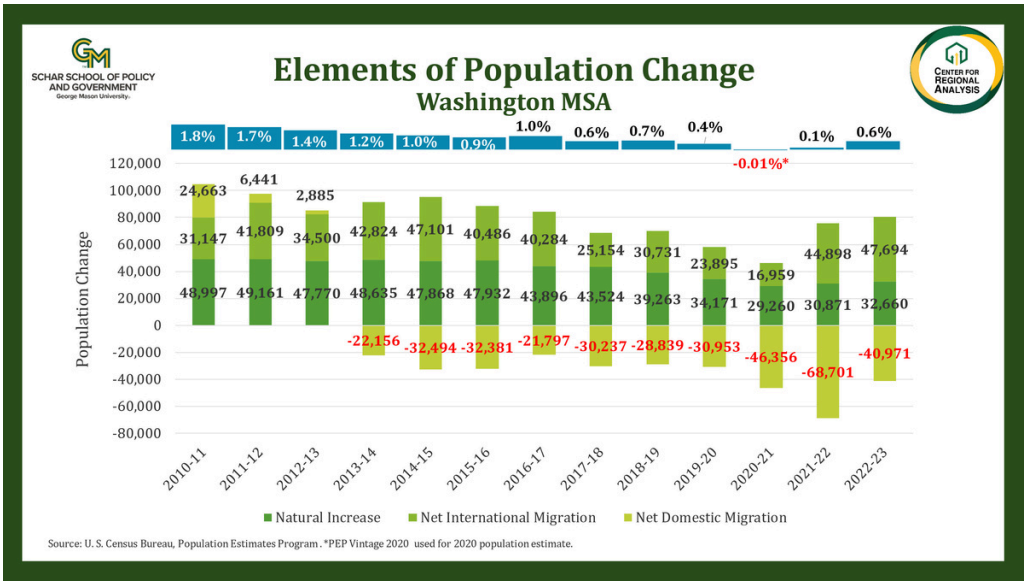


FIGURE 5: Elements of Population Change

research dollars, Mason is still relatively small, as are our Virginia counterparts. The most recent data reported by NSF HERD shows that research expenditures in U.S. universities increased by $8 billion in 2022. In that same year, bordering states North Carolina universities out-spent Virginia universities by $300 million, while Maryland universities outspent Virginia universities by more than $2 billion.

Northern Virginia has an opportunity to increase its research inputs through state-level support of translational research activities at Virginia's universities, leading to a more robust ecosystem and resulting in more research dollars and tech companies.

Workforce Challenges

After having seen growth that is higher than the national average for multiple decades, since the end of the Great Recession, the Washington, DC metro area has trailed national economic growth trends that can partially be explained by workforce challenges. Region 7's labor market is characterized by elevated levels of Net Domestic Migration, related to young families leaving the region due to housing availability and costs, as well as other cost of living factors (see Figure 5).

Given post pandemic job recovery in Northern Virginia, and combined with the loss of key working age adults, the area unemployment rate is substantially below market balance at 2.7% as of July 2024 (see Figure 6 and Table 1). The lack of available workers, particularly with requisite technical and workplace skills, is a challenge for all Region 7 employers and the number of formal certificate completions at institutions of higher learning have not grown substantially (see Figure 7).

Across the U.S., the number of certificate completions of all types in Artificial Intelligence is growing rapidly, though still relatively small (see Figure 8). As of 2023, there are no (zero) reported completions for AI focused programs in Region 7. Region 7 is behind the curve in training for this emerging technology sector that is likely impacting opportunities for entrepreneurial growth in the region. There remain more job openings than qualified workers in information technology occupations. Table 2 shows information technology job change and demand by occupation in Region 7. Our overall technology job growth has trailed national averages for the past several years.

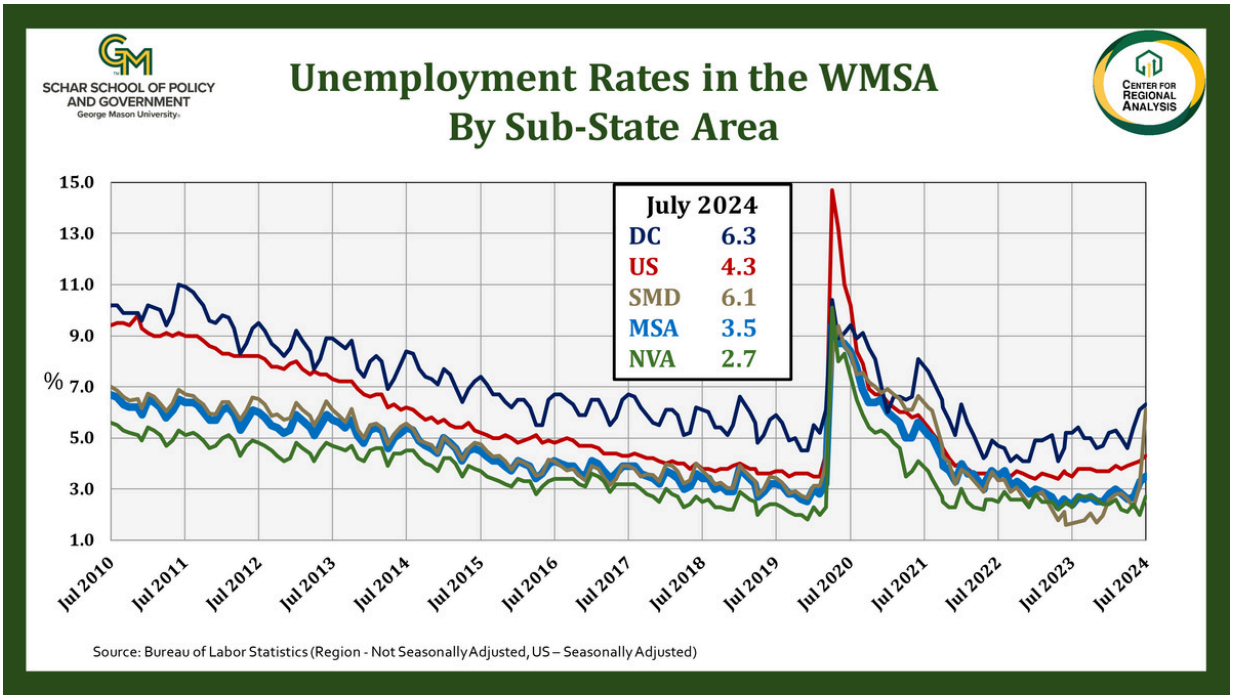


FIGURE 6: Unemployment Rates in the WMSA by Sub-State Area

TABLE I: Education Awards by Type

PROGRAM TITLE	CERTIFICATES	ASSOCIATE DEGREES	BACHELOR DEGREES	MASTER DEGREES	DOCTORAL DEGREES	TOTAL AWARDS
Computer & Information Sciences	162	122	355	252	15	906
Information Technology	14	433	608	162	18	1,235
Computer Systems Analysis/Analyst	–	–	3	–	–	3
Computer Science	–	331	27	–	–	358
Web Page, Digital/ Multimedia Design	26	–	–	–	–	26
Data Modeling/ Warehousing, DB Admin.	–	–	–	319	–	319
Comp. Systems Networking & Telecom	–	2	–	6	–	8
Computer & Info. Systems Security	6	422	–	50	36	514
Computer Support Specialist	–	30	–	–	–	30
TOTAL	208	1,340	993	789	69	3,399

Source: Lightcast

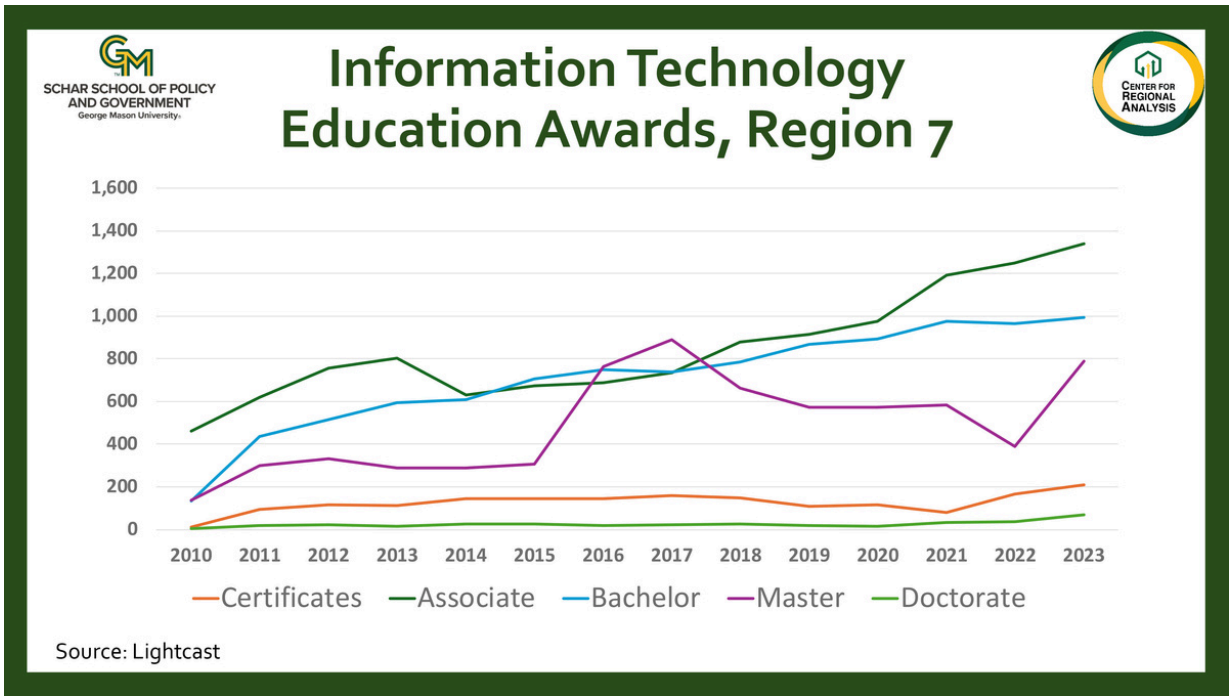


FIGURE 7: Information Technology Education Awards, Region 7

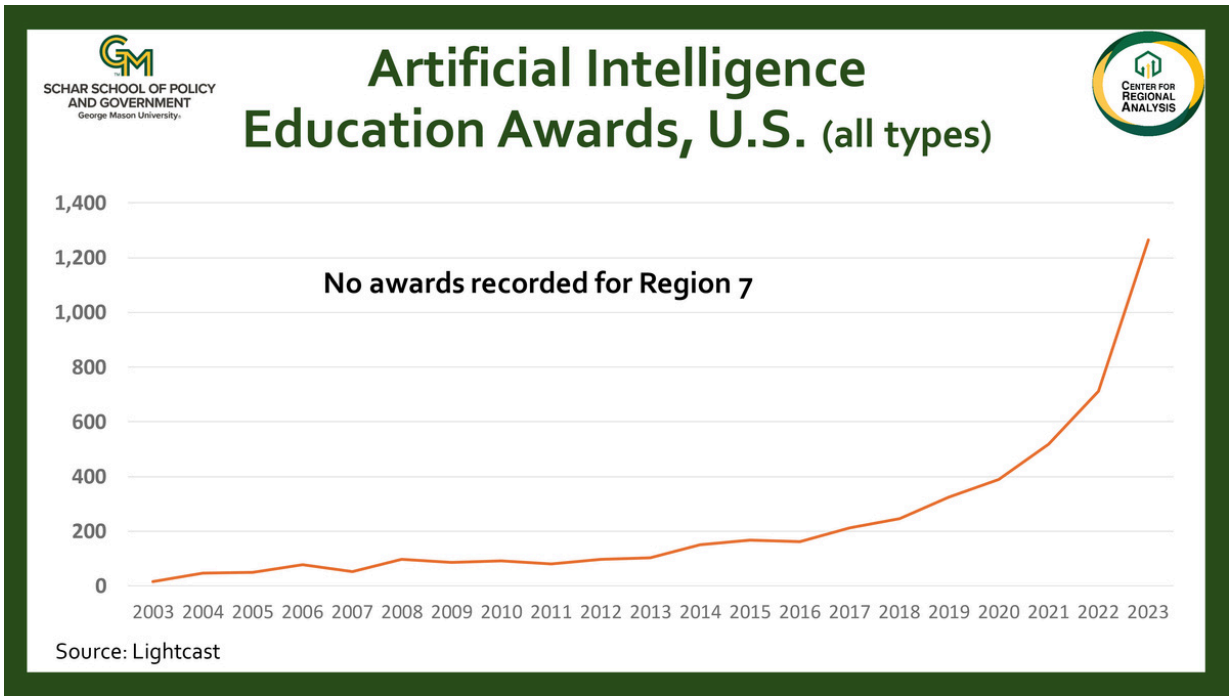


FIGURE 8: Artificial Intelligence Education Completions in Region 7

TABLE 2: Job Change and Openings for Selected Technology Occupations

DESCRIPTION	2015 JOBS	2024 JOBS	MEDIAN ANNUAL EARNINGS	2024 OPENINGS	2015-24 CAGR
Computer Systems Analysts	16,233	11,671	$ 127,094	784	-3.6%
Information Security Analysts	7,327	12,125	$ 142,645	1,001	5.8%
Computer & Information Scientists	1,300	1,103	$ 173,521	91	-1.8%
Computer Network Support Specialists	3,798	2,814	$ 86,873	205	-3.3%
Computer User Support Specialists	9,631	10,536	$ 74,344	798	1.0%
Computer Network Architects	5,049	6,269	$ 154,080	332	2.4%
Database Administrators	1,983	2,417	$ 115,588	147	2.2%
Database Architects	2,535	2,916	$ 148,205	178	1.6%
Network & Systems Administrators	11,243	7,561	$ 119,563	439	-4.3%
Computer Programmers	5,479	1,414	$ 115,957	88	-14.0%
Software Developers	34,322	53,51	$ 144,444	3,810	5.1%
Software Quality Assurance Analysts	4,971	5,146	$ 121,812	388	0.4%
Web Developers	1,409	2,810	$ 112,452	208	8.0%
Web and Digital Interface Designers	1,136	2,166	$ 87,192	186	7.4%
Computer Occupations, All Other	7,691	8,232	$ 144,757	643	0.8%
	114,107	130,699		9,298	1.5%

Source: Lightcast

NATIONAL TBED ECONOMY

The State Science & Technology Institute (SSTI) – the national tech-based economic development (TBED) community of practice that focuses on state initiatives – recommends best practices for states and regions based on successes around the country. Ecosystem mapping, metrics collection, and new program development is among the recommendations they make to TBED organizations. The national trends they identify that impacts the specific work of TBED practitioners includes:

- The problems of our society today are not new. The Aspen Institute predicted that America would be facing education, talent and wealth disparity issues twenty years ago. Similarly, the Northern Virginia's disparity also represents an opportunity of new citizens and previously untapped talent to be trained and educated in jobs and skills that Northern Virginia start-up community needs.
- State economies are not expanding in large part due to the lack of appropriately skilled workforce.
- Income disparity and the challenges it creates have worsened. While the income for top third of earners has increased exponentially (people with college degrees saw wealth go up 150 percent) this gain is not equally shared (those with a high school degree decreased 50 percent). Further white households are on average four times wealthier than black households and the average wealth at age of 34, current generation, is significantly behind GenX and Boomers.
- In a review of 43 million job postings: 92 percent required digital skills. Virginia is in the lowest sector for covering student cost of higher education, grouped with the states of Oklahoma, North Dakota and South Dakota in levels of support.
- Maintaining programs aimed at addressing these challenges is important. Once a state program gets eliminated, it takes approximately 20 years to re-create.

- The Federal government is trying to keep up; states who invest wisely will have a competitive advantage. Rainy day fund balances in states increased significantly, in large part due to the pandemic. In the next downturn, states will have to rely on themselves. Federal Economic Development Administration Build Back Better and National Science Foundation Engines programs show that communities are thinking thematically and larger about the technical future of their economies.

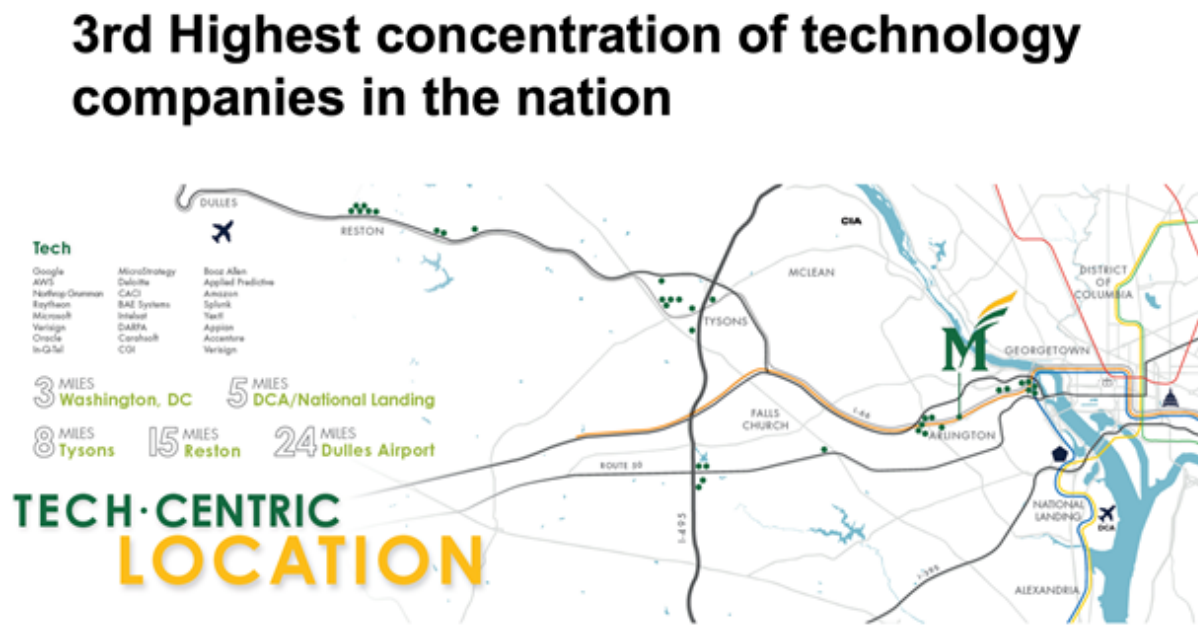
The SSTI report findings underscore the critical need for programs that educate and engage our population in productive and appropriately remunerative work, and that the health of the state is dependent on growth activities enabled by these efforts. When coupled with the Teconomy work there emerges an imperative to generate new innovative businesses and associated employment efforts. The team's work is aimed at that complex goal, with the added dimension of effectively leveraging our proximity to the activities and senior personnel of the federal government to help accelerate this needed growth.

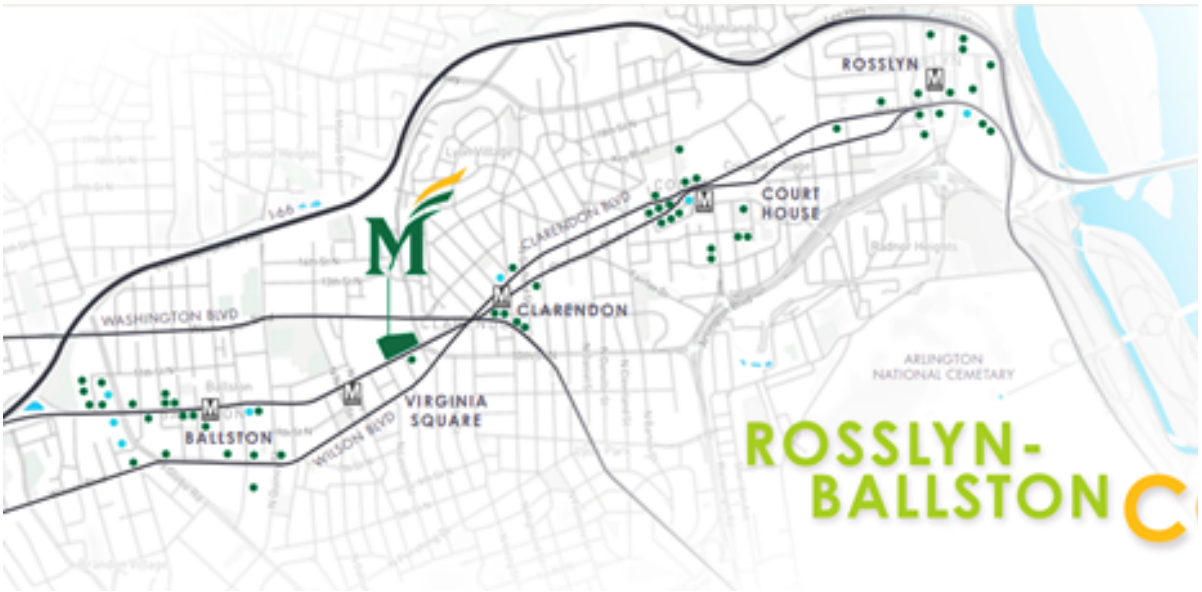
The shared definition of a "technology company" for the purpose of this activity is a business in which research and development brings forth an innovative product or process. The innovation typically involves intellectual property that contributes to a strong competitive advantage in the marketplace, and serves as a foundation for a high rate of growth.

The advice above is provided nationally to states and regions that wish to be leaders in the national economy. Other regions, however don't have the vast assets that Northern Virginia enjoys: More than 16 colleges and universities, 14 Fortune 500 companies including Amazon's second headquarters and the expansion of West Coast companies such as Google and Microsoft, Federal agencies that support science and technology development, two major airports, an enviable public transit system, and a large cluster of data centers.

These assets are spread throughout the region. Examples of concentrations that impact the region:

- the biotech companies and lab space in Prince William County;
- the large defense contractors and tech companies in Fairfax County;
- the data centers in Loudoun County, spreading to Prince William and Fairfax Counties; and
- the concentration of govtech assets in Arlington County as shown below:





APPROACH

In order to best respond to the challenges identified in the 2019 report, the REI project work was approached in the following way:

1 **Identify the problems first:** Before coming up with solutions first, which is often the temptation, the team instead examined the specific problems and their related issues to determine why these problems exist. What was discovered is that this is often a case of incentives and disincentives, and being explicit about these enables a more effective program of response.

2 **Be inclusive to more than the usual participants in the engagement:** Invite as many members of the ecosystem who are willing to spend time to identify the problems, their drivers, and opportunities. To ensure the organizations that can and do play a large role in the ecosystem would be represented, invitation requests for attendance were sent to specific individuals followed by personal outreach. It was important to include both practitioners who participate heavily in the early-stage tech economy, as well as entrepreneurs. This enabled the team to create the model and process for a high-functioning tech entrepreneurial ecosystem in the region, and this early engagement made it easier to ensure active participation by these diverse players in the ecosystem; necessary for the kind of innovation needed to drive rapid growth. Expand the discussion by asking the participants who else should be included in the discussions, creating a broader and more diverse network of response. Have official and unofficial leaders in the ecosystem facilitate discussions and work groups to flesh out the details leveraging the collective experiences and knowledge about what works, and what is likely to face challenges.

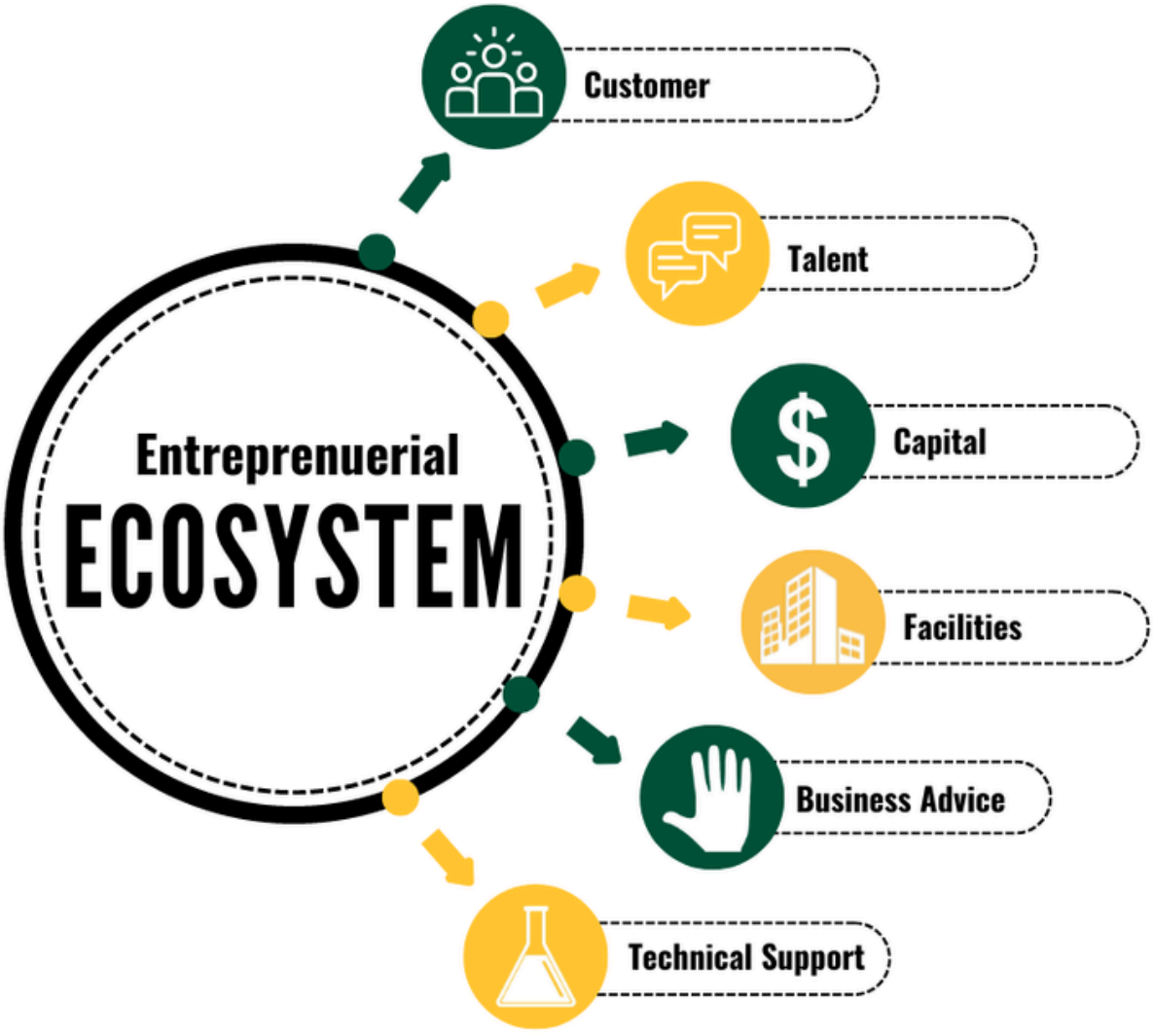
3 **Focus and narrow down the opportunity space:** Rather than "boiling the ocean," select high impact projects that will result in more successful innovation and entrepreneurs in the region. Make certain the team includes the development of professional skills and enabling networks as well as innovative ideas and financial support elements, in large part by actively engaging the broad team developed in no. 2.

4 **Leverage experts:** The team worked with two kinds of experts to help drive this work. Given the complexity of some of the innovation opportunities, experts were recruited on specific topic areas, both who are knowledgeable and care about success in the region. And to help facilitate and focus (large and smaller group), discussions the team utilized regional and national consultants who have a track record in helping similar efforts to achieve their goals.

5 **Tap into existing leaders and create opportunities for new leadership growth:** Project leads are those people and organizations who are passionate about generating an active ecosystem. The team was able to engage them more fully because of their leadership role; working sessions significantly expanded the pool of leaders who can help drive the necessary activities leading to success.

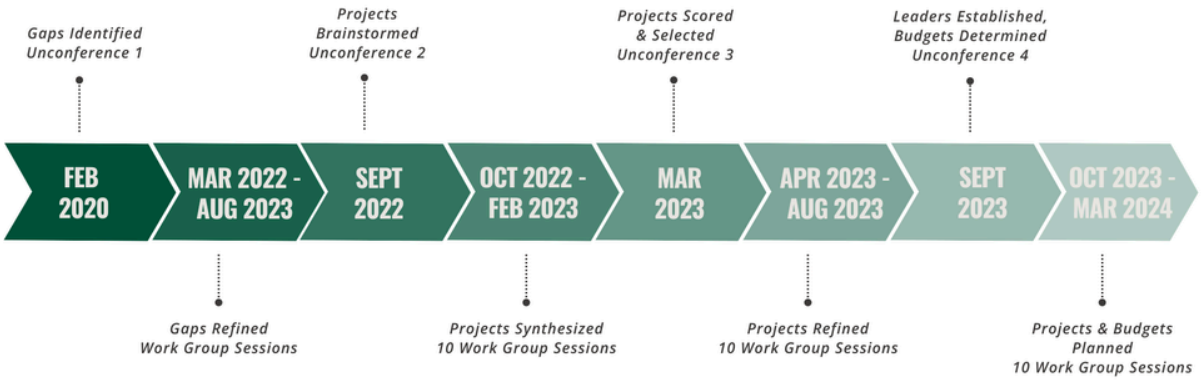
6 **Metrics and measurements:** Focused on standards that can track outcomes across an ecosystem of players and included organizations in teams that have proven processes and collection tools ready.

The overall goal is to create and foster a technology ecosystem which drives sustainable economic growth and new high value employment in the region. By definition the innovation ecosystem includes the elements below (and included representative from all of these in the work) and its success can be defined by the access it provides to its entrepreneurs, both those in the state and those it wants to attract internationally.



PROCESS

In order to translate these strategic elements into effective action, the work was done over a two-year period, allowing the team to provide time for feedback and enhancement/integration of complex and diverse ideas, and to grow the network of those creating solutions – securing their engagement going forward. Consistent with the need for focus, a significant amount of work was done to synthesize many ideas into key themes and to gain the alignment of more than 100 people who were actively involved in our work. This is something that could not have occurred over a compressed period of time. In addition to the numerous in-person and on-line meetings there was extensive work performed in between these unconference meetings in concept refinement, network expansion and documentation. This ongoing process allowed the team to keep all of the work coordinated across the teams and also enable the needed synthesis and feedback to the teams.



Unconferences

Over the two years of the project effort Mason Enterprise convened four in-person "Un-conferences," six months apart. Broad invitations were sent to universities, non-profits, government agencies (local, state and federal), and businesses connected to the entrepreneurial ecosystem. In one of the first activities in our work the participants identified twelve of the biggest concerns affecting the ecosystem. They then voted to focus on those most pressing issues to find solutions to address them. The unconferences were emceed by a local representative from a national consulting firm and loosely structured to allow for maximum ideation and collaboration. Each unconference was designed to address one of the following questions:

- What are the gaps to success in the tech entrepreneur ecosystem?
- What are all the solutions that could be deployed to fill the gaps?
- Of all possible solutions to fill each gap, which have the most impact?
- What would each solution cost?
- Who should take the lead?
- What organization can provide the financial match?

The following are summaries of each of the four sessions. More detail is provided in the appendix.

SESSION 1: *What are the gaps to success in the tech entrepreneur ecosystem?*
The outcome of Session 1 identified several gaps in the ecosystem and recommended solutions which were summarized in five key areas activity areas:

1. Create a more connected regional ecosystem;
2. Increase company success rate and quality investor deal flow;
3. Develop a more diverse talent base;
4. Create a robust ecosystem not crowded out by the federal government and big government contractors but leveraging inventions and ideas which can be adopted and scaled outside this market; and
5. Expand mentor capacity with attention to the diversity of the mentor group to match innovator needs with the skills and experiences of the mentor.

In addition, it was determined that a core leadership group was needed to build on past success and tie the disparate pieces together. This leadership group needed to be engaged in an ongoing manner to ensure continuity of the process, foster and appropriately grow the ecosystem, and maintain focus on the key outcome objectives. This is a fundamental management principal that is often missing when economic grow programs are developed and a key element of our proposed program going forward.

SESSION 2: *What are all the solutions that could be deployed to fill the gaps?*
This activity generated hundreds of ideas for projects and programs that build the ecosystem. Participants were asked to rotate across the topic discussion teams to ensure a 360-degree view of the gap areas and to identify the opportunities for synergies across the five areas.

Brainstormed projects ranged from large to small, and some projects were identified in multiple gap categories. Importantly, each of the solutions in the different gap areas were interrelated, which reinforced the benefit of an ongoing management effort. Programs that only address on of the gap areas are less likely to succeed in the overall goal than those that approach the problem holistically. Teams were excited to work together, and formal and informal leaders emerged. The formal leaders agreed to maintain the efforts of their teams going forward and the informal leaders helped with the cross-team synthesis. The many suggestions were synthesized into common "solution" themes which were carried into the next session. These themes are described in the appendix.

SESSION 3: ***Of all possible solutions to fill each gap, which have the most impact?***
One of the key recommendations by the participants was that any solution had to be viable (financially and functionally possible and sustainable) and impactful (achieving its desired goals and creating the desired synergies with other activities). Starting with the synthesized solution sets for each category, participants scored the solutions according to high, medium, and low impact, and then by resource (financial and personnel) resource requirements according to the same high, medium, and low categories. Each topic area in this session was facilitated by members of the VIPA Board, of VIPC, and Connectpreneur to help ensure the projects were unique to the ecosystem and Go Virginia projects were understood and coordinated with respected players in the ecosystem. The projects selected to move forward were high impact, though resource requirements varied.

SESSION 4: ***What would each solution cost, who should take the lead, and what organization can provide the match?***
Participants were asked to identify one of the five gaps that held the most interest and form a team to address the specific gap building on the solutions identified in Session 3. Each team was then asked to select a leader to facilitate. The overall effort was facilitated by two of our outside consultants and three deliverables created: Programs were specifically defined by process, participant and goals, draft budgets were prepared and a lead organization stepped forward with the agreement of the others.

2

Ecosystem Gaps

The five ecosystem gaps identified in Session 1 became the topic areas for five project workgroups, which met remotely twice in between each of the unconferences to discuss potential projects in more detail and identify additional participants. These 30 on-line meetings (six each for the five gap groups) became the ongoing glue for the project, allowing the teams to maintain continuity and also expanding the working groups. In addition, the facilitator contacted many of the participants both before and after these sessions to help clarify and expand on the work of the session. This process allowed the team to have clarity around how the projects could be connected by threads of a common purpose. The work groups were facilitated by a professional consultant who is also a former partner and senior advisor at The Boston Consulting Group.

Project Development

The next task was to translate the output from the workshops in order to propose an ecosystem buildout to Go Virginia's Region 7 Board. This was an effort of both the George Mason leadership and partners in grant writing, budget development, and identifying match dollars. The Region 7 Board received a preview of the REI work in November 2023 and had the opportunity for Q&A at that time. George Mason's President's Innovation Advisory Committee also received an in-person preview for feedback and based on these inputs the report was revised. The team generated the necessary mix of projects to first establish the ecosystem and then to create the conditions to sustain it over the longer term. Thus, some projects are short-term to achieve a specific outcome, while others are longer term and require a sustainability plan to effect change

over several years. George Mason coordinated the topics, met with key project leaders, aligned the projects into the central theme, and connected related projects to eliminate duplication and ensure partners were committed to outcomes.

The partners leading the projects are:

- George Mason University (Mason Enterprise) as the HUB
- Smart City Works
- Deloitte
- DC Archangels
- Citrine Angels
- Virginia APEX Accelerator
- Arlington Entrepreneur in Residence
- SBDC/ICAP team

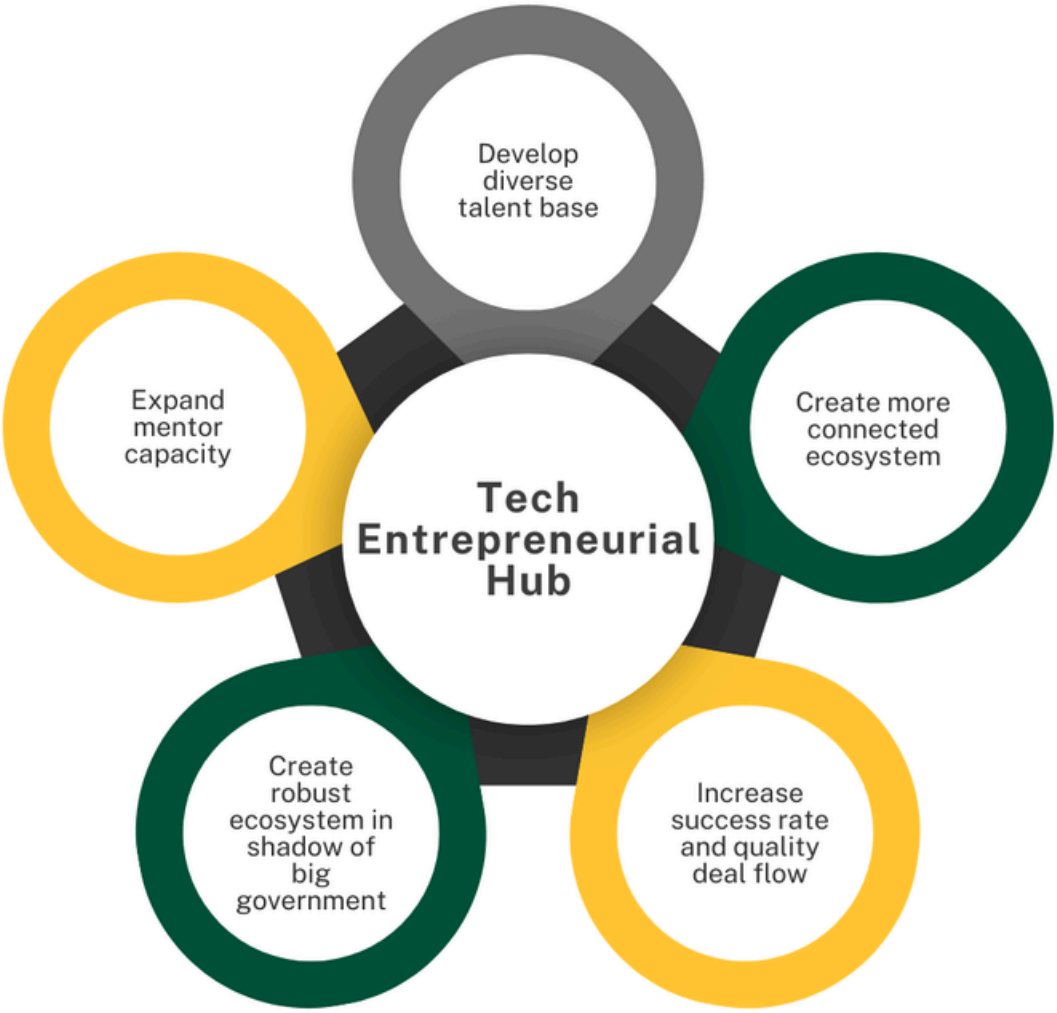
Other partner leads in discussion are Virginia Tech, University of Virginia Darden, and Northern Virginia Tech Council, and Gov Futures. Review and feedback on these efforts is being provided by Go Virginia and VIPC.

Development of the Hub and Spoke Model

During Session 4 it became increasingly clear how the five gap areas overlapped and leveraging these overlaps created strong synergies across all the efforts. This reinforced the importance of a coordinating activity, the Hub, to identify and communicate/coordinate across the five gap areas to maximize these synergies and reduce duplication.

As the development of a Hub-to-Spoke model evolved, George Mason was suggested to lead many of the activities, likely due to the foundational federal programs supporting entrepreneurs that are operated at the university, housed under Mason Enterprise. In addition, at recent and ongoing conversations at the national Association of University & Technology Managers (AUTM), the American Public & Land Grant Universities (APLU), and the State Science & Technology Institute (SSTI), universities are often the longest standing organizations in an ecosystem (besides governments), typically the center of innovation districts, and have increasingly been expected to grow their role into economic development to ensure research and talent serve the regions where they are located. Also, universities are in the unique position to be able to leverage alumni and supporters through donations and talent under a structured team of development professionals. For this reason – and because of its size as the largest university in Virginia, originally created by the business community – George Mason took on the HUB role that has been naturally evolving over decades. However, because a primary goal was to develop a connected ecosystem, significant work went into encouraging other organizations – some of whom stepped forward on their own – to lead initiatives and in some cases collaborate.

The emphasis for this was to work with local organizations who were intent on building local capacity in an integrated format. To quote the former director of innovation at NIST, founder of Ben Franklin and TEDCO, and senior advisor to the International Economic Development Council: “National accelerator organizations cannot exist without eating the seed corn of local organizations, cherry pick the best companies for national investors, and are not regionally economic development focused – that is their business model.”

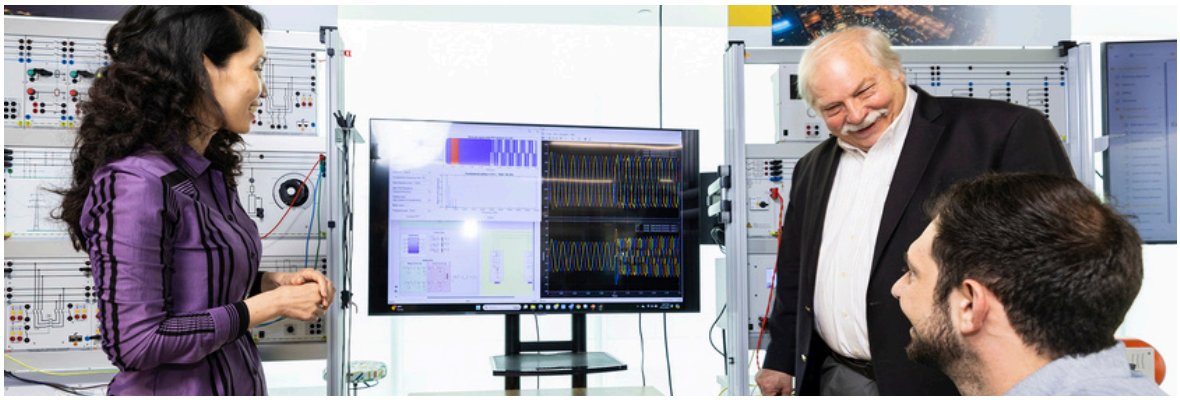


Region 7 Gaps

A "HUB" or central coordinator is also necessary to serve as convener, data tracker, and reporter. The HUB would lead by convening partners and supporting organizations monthly to ensure projects moved forward and were continuously connecting their activities to avoid overlap. The cross-pollination is intended to create a whole that is greater than the sum of its parts. The categories above represent the areas of focus designed to address the identified gaps in the current ecosystem.

Since the beginning of the REI gaps identification activities, steps have already been taken to build a HUB, and some progress has been made. The work to date includes:

- Facilitated team of 40 to practice company hand-offs among the Mason Enterprise programs, next will be with external team partners.
- Facilitated activity to explore where AI can be leveraged to provide faster, more informed, and better services to entrepreneurs.
- Facilitated discussion with county EDOs to provide status update, lay out federal opportunities, and explore joint strategy where the REI projects are incorporated into local strategies.



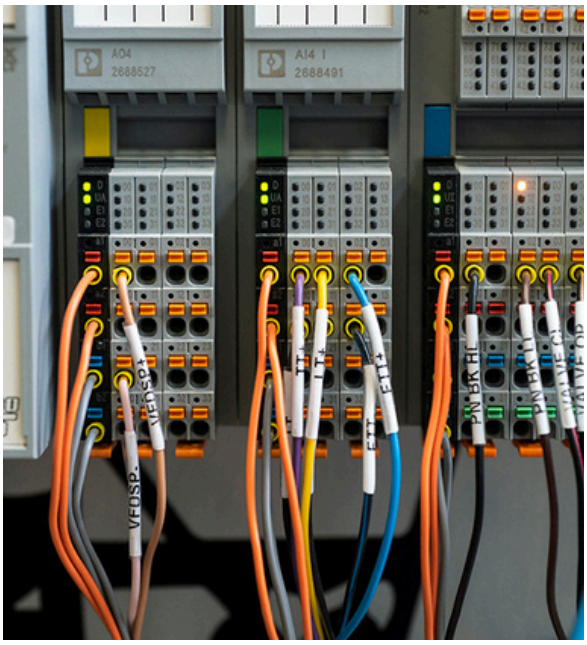
- Exploratory conversations with multiple DoD agencies, SBA, EDA, NIH and NSF to discuss ecosystem development funding opportunities and provide input to needs of the region.
- Exploratory conversation leading to MOU with Foundation to discuss the expansion opportunities and shared missions.
- Hosted an AI Salon with former publisher of Washington Post and 40 private sector start-ups and large regional corporations to discuss future AI needs in tech development.
- Executed multi-point MOU with NVTC to cross-support programs so that large companies and tech start-ups co-mingle as potential vendor/ customers. Created a low-cost NVTC membership for startups who are in the Mason Enterprise Centers.
- Developed a partnership across four states to increase opportunities for federal funding under a "Mid-South Hub." This resulted in NSF I-Corps hub funding to and NIH REACH program to assist faculty innovators across Virginia.
- Held individual discussions continue with REI partners to assist with continuing program development and funding opportunities.
- The George Mason University advancement team has appointed an individual to facilitate introductions to private sector potential partners.
- Last year's impact in Virginia, heavily weighted to Northern Virginia, showed early indicators of the work in building a tech ecosystem: both angel and venture investment increased among 1,550 portfolio companies monitored by Mason Enterprise. The start-ups received more than $200 million in follow-on funding.
- George Mason received U.S. Department of Education status as a minority serving institution. This opens doors to resources as George Mason continues to serve the community by developing future talent from diverse populations.
- A Soft Landings program at the Mason Enterprise Centers operates in partnership with the regional economic development offices to attract start-ups from other countries. The program was originally started through a partnership with George Mason and the European Union Enrich Program. The soft landings program is now expanding to other countries with direct partnership in Europe and Asia. Companies who opt to move to Northern Virginia are housed at one of five Mason Enterprise Centers (MEC) and receive the benefits packages offered to all MEC members.
- The SBA's International program awarded the SBDC additional funds that have been expanding the tech opportunities in engagement with five countries so far.

GAPS DEFINED

Create a more connected ecosystem
The work groups discussed the desired elements of a more connected ecosystem:

- Coordination vs. duplication
- Frequent convening, at least quarterly, include funders (including the regional angel groups) and new and successful entrepreneurs
- Outreach to bring in new partners, create diversity of strength
- Role modeling
- A meta navigator that will run items such as (i.e.) a unified calendar, slack group
- A regional approach (vs. statewide)
- Partnership with VEDP for national/ international attraction

The discussion across this topic and most of the others was to focus on the ease of use by an entrepreneur – how efficiently could someone starting a tech business navigate across the existing assets and be poised for hand-offs. The possibility of creating a new entity was discussed, but was eliminated for the following reasons: a new entity development would require ongoing resources, and there are important tech and economic development non-profit organizations in the region that are currently struggling with funding, an additional organization would instead compete with the existing organizations. Also, George Mason was identified as the lead since public universities are typically a long-term, stable entity – it could continue to play a lead role and leverage existing infrastructure over decades/centuries in order to meet the goal to build a thriving and more connected ecosystem, the team focused projects on two aspects of



Lead Partners
Smart City Works, Deloitte, Mason Enterprise
Supporters
FFCEDA, VIPC, Virginia Tech, University of Virginia

ecosystem building: ecosystem network navigation and ecosystem convenings. Accessible ecosystem network navigation and convenings are essential to creating an enabling environment that facilitates connectedness, collaboration, and resource awareness/sharing. The team explored several existing tools and maps that had been created, and interviewed users from the state, other regions, and other states to establish best path forward.

1a **Develop and maintain an interactive map of the Northern Virginia entrepreneurial ecosystem**

- Freely available online, and accessible to any entrepreneur trying to navigate resources or interested in moving to the region.
- Inclusive of training resources, events, mentorship and counseling opportunities and contacts
- Designed to be consistent with best practices in ecosystem mapping not too large and complex, but informative and utilizing a map framework to allow better geospatial access for users across the region
- Dynamic links in the map to government services and funding resources.
- Include feedback mechanism in the website to allow contributions of other resource ideas
- Monthly reporting metrics on access and resources searched by users.

1b **Create a quarterly meeting series that:**

- Provides companies the opportunity to practice investor and customer pitches
- Enhances networking for entrepreneurs, investors, and service providers

This project is under way, thanks to the leadership and financial support of Fairfax County, followed by the support of Arlington County, Prince William County, and corporate partners. This five-year program allows companies to receive practice pitching for funding, gives local investors an "early look" at companies, convenes the public and private sector attendees last year and has gained traction as a seminal event. The first two breakfasts were over-subscribed with 200 in attendance at each, more than 80 companies submitted to pitch at both. Pitching companies were coached by the ICAP mentor team and start-up community volunteers.

2 **Increase company success rate and quality deal flow**

Start-up company success from pre-seed to exit can be a long and difficult path. An increase in successful companies and a critical mass of exits enhances the local investment returns allowing for reinvestment, and creates outside interest in the ecosystem. The team discussed Pre-seed, Seed, Series A, and Series B companies as groups. Success challenges for start-ups were identified at every stage, but particularly narrowed in Pre-Seed and Series B phase companies.

National ecosystems that have selected industry verticals such as Miami, Salt Lake City, and Madison were used as examples where the region could focus on digital innovation as it relates to cyber, AI, communications systems, as well as biohealth.

Lead Partners
DC Archangels, Citrine Angels
Supporters
VIPC

2a Develop an on-ramp for angel investors

- *Angel Investor Recruitment*: Develop a structured recruitment campaign targeting individuals interested in angel investing, both locally and outside of the region. Leverage existing business networks, social media, and partnerships with local business associations to identify potential investors and introduce them to this effort. Additional focus on expanding the base of angel investors to include a broader base of local entrepreneurs from all backgrounds.
- *Angel Investor Onboarding*: Create an onboarding program that guides new angel investors through the investment process. This program should include mentorship from experienced investors, access to deal flow platforms, and educational resources.

2b Track Angel investment activity

- *Deal Flow Platform*: Establish an online platform where startups seeking investment can connect with angel investors. The platform features a user-friendly interface, transparent investment opportunities, and a secure communication channel for negotiations. VIPC will be included in the discussion to ensure flow-through from angel investors.

3 Develop and foster an expanded talent base

More deeply involving community colleges and HBCUs in the region to foster tech sector involvement under for a broader reach in talent development among diverse and rural students. There are already some successful programs, such as the Commonwealth Cyber Initiative internship program, and Future Kings and Global Inheritance middle school mentorship that could be expanded to other industry sectors, genders and geographies in Northern Virginia. Types of training needed:

- Pitch and polish
- Role play/mock business meals
- How to work in a start-up (currently offered by George Mason to CCI interns)
- Tech investment
- Tech Management
- Hackathons to identify talent
- MakerFaires
- Coding for girls and diverse populations to expand talent base

Funding and training opportunities by Virginia Venture Partners would require a state/VIPC/VIPA commitment, that could grow tech investment and management talent.

Lead Partners
Kovexa, Citrine Angels, CCI Internship Program
Supporters
ICAP, Mason Enterprise Centers, Fairfax and Arlington Funds

3a

Internships

The Northern Virginia tech ecosystem has tested and refined a successful program (including training on how to work in a startup) to place STEM and non-STEM undergraduates to work as interns at cyber security start-ups. More than 80 percent of interns were offered permanent jobs when the internships ended.

The rapid expansion of IT and artificial intelligence companies is creating a talent need that is difficult to fill. This expansion is taking place across the country. The opportunity is to fill the positions and keep students locally who will be trained in both expanding the types of software and data companies, while retaining new graduates locally.

The program will also work with local businesses to help define the kinds of skills and experiences they desire in new employees, and George Mason and partners will work to include these in curriculum and related efforts.

3b

Women entrepreneur cohorts

A cohort of women entrepreneurs will be supported hands-on through training and supported by the mentorship program mentioned below. The mentorship goes beyond basic entrepreneur training to soft-skills and introductions to women angel investors and funding groups.

Progress to date

The Commonwealth Cyber Initiative (CCI) funded growth of two successful programs operated by Mason Enterprise: the cyber security internship program, which has placed more than 250 students in cyber start-up companies in Northern Virginia, and the CCI+A Accelerator program, which guides

faculty through steps to bring cyber technologies to market. Seventy percent of the students placed were women and people of color. CCI is funded by the state to Virginia Tech, who distributes program and research funds to nodes. George Mason operates the Northern Virginia node.

Kovexa has taken the lead to develop an AI training tool that can be used at the K-12 and community college level to more rapidly educate a workforce. The Kovexa CEO has experience building similar cloud computing programs at AWS, Microsoft, and George Mason.

4 Create a robust entrepreneurial ecosystem in the shadow of big government

While the large presence of the federal government and its contractors has been indicated by secondary research reports as an impediment to innovation, the team took the stance that the opportunities of the federal government as a customer and an innovation development partner could be a critical value proposition for start-ups in the region, if the way could be paved to make it easier.

An estimated 5 percent of start-ups obtain venture capital, but all start-ups require revenue generation. Even those who do plan to get VC funding have a better likelihood of obtaining funding if they show the ability to generate customer sales. Facilitating conversations with government as a customer is in the best interest of tech companies in the region to help them generate revenue more quickly. Their key advantage is being close to the customers. Many start-ups in this region don't pursue venture capital because contracting is an opportunity for revenue generation where the company owners can maintain equity in their entities. This is not a negative, but an indicator of greater potential. In additional to developing deeper partnerships with angel groups and venture firms, boutique investment banks and PE firms should be considered as partners.

There was a shared opinion that the general public was not sufficiently aware of what the ecosystem partners could bring to the table. Combining skills like the government contracting success of the APEX Accelerators and the tech company building success such as that of the ICAP program, and creating a roadmap of services such as this would help eliminate barriers.

Making market research more accessible to start-ups was discussed, leading to the potential for business school interns working for start-ups and start-up support organizations. The ability to market the region in this way could be a competitive advantage, but the "engine" needs to be built and tested at a larger scale.

The presence of federal government and the large government contractors have been identified as one of the constraints to the development of a stronger entrepreneurial ecosystem in the region. However, there is an opportunity to

Lead Partners
Virginia APEX Accelerator, Arlington Entrepreneurs in Residence
Supporters
SBDC/ICAP, George Mason University GovCon Center

them as part of the solution, both as customers for start-ups and as sources of IP which can be commercialized outside of the federal government market.

This approach takes technology, combined with one-on-one technical assistance, to be realized. One system, already in place, is the DoD funded APEX Accelerator program. Although designed for the Defense and Government industrial base, this system combines technical knowledge and one on one counseling to achieve a higher success rate in participation in governments spend. The Arlington Entrepreneurs in Residence are a group of tech entrepreneurs who also have backgrounds working in innovation at federal government agencies.

Many entrepreneurs fail to build a strong foundation and stop pursing opportunities because they lack the knowledge on how to move successfully within the system. There is a need to that entrepreneurs can be given the opportunity to utilize both human and technology-based assistance in order to build a stronger understanding on how to succeed in a highly competitive arena.

Government innovators as customers

APEX accelerators already work with traditional types of businesses. Shifting their work so that they are supporting tech entrepreneurs is a new take that will require developing new skill sets that build on their assets. They will offer through training and counseling:

- Complete registration with a wide range of databases necessary for them to participate in the government marketplace (e.g., SAM).
- Identify which agencies and offices may need their products or services and how to connect with buying agencies and offices.
- Identify any purchasing criteria or set-asides.
- Determine whether they are ready for government opportunities and how to position themselves to succeed.

- Navigate solicitations and potential funding opportunities.
- Receive notifications of government contract opportunities on a regular basis.
- Network with buying officers, prime contractors, and other businesses.
- Resolve performance issues and prepare for audit, only if the service is needed, after receiving an award.

4b

Create a roadmap to federal customers

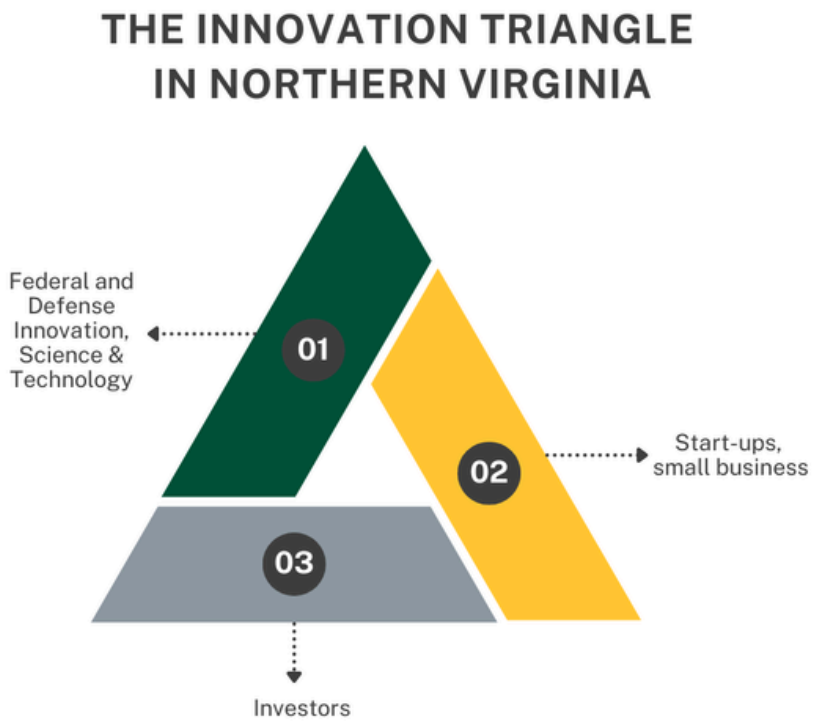
Government Contracting Officers need a faster and more efficient method to identify companies within the small business industrial base. Meanwhile, tech start-ups need information and access to serve the country's largest customer.

The team is proposing a generative AI tool provides a one-stop shop for all opportunities, significantly simplifying searches and research, providing stored search criteria with email notifications and a simple natural language user interface. The AI Assistant will help with daily tracking of Federal opportunities across many different contract vehicles whilst ensuring it is always up to date. This tool enhances the innovation triangle, matchmaking AI algorithm that scales innovation and impact, connecting government agencies with industry and strategic capital.

4c

Working with large government contractors to 'spin out' technologies for other markets

While some contractors have successfully diversified their markets, many prefer to focus on the federal government. It is a market they understand, in many cases with less risk and competition than more general markets (even state and local government). Working together with them to identify products with potentially large markets and developing the equivalent of technology transfer solutions, paired with private investors, to help monetize these assets, and create new businesses in the region.



Progress to date
The Entrepreneur in Residence Program (Mason Enterprise + Arlington County) hosted formal meetings with four federal innovation-focused agencies to discuss agency needs in early-stage tech and how an ecosystem in Northern Virginia could support the federal priorities.

GovFutures brought the informational monthly series "Modernizing the Federal Government" that included multiple federal agencies, such as the CIA, GAO, FBI, CDC, Army, FDA, IRS, GAO, Air Force, and others, as well as the CIO or CTO of other private and public sector organizations.

The APEX Accelerator brought in more tech-sector focused instructors for targeted workshops (such as AI) — some of whom were connections through REI program — and are currently testing the audience demand per subject. They have explored partnership with AI companies that assist government contractors.

New York-based TechDuels moved its operation to Arlington and hosted an all women Artificial/Augmented Intelligence debate with representatives from the federal government and corporations.

Lead Partners
Virginia APEX Accelerator, Arlington Entrepreneurs in Residence
Supporters
SBDC/ICAP, George Mason University GovCon Center

5

Expand mentor capacity
Mentorship of companies is an acquired skill. Even successful tech entrepreneurs must develop a methodology and communication tactics for supporting start-ups effectively. What is known to work:

- Affinity groups
- Customer match-ups
- ICAP, though requires sustained funding

What else can be done:

- Accelerate – involve mentors earlier with companies
- Encourage mentors to refer ready companies to venture
- Target programs for masters and doctoral students
- Get investors more involved in programs at an earlier stage

Successful entrepreneurship requires good ideas, access to capital, and skilled leadership. The ability for diverse groups to access capital to grow their businesses impacts their long-term success rates, and why focus on this in other areas, mentorship is also a critical resource. It is well-known in the entrepreneurial community that affinity group are more comfortable sharing information and receiving support from one another. Similarly, mentors with backgrounds similar to the communities they serve create a trusted bond.

The Northern Virginia entrepreneurial community is fortunate to have a wide range of successful people willing to provide advice and counseling to entrepreneurs. However, even very experienced entrepreneurs may have no way to prepare themselves to coach and mentor a start-up leader. These programs address that gap.

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5a

Focus on women, minorities and veterans

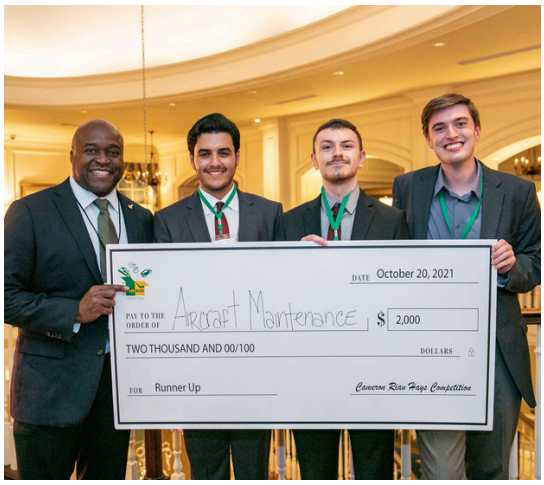
- Recruit mentors with a wide range of backgrounds to support cohorts of diverse entrepreneurs in the ecosystem.
- Initiate a Finance and Pitch Prep Program, which develops basic skills for entrepreneurs. While most entrepreneurs initially believe they only need funding to achieve their goals, often much more education and training is necessary. Also, pitch preparation includes sales pitches and introductions to potential customers. This training includes two complementary elements: Financial Prep Program, including forecasting and Pitch prep and pitch deck preparation, including communication styling.

Train the mentor

- Mentor Training Program that includes Mentoring 101, goals, approach, and process, avoiding mentor bias.
- Founder and Mentor Gatherings such as networking events with a speaker series – “war stories” and how to monitor and coach entrepreneurs’ progress.

Progress to date

- Implemented mandatory coaching (mostly by ICAP) of companies pitching in the Accelerate annual investor conference, which also allowed for system of follow-on tracking. Feedback by local and out-of-region investors was that companies were “much improved.” Accelerate companies have raised more than $47 million in follow-on funding.
- Fairfax County and Arlington County launched Founders Funds to help capitalize early-stage companies with a focus on diverse founders. Companies were mostly sourced and coached by ICAP mentors.



- Brought ICAP mentors with a variety of backgrounds into federal programs to provide coaching to faculty innovators, providing guidance on product-market fit and business model strategies. Expanded Entrepreneurs in Residence to include biotech and AI expertise to provide mentorship and training to staff.
- Expanded Entrepreneurs in Residence to include biotech and AI expertise to provide mentorship and training to staff.
- Smart City Works' lab and venture studio incorporated pitch coaching and advising delivered by ICAP mentors to improve their success rate.
- The Mason Innovation Exchange (MIX) maker space expanded programming to the community, including making training and hands-on use of equipment to companies of the Mason Enterprise Centers across Northern Virginia.

Lead Partners
ICAP Program
Supporters
Citrine Angels, SBDC, APEX, VA

Region 7 Goals and Projects

RECOMMENDATIONS

Given the current business climate, the national trends and the global challenges experienced today and predicted for the future, the Northern Virginia region is at the epicenter of the thought leadership and resources that will drive the country's direction. By building a robust tech ecosystem that fills specific gaps identified by the early-stage tech practitioners in the community, the region will position itself to leverage its best assets and diversify its economy.

Five identified gaps led to ten identified projects projected to have the highest impact value to the ecosystem. Four of the gaps: mentor capacity, diverse talent, connected ecosystem, and company success rate, created a foundation for what are typical needs in any growing ecosystem. The fifth gap, building early-stage tech companies in the shadow of big government, is unique to this region – similar to finance in New York City, automotive in Detroit, or gaming in Las Vegas. Ignoring the gorilla in the market leaves opportunity on the table, and embracing it improves the odds of filling the other four gaps in a way that can create a more powerful and integrated ecosystem.

Projects identified by the group and recommended to fill the gaps include the following:

- Create a mapping of the ecosystem that can guide companies to get the resources they need, regardless of starting point. Efficient traversing is important to this effort and outcome.
- Provide an opportunity for companies to receive more pitch practice and for the ecosystem to convene regularly. This is targeted to fill gaps in both increasing company success rates and increase the connected ecosystem.
- The need for more seed-stage funding led to the need to create an "on-ramp" for angel investors to join the ecosystem to more systematically get access to deal flow and, if desired, a primer on how to begin investing in start-ups.
- A tracking system for angel investment activity to both ensure support of start-ups and expand and encourage angel funding is recommended to augment a resulting increase in angel activity.
- Create a roadmap for tech start-ups to navigate the federal government as a customer.
- Develop programming to systematically engage the innovation departments of federal agencies to create a demand-and-process engagement structure with tech start-ups.
- Expand mentor capacity to more robustly engage and support women, minority, and veteran founders by adding dedicated mentors that reflect the background of founders.
- Create a training program to encourage interested mentors and provide guidance on how to best

- engage, advise, record, and hand-off start-ups.
  Leverage successful internship programs and tools to target new technology sets such as Artificial Intelligence.
- Create a cohort of women faculty and start-up entrepreneurs supported by successful women entrepreneurs and investors.

These identified projects were those strategically deemed by ecosystem participants to be the highest impact, though they are not an inclusive list and make room for opportunistic additions. In addition to the identified projects, further HUB development activity will take place. The following plan identifies project implementation ideals and for year one, actual activity.

The plan is based on experience, current bandwidth, and resource availability. However, a change in resources or champions could shift a project in either direction.

Region 7 Proposed Roadmap

GAP CATEGORY	PROJECT	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5	
HUB Build Out & Strengthening	Regular Planning Meetings		$5K	$5K		$5K		$5K		$5K	
HUB Build Out & Strengthening	HUB Operations				$650K	$650K		$650K		$650K	
HUB Build Out & Strengthening	Assessment of Funding Opportunities	$2K	$2K	$2K		$2K		$2K		$2K	
HUB Build Out & Strengthening	Integration into Regional Strategies										
Connected Ecosystem	Map of Ecosystem				$350K	$25K		$25K		$25K	
Connected Ecosystem	Accelerate Quarterly Meetings	$250K	$250K	$250K		$250K		$250K		$250K	
Increase Company Success Rate	On-Ramp Angel Investors						$350K	$350K		$200K	
Increase Company Success Rate	Track Angel Investment Activity					$250K		$50K		$50K	
Federal Government Customers	Government Innovators as Customers			$1.1M		$1M		$1M		$1M	
Federal Government Customers	Roadmap to Federal Customers					$150K		$50K		$50K	
Expand Mentor Capacity	"Level Up" Mentorship				$1.1M	$1.1M	$1.1M	$1.1M	$1.1M	$1.1M	
Expand Mentor Capacity	Train the Mentor						$350K	$350K	$350K	$350K	
Diverse Talent Development	Increase Internships				$1M	$1M	$1M	$1M	$1M	$1M	
Diverse Talent Development	Women Entrepreneur Cohort						$250K	$250K	$250K	$250K	

Planning and Resource Development
Implementation
Execution
Budget estimates are annual
Currently in second half of year 1

MILESTONES & SUCCESS METRICS

The purpose of building a connected ecosystem is to make it easier for local entrepreneurs to create successful, stable, and well-funded companies. It is also to allow for growth through new talent and outside companies wanting to become established in Northern Virginia. Success will be measured in several complementary ways with specific metrics:

Success is defined by:

- Entrepreneurs, able to navigate to the resources they need for their next step in company development; numbers entering the system and at each stage of development and resource access.
- Ecosystem partners who trust one another for seamless hand-offs and cross-promotion, which allows for a "no wrong door" approach to bringing new entrepreneurs into the ecosystem; base of partners and the expanded number by activity.
- Resources across public and private organizations that benefit all participants; the range of resources accessed and the direct and indirect dollar value.
- Balance, where one organization may convene, but every participating organization plays a leadership role that plays to their strengths; number of leadership organizations and overall ecosystem participation.
- Ecosystem participation continued to expand, including more organizations to support an ever-growing cadre of tech entrepreneurs; number of new participants over time, including start-up firms and individuals.

Success is tracked through:

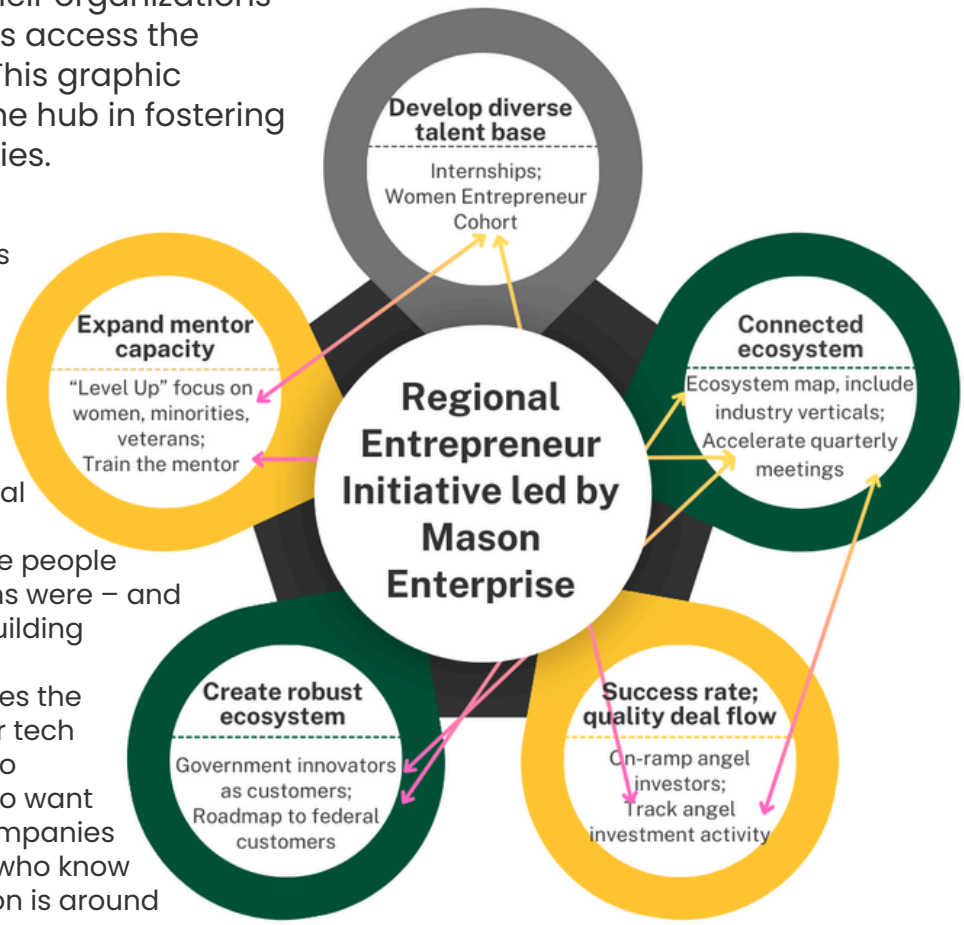
- Follow-on funding achieved by start-ups: venture, angel, bank loans, sales revenue growth
- Tech sector jobs created and retained
- Mergers and acquisitions, IPOs, and other liquidity events
- New start-ups, retained, and those who become anchored in Northern Virginia
- Inter-connected activity of the partners
- Start-up company retention/ expansion
- Brain drain/retention
- Companies that receive local A round, then a coastal B round

Milestones to achieve success are:

- Convene Core hub and spoke group to schedule two-year timeline - Invite other ecosystem members to participate and provide input
- Short-term projects (ecosystem map and educational content curation/ development) are scoped in detail and executed.
- Long-term programs develop strategic runway with public and private sector partners to ensure continuity of effort.
- Regularly scheduled ecosystem meetings to share program information and start-up company support occur organically. Continuous improvement and program iteration ensure activities keep up with ecosystem needs.
- Regular (bi-annual) presentations to Go Virginia Board to update on progress, evolution of lessons learned, and recommended future plans. Similar presentations to DHCD upon request.

BUILDING THE HIGH-PERFORMING, CONNECTED ECOSYSTEM

The opportunity to build formal and informal connections in a way that has eluded the ecosystem can be achieved through a hub-and-spoke model that creates an evolution where all participants benefit from the connection to make their organizations stronger, and start-ups access the resources they need. This graphic illustrates the role of the hub in fostering the cross-area synergies.



A quote from Apple on this year's 40th anniversary of the Macintosh, "Steve knew that the very best work conveys the ideas and intentions of the people who created it," resonates with the Regional Entrepreneur Initiative strategy. A team of diverse people across many organizations were – and still are – committed to building Virginia into a technology powerhouse. The team sees the region as a destination for tech entrepreneurs who want to succeed, the investors who want to participate, and the companies and government players who know that the next big innovation is around the corner.

TEConomy Partners – the same group that conducted the 2019 study for Virginia – stated, "Moving the macro-economic needs takes time and sustained funding." In this proposal, the partners outlined the gaps in the technology-based ecosystem. There are willing leaders, willing partners, and opportunity to build a long-term, successful and sustainable tech ecosystem that increases the competitiveness of Virginia.

TIMELINE

According to SSTI and long-term economic development professionals, an ecosystem takes ten to twenty years to build, with consistency of funding and resources.

Some programs exist “but for” government funding, others can be augmented with private capital. Another data point mentioned by SSTI at the past annual meeting is that in tracking state-funded entrepreneur initiatives around the country, once a program is eliminated, the average length of time to reinstate is twenty years. Therefore, any effort to create new programming should be done with a long view on how to sustain. Good examples of successful, long-running programs are the Small Business Development Centers and APEX Accelerators, and state-funded examples are Pennsylvania’s Ben Franklin fund and Ohio’s Third Frontier.

Recently at the annual summer convening of tech economic development leaders around the country, hosted by SSTI, the group discussed their largest concerns. The most critical element in a tech ecosystem is the “glue,” or the central organizations that facilitate, connect, partner, and orchestrate the important and ongoing activities. The group acknowledged there is little support for such glue through government funded programs. For that reason, public universities are typically the long-term, stable source for entities with a service mission that will exist for decades and centuries to come.

APPENDIX: PARTICIPATING ORGANIZATIONS

Organizations that participated in the unconferences are in alphabetical order in the Appendix. The list below includes those representatives who registered and attended, although approximately 10 more partners and entrepreneurs didn't register but joined the discussion at some point and do not appear on the list.

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Universities
- George Mason University and Affiliates
- George Mason Business School
- George Mason Center for Entrepreneurship
- George Mason College of Engineering & Computing
- George Mason Office of Research
- George Mason Antonin Scalia Law School
- George Mason Schar School of Policy and Government
- George Mason Tech Transfer
- Mason Enterprise
- George Washington University
- University of Virginia Business School
- Virginia Tech
- Virginia Tech Center for Economic & Community Engagement
- Virginia Tech Innovation Campus

Companies
- American Gene
- Applied Impact Robotics
- BE-FIT Technologies
- Boston Consulting Group
- Clover
- Entreworks Consulting
- Impruvon Health
- Kovexa
- Morgan Franklin
- NtelX
- Pennoni
- Polaris Genomics
- Womble Dickenson Bond

Economic Developers
- Arlington Economic Development
- Commonwealth Cyber Initiative
- Fairfax City EDA
- Fairfax County
- Fairfax County EDA
- Go Virginia
- Go Virginia – DHCD
- Go Virginia Board
- Go Virginia Region 7
- ICAP Program
- Loudoun County DED
- Prince William County EDA

Accelerators
- Connectpreneur
- Mason Enterprise Centers
- Smart City Works
- Tech Stars
- Zebox

Investors
- Citrine Angels
- Community Foundation of NoVa
- DC Archangels
- Halcyon Angels
- In-Q-Tel
- Maan Ventures
- NGP Capital
- Northern VA Community Foundation
- Opus8
- Paladin Capital
- Ultratech Capital
- Virginia Venture Partners

Federal Agencies & Programs
- Department of Defense
- Mason SBDC
- NIH REACH
- National Science Foundation
- NSF I-Corps
- Procurement Technical Assistance Center/ APEX
- Virginia Small Business Development Center

Non-profits
- Black Men Ventures
- Building Momentum
- Community Business Partnership
- Connected DMV
- Cyber Guild
- Future Kings
- Mach37/Venturescope
- Mindshare Alumni Network
- MITRE
- Northern Virginia Tech Council
- NOVA Labs
- SecureTech360
- Springboard

Commonwealth Government
- Virginia General Assembly
- Virginia Innovation Partnership Authority
- Virginia Innovation Partnership Corporation

ABOUT THE AUTHORS

Paula Sorrell is Associate Vice President of Innovation and Economic Development at George Mason University. She was previously at the University of Michigan as Director of the Economic Growth Institute where she authored international, national, and regional studies in best practices in Economic Development. As VP of Innovation, Entrepreneurship and Venture Capital at the Michigan Economic Development Corporation, she created several long-standing programs during the great recession to fill gaps in the tech ecosystem.

Michael Kleeman is on the Mason Enterprise board of advisors, a senior fellow at the University of California San Diego focusing on critical infrastructure resilience, and former partner of the Boston Consulting Group. He has been active in corporate sustainability for more than 20 years, working with Fortune 50 firms, nonprofits, and entrepreneurial startups on strategy, positioning, and maximizing competitive advantage through sustainability and has led efforts that have resulted in significant improvements in greenhouse gas emissions, waste, and water usage.

Terry Clower is Northern Virginia Chair and professor of public policy in the Schar School of Policy and Government at George Mason. He is also director of the university's Center for Regional Analysis. The Center provides economic and public policy research services to sponsors in the private, nonprofit, and public sectors. Previously he served as director for the Center for Economic Development and Research at the University of North Texas. He also spent 10 years in private industry in logistics and transportation management positions.

All three have been researchers, strategists, and practitioners in innovation economies around the globe.