Region 2 Entrepreneurial Ecosystem Strategic Investment Plan

For the Greater Lynchburg, New River Valley, and Roanoke Valley-Alleghany Highlands Regions

Prepared by Valleys Innovation Council for the Region 2 GO Virginia Council

March 2021

In December 2019, the GO Virginia Region 2 Council awarded the Regional Entrepreneurship Initiative (REI) grant to Valleys Innovation Council (VIC) to create strategic investment plans that will support the innovation-based entrepreneurial ecosystem in Region 2, with a particular focus on identifying projects that align with the existing priorities of the Regional Council. VIC laid out a collaborative, research-informed continuous planning process that would draw from best practices as well as the knowledge and experiences of regional stakeholders across Region 2. The process is outlined in the graphic below and divided into four phases: review, engage, synthesize, and deliver.

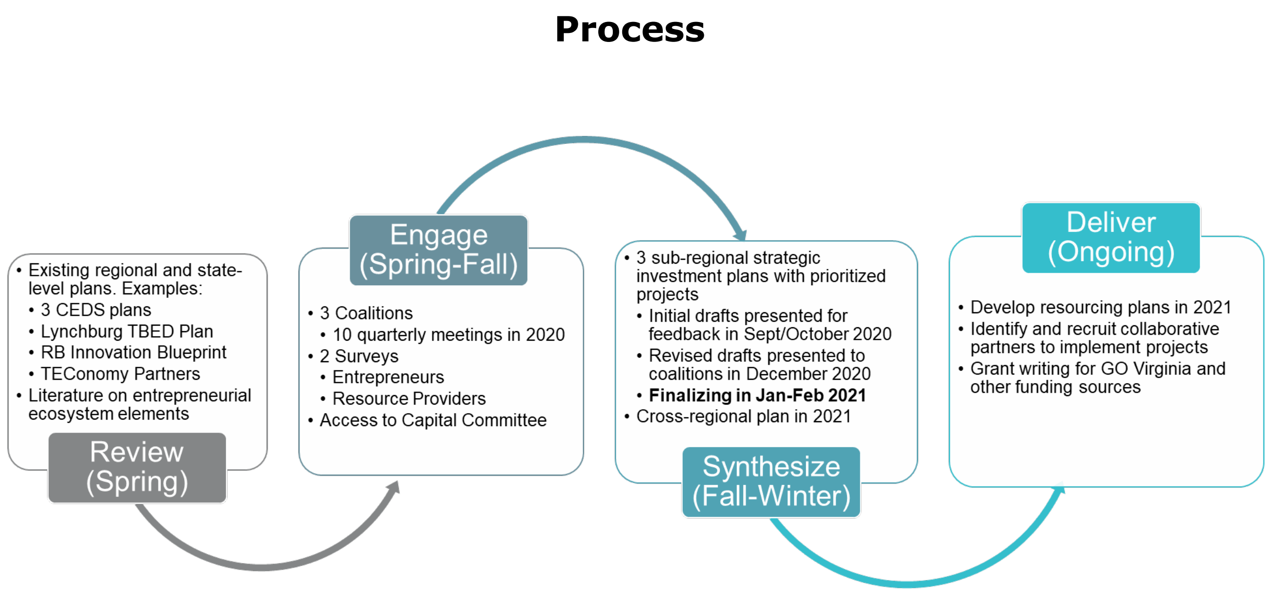

Figure 1 REI Process

Review

Phase 1 of the process began in January 2020 with a literature review of existing regional and statewide reports and industry research on innovation and entrepreneurial ecosystem elements. Regional reports included, but were not limited to, existing Comprehensive Economic Development Strategy plans for each of the three planning districts represented in GO Virginia Region 2, a recently-released technology-based economic development plan released for the Lynchburg region from July 2020, the existing GO Virginia Growth & Diversification plans from 2017 and 2019, the Capital Landscape Study conducted by VIC in 2018, the TEConomy Partners study focused on Region 2, the 2015 Regional Economic Development study conducted by the Office of the Senior Fellow for Resource Development at Virginia Tech in conjunction with the Weldon Cooper Center, and the Roanoke-Blacksburg Innovation Blueprint from 2012. At the state level, reports included the TEConomy Partners studies conducted for the Virginia Research Innovation Fund (VRIF) and GO Virginia, as well as the 2019 Virginia Innovation Report.

Industry research on innovation and entrepreneurial ecosystems focused on the identification of the necessary elements of such ecosystems to support innovation-driven entrepreneurship. Innovation-driven entrepreneurship is defined as "the creation of Innovation-Driven Enterprises that pursue global opportunities based on bringing to customers new innovations that have a clear competitive advantage and high growth potential."[1] Innovations can include any number of products and services that improve on goods, services, or processes and go beyond just technology. Put another way, a focus on innovation-driven entrepreneurship is supportive of the formation of new startups and companies that will bring innovations to market rather than only those policies and practices that promote innovation through existing larger firms.

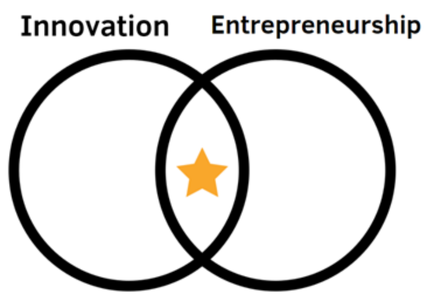

Figure 2 Innovation-driven Entrepreneurship

In 2013, the Aspen Institute conducted a meta-synthesis of a variety of entrepreneurial ecosystem frameworks in order to identify common elements that existing across the frameworks.[2] The resulting framework divides entrepreneurial ecosystems into 8 specific domains and classifies them as having a direct, partially direct, or indirect role in influencing desired entrepreneurial performance (creation of new firms, employment, and wealth) and impact (economic growth, job creation, and poverty reduction). The domains of **finance** and **support** are viewed as having a direct influence on entrepreneurial success (performance plus impact). Next, the domains of **policy, markets, human capital, infrastructure,** and **research and development** have a partially direct influence on entrepreneurial success as defined by Aspen. Lastly, **culture** is viewed as having only an indirect role in influencing entrepreneurial success.

The table below adapts the framework synthesized by Aspen to an orientation towards innovation-driven entrepreneurship. In light of the strategic investment plan's focus on this particular form of entrepreneurship, research and development likely has a more direct role in influencing the innovation-driven

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[1] Aulet, Bill & Fiona Murray. May 2013 *A Tale of Two Entrepreneurs: Understanding Differences in the Types of Entrepreneurship in the Economy*. Kauffman Foundation. Retrieved from: https://www.kauffman.org/wp-content/uploads/2019/12/a_tale_of_two_entrepreneurs_report.pdf

[2] Aspen Network of Development Entrepreneurs. December 2013. *Entrepreneurial Ecosystem Diagnostics Toolkit.* Retrieved from: https://www.aspeninstitute.org/wp-content/uploads/files/content/docs/pubs/FINAL%20Ecosystem%20Toolkit%20Draft_print%20version.pdf

entrepreneurial ecosystem than the general or main-street focused entrepreneurial ecosystem. As a result, R&D has been moved from a partially-direct influence as defined by Aspen to a direct influence on entrepreneurial success in the framework utilized for this work as it relates to innovation-driven entrepreneurship.

<table>
<tr><th colspan="12">Direct</th></tr>
<tr><td colspan="4">Finance</td><td colspan="4">Support</td><td colspan="4">R&D</td></tr>
<tr><td colspan="4">Angel Investors</td><td colspan="4">Incubators/Accelerators</td><td colspan="4">Research Institutions</td></tr>
<tr><td colspan="4">Government Grants</td><td colspan="4">Mentors</td><td colspan="4">Licensing</td></tr>
<tr><td colspan="4">Venture Capital</td><td colspan="4">Professional Services</td><td colspan="4">Founder-Friendly Institutional Policies (tenure pathways)</td></tr>
<tr><td colspan="4">Investment Banking</td><td colspan="4">Industry Associations</td><td colspan="4">Patent support</td></tr>
<tr><td colspan="4">Revolving Loan Funds</td><td colspan="4">Business Planning</td><td colspan="4"></td></tr>
<tr><th colspan="12">Partially Direct</th></tr>
<tr><td colspan="3">Infrastructure</td><td colspan="3">Human Capital</td><td colspan="3">Markets</td><td colspan="3">Policy</td></tr>
<tr><td colspan="3">Office Space</td><td colspan="3">Skilled Talent</td><td colspan="3">Consumers</td><td colspan="3">Zoning</td></tr>
<tr><td colspan="3">Lab Space</td><td colspan="3">Higher Education</td><td colspan="3">Retail Networks</td><td colspan="3">Entrepreneur-Friendly Legislation</td></tr>
<tr><td colspan="3">Traditional Utilities</td><td colspan="3">K-12</td><td colspan="3">Business-to-Business</td><td colspan="3">Tax policies</td></tr>
<tr><td colspan="3">Broadband</td><td colspan="3"></td><td colspan="3">Access to International Markets</td><td colspan="3"></td></tr>
<tr><th colspan="12">Indirect</th></tr>
<tr><td colspan="12">Culture</td></tr>
<tr><td colspan="12">Media</td></tr>
<tr><td colspan="12">Professional Associations</td></tr>
<tr><td colspan="12">Social Organizations</td></tr>
<tr><td colspan="12">Stories of Success</td></tr>
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It is only through the existence, cultivation, and interactions between each of these elements that an ecosystem can fully optimize its support of innovation and entrepreneurship. The definitions used in this report are described below with a few examples of each as they are present in the region.

Finance: Access to capital is consistently identified as the most important and direct means of influencing entrepreneurial success, particularly for the earliest stages of company development. Regions with access to capital to fund startups from pre-seed stages through scaling, as well as the needed technical assistance (e.g., grant writing assistance, capitalization planning for new ventures, etc.) are better equipped to support innovation-driven entrepreneurship, which may require a longer runway of early-stage capital to support commercializing invention/innovation than would be required for Main Street local businesses. Funding health and life sciences companies, which often require lengthy regulatory testing and approvals, can be a challenge for this identified industry cluster within Region 2.

Important sources of capital for innovation-driven entrepreneurship include government grants and other non-dilutive funding such as proof-of-concept grants, business competitions, and accelerator cohort funding; angel investors; venture capital; and access to larger capital markets through investment banking. The 2019 Valleys Innovation Council *Capital Landscape Study* investigated Region 2's capital ecosystem in depth and identified a number of areas of strength (e.g., relatively large number of SBIR/STTR grants compared to peer regions) as well as areas in need of improvement (e.g., no regional angel investor network and a lack of proof-of-concept funding sources). Since the release of that study in March 2019, the region has experienced the launch of a new angel investor network, Common Wealth Angels, and both Virginia Tech and Carilion Clinic have launched proof-of-concept grant programs. In addition, the presence of the VTC Seed and Innovation Funds have helped to address seed and early-stage venture capital needs, as has the investment activity of the CIT Gap Funds, and its affiliate the Virginia Founders Fund. Syndicating with and building bridges to external sources of new venture funding is necessary and remains an evolving opportunity for Region 2.

Support Mechanisms: The presence, absence, and quality of services that support entrepreneurs and scaling startups in a region can also have a large and direct influence on entrepreneurial success. These services can include assistance with business planning, access to supportive and skilled mentors, and formal accelerator programs. The addition of the Regional Accelerator and Mentoring Program (RAMP) to the regional ecosystem in 2017, as a result of the collaboration among the City of Roanoke, Virginia Western Community College, and the Roanoke-Blacksburg Technology Council was a significant step forward in the region's ability to meet the needs of its innovation-driven startups. Other important support services include the regional Small Business Development Centers' advising and Innovation Commercialization Assistance Program (ICAP) and The Advancement Foundation's Gauntlet and Innovation Mill programs.

Research & Development: While R&D activity levels are generally considered to be a partially direct influence on the overall entrepreneurial ecosystem, translational R&D activity has a more direct role as the start of the innovation pipeline for innovation-driven entrepreneurial success. Without new products, services, and process improvements being invented and someone to shepherd those innovations or inventions through the commercialization process with an eye towards the formation and support of new startups, innovation-driven entrepreneurship in the region will not be optimized. The restructuring of Virginia Tech's commercialization support program to include the LAUNCH program and the maturation of Carilion Clinic's Carilion Innovation group are two examples of advancements in promoting R&D commercialization within the region.

Infrastructure: Early-stage and innovation-based startups that are scaling have infrastructure needs that may vary from those of established companies or Main Street small businesses, though the influence of this infrastructure on entrepreneurial success may be less direct than the previous three elements. High-speed, high-quality affordable broadband internet service is a pre-requisite for the success of these companies, but it can be difficult for more rural entrepreneurs to obtain. Its absence can slow the progress of early-stage innovation as many innovators start their companies in their garages, basements, or home offices, which means that is necessary for utilities to be ubiquitous rather than concentrated in industrial and office parks. Further, these networks allow for remote collaboration with remote workers and vendors such as offshore software developers. Regional broadband assets include middle-mile fiber networks by Citizens Telephone Cooperative and fiber networks built by the Roanoke Valley Broadband Authority.

Knowledge-based startups in software development and similar fields may also need scalable co-working spaces with resources to support them, like the CoLab in Roanoke or the Virginia Tech Corporate Research Center's new COgro facility in Blacksburg. For startups in specialized industries like health and life sciences, they may also need access to affordable wet lab space to further translational research, while startups in the autonomous systems industry need access to aerial, terrestrial, or aquatic testing facilities. Regional infrastructure assets for this sector include the Alleghany Highlands Drone Zone and the Virginia Tech Transportation Institute's Smart Road.

Human Capital: As innovation-driven startups begin to scale and grow, the ability to access the right talent and experience levels for their workforce will be essential to growing their capacity to achieve results. For a region, this means attracting and retaining skilled talent as well as creating home-grown talent through high-quality educational institutions and training opportunities. Several of the region's colleges and universities have also developed entrepreneurial education programs, including the Apex Center for Innovation and Entrepreneurship at Virginia Tech, The Center for Leadership and Entrepreneurial Innovation at Roanoke College, Radford University's Entrepreneurship Learning Community, and the Entrepreneurial Learning Institute at Hollins University. The three regional workforce boards also play an important role in connecting talent to opportunities, and the Roanoke Regional Partnership alongside Onward NRV and the Lynchburg Regional Business Alliance have also been focused on the issue of skilled talent in the region.

Markets: Access to national and international markets is key to building a significant size business and becoming a "traded sector"[3] company, which are

[3] Traded sector businesses are those that sell their output in competition with businesses in other states or nations. Local businesses, as the name implies, sell their goods and services primarily or exclusively in a local market. The presence of a large number of "traded sector" businesses that employ well-educated workers is an important marker for a prosperous region.

important for regional vitality. *The TEConomy Regional Entrepreneurial Assessment of Region 2* dated December 2018 revealed a decline of 9,187 in employment within a number of "traded sector" companies in Region 2 between 2007 and 2017. The study also found that the 1,673 traded sector startups founded since 2007 supported 11,166 employees, buffering the 9,187 decline in traded sector jobs during the period and demonstrating the critical importance of entrepreneurial growth.

Having good access to both broader domestic and international markets is particularly important to the growth of employment in traded sector jobs. For companies shipping physical goods and/or depending on remote supply chains, physical infrastructure such as interstate systems, and good access to rail, air, and shipping are critically important, and Region 2 has generally good access through these mechanisms. With the increasing migration of shopping, order processing, and fulfillment functions being conducted online, and customer interactions also being increasingly conducted via technology platforms such as Zoom, having advanced telecommunications and broadband access is equally critical for Region 2 companies to be able to access, serve and compete for customers in remote markets.

There are 18 different organizations providing assistance helping Region 2 companies better access markets for Region 2. Most of the organizations are economic development organizations or SBDCs. Helping entrepreneurial companies position to access national and international customers and suppliers is key to greater growth of traded sector companies in Region 2. Leveraging resources such as the VEDP's international trade assistance program and other programmatic offerings is important for this to be even more successful in the future.

Policy: Policies are another partially direct influence on entrepreneurial success. Governments at the federal, state, and local levels establish many regulations and policies that guide and shape business conduct and affect competitiveness. These can range from tax policies to international trade treaties, from advantageous zoning policies, such as Opportunity Zones and HUB Zones that overlap with the infrastructure element, to setting permit and regulatory rules, to state-level angel investment tax credits that can incentivize angels to invest in entrepreneurial companies to setting interest rates. Having stable, business-friendly policies are an important underpinning of entrepreneurial economic development.

Culture: The final entrepreneurial ecosystem element is centered on the development and vibrancy of an entrepreneurial culture within the ecosystem that encourages and supports self-employment, celebrates innovation and entrepreneurship, promotes a research culture, accepts risk and failure, promotes figures that model successful entrepreneurship, and is inclusive and diverse. This is where organizations like the Roanoke-Blacksburg Technology Council, Innovate Lynchburg, regional chambers of commerce, and Junior Achievement et al play a role in promoting stories of entrepreneurial success and supporting entrepreneurs professionally and socially by cultivating networks of peer entrepreneurs.

Engage: Regional Participation

The Regional Entrepreneurship Initiative engaged stakeholders from across Region 2 in the identification of regional needs and priorities through a variety of mechanisms including the formation of sub-regional coalitions, a committee focused on regional capital access, surveys, and one-on-one meetings. This approach met and exceeded the engagement plans articulated in the original REI proposal with modifications to address new challenges for entrepreneurs/startups as a result of the pandemic and its effects on the regional economy and supporting ecosystem.

While the engagement process during the REI was (and continues to be) affected by the COVID pandemic, which first paused and then lengthened the anticipated "Engage" phase as both staff and stakeholders pivoted and reevaluated priorities in response to the pandemic crisis, by May of 2020 the planned coalitions within Region 2 were all fully formed with meetings back underway (though virtually). Engagement with entrepreneurial resource and support organizations was the primary source of input for this work. Throughout 2020, 111 stakeholders from organizations and local governments across Region 2 were invited to participate in the needs identification and planning process through one-on-one meetings, a survey distributed in May 2020, and quarterly coalition meetings. Of those invited, 81 participated in at least one coalition meeting and represented sectors including local government (26), higher education (16), and entrepreneurial support organizations (39). 37 participants represented the Roanoke Valley-Alleghany Highlands sub-region (out of 50 invitees), 29 participants represented the Greater Lynchburg region (40 invitees), and 28 participants represented the New River Valley (34 invitees). 13 of the stakeholder participants participated in coalition meetings for more than one sub-region.

In addition, VIC staff designed a survey with input from the coalitions to obtain input from ecosystem support organizations on unmet and under-met needs in each of the three sub-regional entrepreneurial ecosystems. The survey captured 36 responses (32% response rate) drawing from government (13), higher education (11), and other entrepreneurial support organizations (12). The survey was an additional way beyond the scheduled coalition meetings for stakeholders to offer feedback on what they felt were the top 3 most pressing unmet and under-met needs in the region's innovation-based entrepreneurial ecosystem. Survey findings were analyzed on a sub-regional level to be able to identify what differences, if any, there were in the needs across each of the areas. In all three sub-regions, access to capital and related issues emerged as the top identified need with 17 respondents from Roanoke-Alleghany, 20 from the New River Valley, and 13 from Greater Lynchburg indicating that capital was one of the top three regional needs for entrepreneurs. Support for research commercialization was also identified as a common need across the three sub-regions, demonstrating the need for R&D support if an innovation ecosystem is going to thrive. Beyond capital and research commercialization, the regions tended to differ on other priorities and needs with the need for qualified talent emerging as a priority in the Roanoke-Alleghany (7 respondents) and the New River Valley (10) sub-regions while only 2 respondents from Greater Lynchburg indicated that this was an under-met need for their region. The graphs below reflect the responses for each of the identified sub-regional needs.

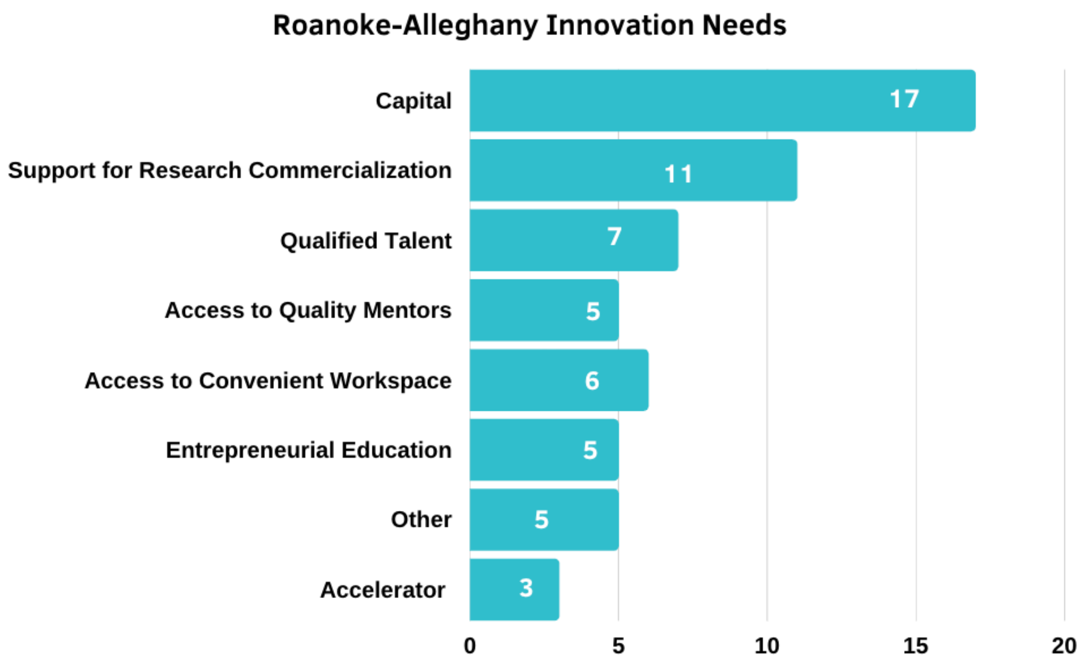

Figure 3 Roanoke-Allegany Innovation Needs (Organizational Survey)

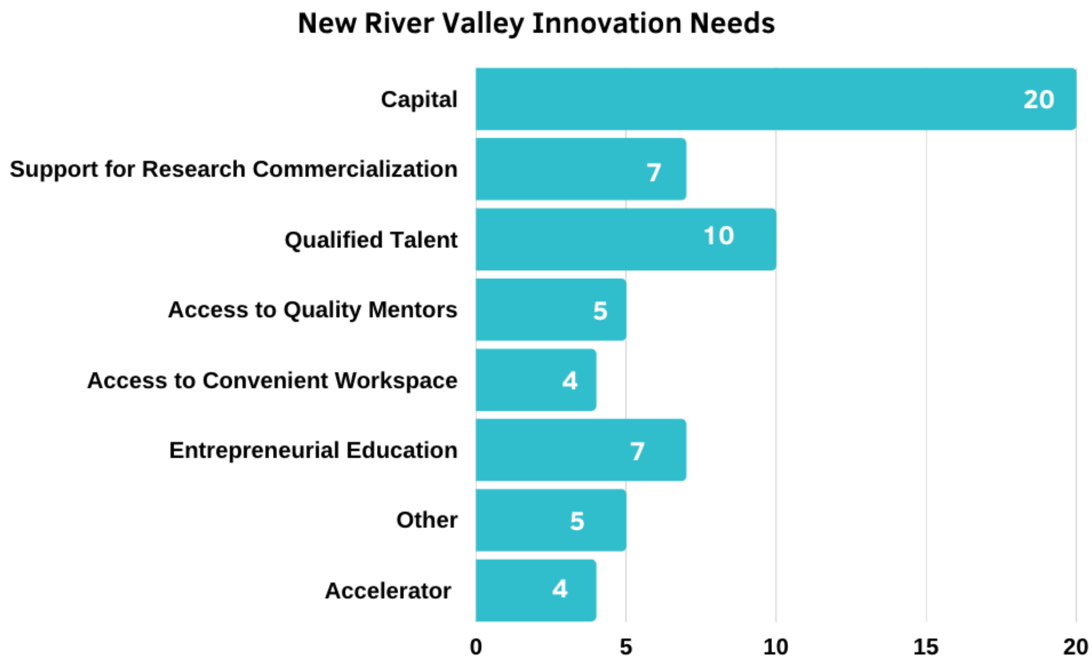

Figure 4 New River Valley Innovation Needs (Organizational Survey)

Figure 5 Greater Lynchburg Innovation Needs (Organizational Survey)

Engagement with entrepreneurs, founders and their companies took place through ongoing one-on-one meetings and a second survey distributed in August

2020 to 114 innovation-based entrepreneurs and startups from across Region 2. The target survey audience was identified within Region 2 companies by using lists of companies that had attended CIT-sponsored SBIR workshops, those who had received investments from CIT, those companies that had won SBIR/STTR federal grants, membership in RBTC or Innovate Lynchburg, tenant lists of the Virginia Tech Corporate Research Center, and alumni of the RAMP accelerator-in-residence program. The list of participants was narrowed to ensure that companies were focused on innovation and/or research to eliminate technology council members or CRC tenants who could be more accurately described as a service provider, for example. Any recipient of VIC's innovation and entrepreneurship ecosystem newsletter was also asked to take the survey if they were an innovation-based startup or to share it with a other regional startups within their circle of peers. The entrepreneur survey had a 30% response rate (35 respondents) of those directly invited by VIC to take the survey. The responding companies had greater representation from the Roanoke-Alleghany and New River Valley regions than Lynchburg. More detailed information on unmet or under-met needs is included in the Appendix.

The entrepreneur survey results showed that the majority of responding companies could be classified as being from IT (17), Health & Life Sciences (9), and Advanced manufacturing (6), all identified Region 2 industry clusters. Overall, 52% of the companies which responded were early-stage companies. The survey also revealed that technical assistance for capital (18), access to capital funding (17) and access to experienced service providers (14) were the top 3 unmet or under-met regional needs.

With respect to access to early-stage investment, one of the respondents commented: "We need more investors willing to invest into high-risk, long-term projects. The investors I've met in the area are overly cautious and want a 3–5-year exit from seed-level funding."

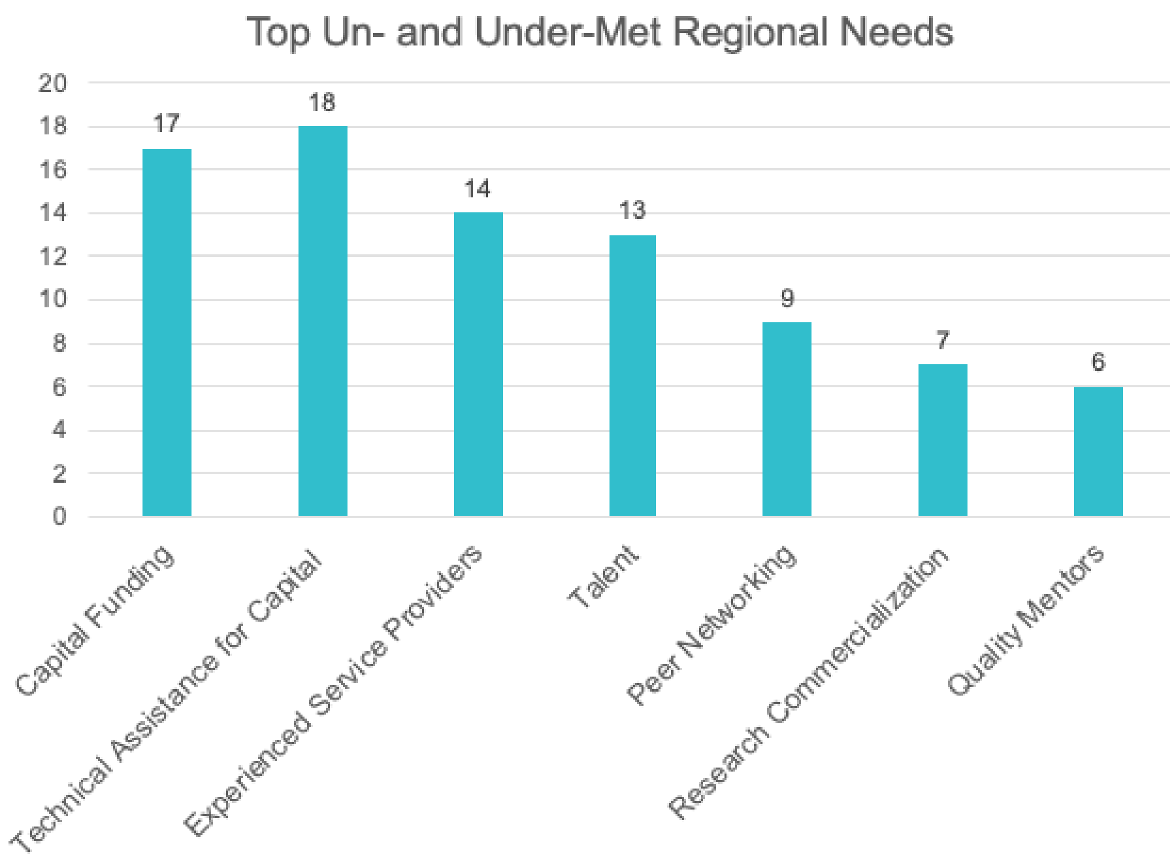

Figure 6 Top Under-met Regional Needs (Entrepreneur Survey)

Synthesize: Prioritized Projects for GO Virginia Strategic Investment

Based on stakeholder input from coalition meetings, the surveys, one-on-one interviews, and reviews of existing regional plans, the REI process has identified 10 projects that would address regional innovation-based entrepreneurial ecosystem challenges. Some of the identified projects are priorities across all sub-regions, while others emerged in just one or two of the identified sub-regions. Often, the projects were prioritized differently by each individual sub-region based on the specific gaps and opportunities identified by participants or through plan reviews.

The chart below identifies these projects and how they were ranked in each of the sub-regions through coalition input, while the subsequent pages of this section of the document provide a more detailed overview of each project. Each project is contextualized with the regional challenge(s), end goal or vision, and proposed solutions that include potential collaborating partners, a proposed timeline for implementation, the role for GO Virginia in supporting the project, and other potential funding sources that have been preliminarily identified.

Table 1 Projects and Sets of Projects Identified to Advance the Regional Innovation-Driven Entrepreneurial Ecosystem

Projects	Roanoke-Alleghany	New River Valley	Greater Lynchburg
Pitch Plus (Technical Assistance)	1	2	3
Startup Pathways	4	1	2
Hub-and-Spoke Startup Studios with Coworking Space	3	3	1
Pre-Seed Funding/Early-Stage Funding Sources	2	6	5
Technical Talent for Hire	7	4	4
Industry-Specific Accelerator Cohorts	5	7	6
Industry-Specific Shared Workspaces	9	5	10
Exit RAMP	6	8	9
C-Suite for Hire	8	9	8
Broadband			7

Project 1: Pitch Plus—Technical Assistance for Capital Access

Roanoke-Alleghany Rank: 1	New River Valley Rank: 3	Greater Lynchburg Rank: 3

Challenge: Many first-time founders and entrepreneurs in the region lack the knowledge and connections to secure the capital they need to grow their companies. Access to capital is also acknowledged as one of the top needs for startups and innovators across the country. Companies in Region 2 face similar challenges in accessing the financial resources needed to validate their ideas and then form and scale their companies effectively. The topic can be divided into two distinct but interconnected issues: a) the presence of adequate capital sources and supply and technical assistance within a region and b) the ability of founders to understand and know how to access appropriate and sufficient capital at the right time given their company's stage of development. An assessment of the then-current state of the regional capital landscape was reported in 2019 through VIC's GOVA-funded capital landscape study. Since then, VIC has continued to focus on the region's capital needs through periodic updates to the original capital ecosystem research, as well as through ongoing facilitation of a Region 2-focused Access to Capital Committee, composed of entrepreneurs and representatives of regional support organizations.

The entrepreneur survey conducted during the Summer 2020 as part of the REI reaffirmed what had been observed through other means: the more significant barrier to a startup accessing capital to scale is often the founder's ability to know how and when to access available capital at a stage appropriate for the company's maturity and industry, rather than the absolute level of dollars available from all capital sources within a region. This particular gap has a strong equity component as it is more likely that first-time entrepreneurs, rural entrepreneurs, entrepreneurs of color, and female entrepreneurs lack an understanding of new venture finance due to many having less experience and fewer connections to capital providers s compared to serial entrepreneurs that have operated in larger metro areas, for example.

Goal: The region will put in place support structures to help entrepreneurs access capital and have a culture that educates founders and builds connections between startups and sources of capital.

Recommendation: Expand the reach and access to the current *PitchPlus* program, which prepares post-acceleration stage companies to pursue early-stage capital including angel and seed fund investments and grants through webinars/events, structured clinics, and 1-on-1 advising. Founders learn about topics such as the market expectations and requirements of outside investors, investment structures, the suitability of venture capital and other funding mechanisms, the capital-raising process, cap tables, term sheets, due diligence, securities laws, and managing investor relations.

While the program may incorporate other events in the future, it has currently gotten underway with a new VIC-sponsored monthly Founders & Funders webinar series that began in December 2020 and will run through June 2021. In addition to this series, the program will include semi-annual half-day clinics to support startup companies and their founders by providing access to investment practitioners and mentor connections to help prepare them to pursue early-stage investment opportunities, including angel investors and seed funds. These clinics will be live and interactive but also filmed and made available as podcasts to allow for greater public access to the materials. An expert finance mentor will also provide participating companies with constructive feedback on their pitch deck content, delivery styles and plans for executing their planned capital raise. The program will also offer SBIR workshops by the Center for Innovative Technology/VIPA and technical assistance with grant writing. This will primarily be a cross-regional initiative to take advantage of economies of scale with potential collaborating partners that include CIT/VIPA, VIC through its Access to Capital Committee, and RAMP.

Due to the broad regional demands for technical assistance in accessing capital that was found in the surveys, one-on-one meetings with founders, VIC's past capital landscape study, and in the coalition meetings, the *PitchPlus* program would be a good example of a project that would operate at the cross-regional level rather than within each sub-region. The structure for this project was built into the recently-awarded federal Economic Development Administration grant, *Growing Our Innovation Ecosystem*, which provides a foundation of support for the program.

Potential Role for GO Virginia Support: While the federal EDA grant provides starter funding for this program, the program will need to secure funding from other sources to become more robust and far reaching. GO Virginia could provide funding that would support the program through its initial period of operations in order to be able to demonstrate proof of sustainability and programmatic success.

Other Potential Funding Sources: In addition to the EDA grant and any future GO Virginia support secured, *PitchPlus* could be supported through cash and in-kind staff support from CIT/VIPA along with sponsorship support, other grants, and/or fees from participants.

Project 2: Startup Pathways—Research Commercialization Support

Roanoke-Alleghany Rank: 4	New River Valley Rank: 2	Greater Lynchburg Rank: 2

Challenge: The vibrancy of a region's innovation economy is reliant on activities that take place at the earliest stages of the innovation process to move from ideation through product/market fit to development of a minimum viable product (MVP). At the starting point of the innovation process is an idea that an inventor has for something novel, whether that is a process or product that is an improvement over the way things have been done. The inventor could be located at a research institution like Virginia Tech or Carilion or in their garage, basement, or at their kitchen table. As they begin to validate their ideas, researchers typically need assistance to determine the market viability of their translational research and to commercialize their inventions or innovations. The lack of support mechanisms can often cause otherwise promising ideas to be abandoned to the detriment of the regional economy.

Goal: Develop appropriate, identifiable pathways and implement research commercialization programs that encourage and support researchers in the commercialization process to accelerate more inventions being brought to market.

Recommendation: The new Startup Pathways program refers to those pre-accelerator activities that encourage, enable, and guide researchers to consider applying their innovations/inventions to market problems and evaluating whether there is potential product/market fit and significant business opportunity. The program would aim to establish and strengthen research & development pipelines across the region whether that research originates in existing industry, research institutions, or the community at large. Events could include idea festivals, hackathons, and other activities that both encourage ideation and ensure that inventors, innovators, and researchers are educated on the support structures that are available to them in the community as they look to translate ideas and research to market applications. The recently-awarded EDA grant further encourages these efforts to connect with RAMP and other ecosystem resources outside of research enterprise settings such as universities so that researchers are educated on the support structures that are available to them.

At a cross-regional level, potential collaborating partners include the Innovation Commercialization Assistance Program (ICAP) through the Small Business Development Centers (SBDC) and RAMP's Pitch and Polish program. In the New River Valley and Roanoke Valley-Alleghany regions, additional potential collaborating partners include Virginia Tech's Launch and Link programs, the Fralin Biomedical Research Institute at Virginia Tech Carilion, and The Advancement Foundation's Innovation Mill. In the Greater Lynchburg region, additional potential partners include both Innovate Lynchburg and the Lynchburg Regional Business Alliance.

Potential Role for GO Virginia Support: These early, pre-startup stage activities could be supported by GO Virginia by funding outreach and engagement programs at regional research institutions to encourage more research spinouts and continuing to support regional entrepreneurial resource programs for early-stage startups like RAMP and the Innovation Mill to expand service capacity.

Other Potential Funding Sources: Additional support for Startup Pathways is made available through the recently-awarded EDA grant as well as internal staffing support within research institutions. Future funding support for some types of programming within Startup Pathways could be found through VIPA and similar funders.

Project 3: Hub-and-Spoke Startup Studios with Coworking Space

Roanoke-Alleghany Rank: 3	New River Valley Rank: 3	Greater Lynchburg Rank: 1

Challenges:

1. Startups need access to affordable shared co-working space and professional assistance than can be served solely at any given time by the regional accelerator.
2. Not all startups need the formal structure of an accelerator boot camp/class experience but may still need access to some of the other resources, like access to startup-friendly service providers, that an accelerator can provide.
3. Many young startups benefit from collocating alongside other startups at similar or adjacent levels of development and in the same industry and/or in close geographic proximity to where they live to gain the benefit of peer networking.
4. The region has limited resources to support multiple startup-serving programs.
5. There is a geographically dispersed demand for services.

Goal: Give startups access to the necessary infrastructure, programming, and other resources needed to scale operations beyond what a formal accelerator program provides for a limited number of companies.

Recommendation: The hub and spoke model emerged as a hybrid of several suggestions across the region to meet various identified needs. The primary features of the hub and spoke model are a centralized coordinator of services within a sub-region, geographically dispersed shared co-working spaces, and programming and services made available for tenants regardless of location. In this way, one organization, whether it is RAMP, The Advancement Foundation, CoLab, LRBA, and/or the CRC's COgro can deliver entrepreneurial training and support without the need for redundant staffing to support narrower geographic audiences. The "spoke" locations may also be tied to industry specializations in areas such as autonomous systems, green tech, advanced manufacturing, and health and life sciences, particularly if and when such spaces are developed near industry-specific assets such as light manufacturing facilities, makerspaces, wet labs, agricultural processing sites, and testing areas for autonomous vehicles.

Program offerings could be made available as incubator services to aid in proof of concept, business planning, and customer discovery for pre-accelerator entrepreneurs and startups while providing them with access to a like-minded community to encourage their success. The sites could also serve as host sites to a variety of service providers experienced and willing to work with early-stage companies through startup studios. The studio concept typically provides support and resources to assist entrepreneurs and startups in business model development, tech building, go-to-market strategy, governance issues, legal aid, financial aid, and fundraising on an as-needed basis. The startup studio model is a more resource-connection intensive model, but one that provides needed resources for startups on an ongoing basis.

These entrepreneur centers would likely need collaboration from multiple parties in each of the sub-regions. In the New River Valley, potential collaborators include COgro, the Roanoke Regional SBDC, RAMP, and the local chambers of commerce. In the Roanoke-Alleghany region, collaborators could include the local governments, RRSBDC, RAMP, the Roanoke Chamber, the CoLab, and The Advancement Foundation. For Greater Lynchburg, collaborating partners could include LRBA, which includes the SBDC and local chamber, The Advancement Foundation, and local governments.

Potential Role for GO Virginia Support: Funding one or more programs operated collaboratively across participating startup-serving organizations in the region would help to subsidize services from experienced regional providers (law firms, accounting firms, marketing firms, etc.) as well as the costs associated with renovating selected spaces and operating costs.

Other Potential Funding Sources: Costs could also be subsidized through sponsorships, reduced rates charged by service providers, low-cost rent paid by participating companies, program fees charged for program participants, building renovation grants, or future revenue-sharing arrangements.

Project 4: Pre-Seed/Early-Stage Funding Sources

Roanoke-Alleghany Rank: 2	New River Valley Rank: 6	Greater Lynchburg Rank: 5

Challenge: With the launch of Common Wealth Angels and the VTC Seed Fund in 2018/2019, the region's startups have improved access to seed funding sources compared to even 2-3 years ago. However, earlier-stage sources of capital beyond the "family and friends" stage remain a challenge for startups, even those who have completed the regional accelerator. In particular, many first-time entrepreneurs/early-stage startups need access to funding at earlier stages than seasoned and well-connected entrepreneurs due to a lack of personal wealth or access to friends and family with resources and willingness to invest in an unproven venture and its founder.

Goal: To have a diverse portfolio of funding sources, with a preference for non-dilutive sources, available to support early-stage companies.

Recommendations: Unlike the previously identified subjects, solving regional issues around early-stage funding sources will necessitate a variety of solutions to meet the needs of different entrepreneurs and startups. This plan identifies five such solutions, some of which may be more appropriate for GO Virginia funding than others. Since GO Virginia does not allow grant funds to flow directly to startups, grant funds would instead be used to support the costs associated with running the identified or suggested programs. As with other suggested solutions, the problems around early-stage funding sources in our region cannot be solved by a single organization acting by itself and the interventions suggested below each include potential collaborating partners.

1. Work with Revolving Loan Fund (RLF) programs to restructure eligibility criteria for innovation-driven startups. Potential collaborating partners include any organization or local government operating a revolving loan fund. In the New River Valley, this includes the NRV Regional Commission and Montgomery County. In the Roanoke-Alleghany region, this includes Roanoke City and The Advancement Foundation. Organizations in Greater Lynchburg supporting revolving loan funds include Lynchburg Business Development Centre, the Town of Bedford, and the Lynchburg Regional Business Alliance. Another collaborating partner in the Lynchburg region could also include Innovate Lynchburg.
2. Ensure that the regional accelerator is fully funded annually so that it can provide $20,000 in non-dilutive capital per startup. Collaborators for this recommendation include the affiliates of Verge, the City of Roanoke, and Virginia Western Community College Educational Foundation. This will require sustained support of $200,000/year to provide funding for 10 startups annually. At present, this funding is difficult to acquire on a consistent basis from regional sponsors as it is explicitly excluded from state and federal grant program funding.

3. Support proof-of-concept grant programs, including for inventions that are not institutionally connected to Virginia Tech or Carilion. Potential collaborating partners include Virginia Tech's Launch program and Carilion Innovation, along with the development of private funding from non-governmental grants and private sources.
4. Develop and support programs that can help to de-risk early-stage investing while engaging with regional investors to support them connecting with pre-seed and seed-level startups. Potential collaborating partners for this program that would operate at a cross-regional level include Common Wealth Angels and other accredited investors, CIT through its GAP fund, Virginia Founders Fund, and other commercialization funds; and Verge affiliates such as RAMP.
5. Develop a government matching grant programs like the Cville Match program in Charlottesville. Potential collaborating partners for such a program could include government entities willing to set aside a small pool of funds to award grants of under $50,000 per company to companies located within their locality that win a federal or state government grant such as SBIR/STTR funding or CIT's Commonwealth Commercialization Fund (CCF).

Potential Role for GO Virginia Support: Provide planning for a new program and/or operating support for support of angel groups, fund development, investor events, etc.

Other Potential Funding Sources: Depending on the project, additional funding sources could include private investors or equity/revenue sharing arrangements with portfolio companies as longer-term solutions.

Project 5: Technical Talent for Hire

Roanoke-Alleghany Rank: 7	New River Valley Rank: 4	Greater Lynchburg Rank: 4

Challenge: As demonstrated in the 2019 IT and Software Development Talent Report created by VIC, this need is particularly acute in the New River Valley with an emphasis on mid- and senior-level software development talent. The region needs to be able to create, attract, and retain talent at all levels to remain competitive on a broader scale. Startups in the region have an additional level of complexity to this need as they often need access to skilled technical talent to scale but may lack the resources to make full-time, permanent hires.

Goal: Startups will be able to connect on an as-needed basis with qualified talent to find the support they need to continue to scale.

Recommendation: The Technical Talent for Hire concept has two components. The first addresses the ability to ensure that talent graduating from the region's higher education institutions are both trained for and aware of the employment opportunities that exist within the region.

The second component would create a pool of experienced technical professionals, such as software developers, engineers, and research scientists, who would be interested in providing services to startups on a contractual basis, perhaps even in return for future earnings.

Potential collaborating partners include the three regional economic development organizations (Onward NRV, Roanoke Regional Partnership, and Lynchburg Regional Business Alliance), regional higher education institutions that can reach out to their alumni and provide access and support for their current students, and the two technology councils (Innovate Lynchburg and Roanoke-Blacksburg Technology Council).

Potential Role for GO Virginia Support: GO Virginia funding would subsidize the costs to operate such programs to facilitate connecting appropriate talent with the right entrepreneurs and startups in need of their services.

Other Potential Funding Sources: Beyond initial startup funds to subsidize the costs associated with launching a new program, sustainment funds and matching funds would come from participating companies seeking the talent provided by this program along the lines of the current GO Virginia ELITE grant model.

Project 6: Industry-Specific Accelerator Cohorts

Roanoke-Alleghany Rank: 5	New River Valley Rank: 7	Greater Lynchburg Rank: 6

Challenge: Startups in different domain specialties have varying needs that may not be best met in a general accelerator program. Specialized accelerator programming dedicated to domain sectors ranging from cybersecurity to health and life science to energy have emerged around the county as a means to support industry clusters and as a point of accelerator differentiation. Domain-specific accelerators provide access to appropriate subject matter expert mentors and the ability to attract potential domain-focused investors able to evaluate the risk and opportunity associated with a given technology or other invention.

Goal: Develop domain specific accelerator cohorts (e.g., the recently launched RAMP Health and Life Science cohort) or partner with other Virginia accelerator programs involved with the Virginia Accelerator Network to address the needs of startups within the identified Region 2 advanced industry clusters. Domain-focused startups within prioritized industry clusters would then have access to mentors and resources tailored to their industry segment to help them determine product/market fit and to successfully scale.

Recommendation: Regional support organizations should evaluate the development of domain-specific accelerator cohorts aligned with existing and emerging Region 2 industry clusters, including sustainment of the new health and life sciences program. A new cohort of four accelerator companies focused on Health & Life Sciences was launched by RAMP in March 2021 with the support of the recently-awarded EDA grant to benefit the region and support this emerging industry cluster. This new cohort will double the number of companies that RAMP is able to serve each year and supports the startup potential from translational research being conducted at Virginia Tech, Fralin Biomedical Research Institute, and Carilion Innovation. Similar industry-specific cohorts for food & beverage processing, advanced manufacturing, autonomous systems, or software development and blockchain applications could also be developed for existing or emerging advanced industry clusters with sufficient company deal flow. Accelerators that gain prominence offering domain-specific acceleration programs frequently attract startups from other parts of the country and even internationally, which becomes a marketing tool to attract more startups and attendant talent.

Collaborating partners will vary based on the targeted industry. For the Health and Life Sciences cohort, Fralin Biomedical Research Institute, Virginia Tech, Carilion Clinic, and RAMP are potential partners. Around food and beverage processing, potential collaborating partners could include experts from the region's food and beverage processing companies, Virginia Tech's highly-regarded food science program, the Community Foundation of the New River Valley for their support of Millstone Kitchen, The Advancement Foundation, the Small Business Development Centers, and local governments. Collaborating partners for an autonomous systems-focused cohort could include Virginia Tech Transportation Institute, the Ridge and Valley chapter of the Association for Unmanned Vehicle Systems International (AUVSI), Dabney S. Lancaster Community College, and RAMP. The timing for the launch of additional industry-specific cohorts would likely depend on a further analysis of anticipated deal flow of promising startups as well as on securing the necessary resources to support the programmatic costs of running a cohort.

Potential Role for GO Virginia Support: GO Virginia funding could be used to first provide enhanced capacity building support that would validate the regional deal flow for a targeted industry-specific cohort followed by up to two years of programmatic support to support the successful launch of the programs.

Other Potential Funding Sources: Alternative and supplemental funding sources may vary based on the targeted industry for new cohorts. The identified collaborating partners may be one source of funds, and cohorts that are operated through RAMP/Verge may have access to VIPA sustainment grants beyond the initial two years of operations. For the new Health and Life Sciences cohort, it will be funded in part for the first three years through the recently-awarded EDA grant. The Build to Scale grant program could be a source of future funding at either the build (up to $600,000) or scale (up to $1.5 million) levels for other cohorts in the future. Cohort company grants are a particularly difficult expense for programs to fundraise consistently, but they could perhaps be funded through sustaining sponsorships from local governments and regionally-invested companies and institutions such as banks, research institutions, other companies interested in supporting innovations in their fields for later investment or acquisition (i.e., blockchain, fintech, healthcare, etc.)

Project 7: Shared Industry-Specific Flexible Workspaces

Roanoke-Alleghany Rank: 8	New River Valley Rank: 5	Greater Lynchburg Rank: 10

Challenge: Startups in some industries, such as software development, have the flexibility to work from anywhere with a reliable high-speed internet connection—including coworking spaces, coffee shops, and home offices. However, startups in other industries, such as the health and life sciences, food and beverage processing, and advanced manufacturing, require specialized spaces to support research and operations. Unfortunately, these early-stage startups often lack sufficient capital to be able to afford unsubsidized space that meets their needs to launch and scale effectively. In the case of the health and life sciences, designing wetlab space that meets industry requirements for safety and privacy can be a very costly undertaking, particularly when companies lack economies of scale early on and only need a benchtop or two. However, as they scale, those needs may change rapidly where they would need more space.

At the same time, entrepreneurs and startups want access to convenient spaces as they balance various professional and personal demands while growing their companies. As a result, a region as geographically broad as Region 2 would likely need to consider supporting multiple smaller-scale specialty spaces based on the location of identified industry clusters rather than building a single wetlab or shared manufacturing facility in only one of the three sub-regions. For example, an agtech-focused space has been considered for Bedford and access to light manufacturing and testing space has been suggested in the Roanoke Valley, along with needs for wet lab space in both Blacksburg and Roanoke.

Goal: The region will have sufficient inventory to house current and prospective companies in identified industry clusters such as health and life sciences, autonomous systems, and advanced manufacturing in proximity to where they need to be located.

Recommendations: Before beginning the development of any capital-intensive project, particular ones where the end uses will be limited by design, feasibility studies should be undertaken to evaluate regional use demand and financial capacity to support such facilities. From discussions with coalition members across all three sub-regions and with entrepreneurs/startups, three industry sectors have been identified: health and life sciences, light manufacturing, and food and beverage processing.

An example of the type of feasibility study recommended is the recently-undertaken study by the VTCRC (supported by a GO Virginia enhanced capacity building grant) to evaluate the need for wet lab space in Blacksburg and Roanoke, which VIC supported based on expressed needs stemming from this REI work. As the region continues to develop its health & life sciences industry cluster, researchers will need high-quality, affordable wet lab space to continue developing their research as they move research from benchtop to marketplace. High-quality, fully-equipped wet-lab space can cost as much as $1,000/sq ft with $500 sq/ft estimated as a minimum average, which can make it unaffordable for pre-revenue startups and other researchers. An additional financial-related hurdle is that, as a developing industry cluster within the region, the current demand for such space may not generate a sufficient economy of scale to make the private development of such an expensive space economically attractive. However, the absence of such space will likely inhibit the growth potential of the industry to support startups and attract research facilities from outside the region. Potential collaborating partners for the development of shared wetlab space(s) will likely depend on where they are ultimately located in the region. Some options include the Fralin Biomedical Research Institute, Virginia Tech, Carilion, the Virginia Tech Foundation/VT Corporate Research Center, Radford University Carilion, the region's community colleges, and local governments. Planning efforts could begin in 2021 with an eye towards implementation being underway in late 2021/early 2022 based on the findings of feasibility studies.

Coalition members in the Roanoke Valley and Greater Lynchburg regions have also expressed a need for shared light manufacturing and/or food and beverage processing spaces. However, the need for such spaces still needs to be validated through feasibility and needs-assessment studies. Potential collaborating partners for such spaces include The Advancement Foundation and local governments, among others.

Potential Role for GO Virginia Support: GO Virginia funding could be used to support planning efforts and/or a targeted portion of the facility's development that would meet the needs of startups in targeted industries in the region. Feasibility studies should not only identify the industry-side need for the development of specialized spaces but also identify funding sources for the development and construction/renovation of spaces to meet identified needs.

Other Potential Funding Sources: Funding capital-intensive projects like real estate may require significant large-scale investments, particularly for the type of specialized space demanded of health and life sciences companies. Funding could come from state and local bonds, regional research institutions and well-established industry partners willing to serve as anchor tenants. For real estate located in Opportunity Zones, there could also be the potential for investors such as Village Capital or other OZ funds. Federal and state grants outside of GO Virginia could also be used as initial funding sources to build or redevelop suitable spaces. Attracting private capital from developers and investors would be dependent on the attractiveness of the return on investment vis-à-vis the risks involved.

Project 8: Exit RAMP—Post-Accelerator Support Program

Roanoke-Alleghany Rank: 6	New River Valley Rank: 8	Greater Lynchburg Rank: 9

Challenge: Many of the companies that have completed the RAMP accelerator program, in which a tremendous investment has been made, have a continued need for support after graduation. Program staff and many mentors have remained engaged with the majority of alumni cohort members, with several companies continuing to collocate in the Gill Building through the following year's cohort. While RAMP offers a great start, the alumni companies are still very early-stage and typically desire ongoing support such as business/technical assistance, mentoring, strategic advice, help with talent attraction, and and other nurturing to improve the odds of long-term survival, rapid growth, and successful access to the capital they need to grow within the region.

Goal: Post-acceleration startups will receive the ongoing support they need within the region, and viable startups will be able to scale rapidly, which will strengthen the regional economy and generate both job growth and wealth.

Recommendation: The Exit RAMP program will provide ongoing post-acceleration support to startups through educational programming, mentoring, networking, and affordable shared coworking space as needed for up to 3 years post-graduation. Potential collaborating partners to support this program include members of Verge (RAMP, RBTC, and VIC), regional chambers, regional SBDCs, Innovate Lynchburg, and service providers in areas such as marketing, legal, and accounting services that can provide on-demand support as companies scale. This program is currently being launched with the support of the EDA Build to Scale grant awarded to VIC in late 2020.

Potential Role for GO Virginia Support: RAMP has used a portion of its Pivot and RAMP Up capacity building/COVID response grant to launch the Exit RAMP program, but its full potential will require more significant funding to sustain and expand.

Other Potential Funding Sources: As the program matures, a sustainment stream of funding could be available to it via CIT/VIPA's Regional Innovation Fund. Additional funding sources could include sponsorships, nominal rent paid by participants, and participation fees by accelerator alumni.

Project 9: C-Suite for Hire—Fractional CEO, CFO, etc.

Roanoke-Alleghany Rank: 7	New River Valley Rank: 9	Greater Lynchburg Rank: 8

Challenge: Many startups are formed by founders with a technical background and sometimes lack a broader management/administrative experience necessary to launch a new venture. As startups begin to grow and scale to seek outside injections of capital, they typically need an experienced and diversified team to be able to fully execute their business plan, develop structures for future growth and to attract potential investors. However, startups at this stage may not have revenue streams sufficient to be able to support multiple, full-time C-Suite level positions.

Goal: The region will develop a pool of experienced management talent available to step into C-Suite level positions on a temporary, part-time contractual basis to help startups mature. Ideally, this pool would be comprised of serial entrepreneurs who have had the experience with prior companies from startup through exit.

Recommendation: The C-Suite for Hire concept would make available a pool of experienced C-Suite level professionals including CEOs, CFOs, and CMOs etc. who would be available for time-limited fractional management services to provide support for companies as they start to scale. The involvement of such individuals can make startups more attractive to investors because of the added depth of experience that can help first-time entrepreneurs and their startups have a higher probability of success. Potential collaborating partners for this program include Innovate Lynchburg, the Roanoke-Blacksburg Technology Council/Valleys Innovation Council (through the strategic alliance, Verge), regional SBDCs, and regional chambers of commerce.

Potential Role for GO Virginia Support: GO Virginia funding could be used to subsidize these services for startups and the costs to operate the program to facilitate connecting appropriate talent with the right entrepreneurs and startups in need of their services.

Other Potential Funding Sources: After the program has been successfully vetted, Regional Innovation Funds could be used to help sustain the operating costs of the program if run through Verge. Other sustainability strategies could include receiving discounted rates from firms that provide fractional executives, which we have started to explore, and sponsorships/grants to develop a pool of dollars to buy down market rates.

Project 10: Broadband

Roanoke-Alleghany Rank: n/a	New River Valley Rank: n/a	Greater Lynchburg Rank: 7

Challenge: More rural areas of Region 2 still lack access to affordable, high-quality broadband infrastructure necessary for modern business operations. As many companies start and grow in home offices, garages, and basements, broadband build-out that prioritizes only urban commercial areas is insufficient to support the entire regional ecosystem. The lack or insufficiency of broadband access across the Greater Lynchburg region was lifted up by many parties as a particular need.

Goal: Ubiquitous broadband availability for commercial and residential locations at affordable rates.

Recommendation: Much of this work will be outside the scope of GOVA. However, funding for feasibility studies, test studies, and middle-mile buildout could still be considered by GOVA. Potential collaborating partners include Innovate Lynchburg, the Lynchburg Regional Business Alliance, and the Central Virginia Planning District Commission.

Potential Role for GO Virginia Support: GO Virginia funding would be restricted to supporting planning efforts or middle-mile network build out.

Other Potential Funding Sources: Non-GOVA funding sources to support network buildout could include Virginia Telecommunications Initiative (VATI) grants, private sector providers, local government, federal grants (if available), and the Virginia Tobacco Commission.

Deliver: Progress to Date

Now in its 5th quarter, Valleys Innovation Council's Regional Entrepreneurship Initiative has been focused on both building the community and culture around entrepreneurship in the region as well as building the capacity of the regional ecosystem to meet the needs of its innovation-driven entrepreneurs and startups. As part of the continuous planning process of the REI initiative, the projects identified above are a point-in-time snapshot of solutions to address needs identified through a participatory, community-based progress supported by additional research by VIC staff. The *2019-2020 Innovation Ecosystem in Review Report*, released by VIC in January 2021 as part of its REI work, further highlights some of the progress by the regional ecosystem stakeholders, as well as additional opportunities to strengthen it.

Building Community and Culture

Beginning early in the pandemic, VIC began producing the "Growing Our Regional Innovation + Entrepreneurship Ecosystem" newsletter on a semi-monthly basis. This newsletter was first released in March 2020 to 157 recipients as a way of sharing news and upcoming events in the ecosystem with regional stakeholders including support organizations, entrepreneurs and startups. By the October 2020 newsletter, the number of newsletter recipients had increased to 270 individuals from across Region 2.

While canceled in 2020 by the pandemic, VIC is currently in the planning stages of a 2021 Regional Entrepreneurship Summit follow-up to the successful Summit held in January 2019. This event will be aligned with the VT Corporate Research Center's GameChangers event scheduled for August 2021 at the Inn at Virginia Tech and will feature an opportunity to showcase entrepreneurial resource providers, to connect them with entrepreneurs and startups, and provide educational programming around access to capital, among other events. As with many post-pandemic events being planned, the Summit will take place in a hybrid virtual/physical format, which will help to connect with resource organizations, entrepreneurs, founders, and other stakeholders who would not be able to make the trip to Blacksburg for this Summit due to geographic distance.

Additionally, VIC intends to continue supporting the three subregional and one cross-regional coalitions through 2021 and beyond. These coalitions provide an opportunity for regional stakeholders to share news, upcoming events and resources, and identify fruitful areas for cross-organizational collaborations.

Building Regional Ecosystem Capacity

While the identification of projects to close gaps in the regional ecosystem was the first portion of the REI scope of work, perhaps more important is the ability to secure the partners and resources that will move a project forward to and through implementation. To date, VIC has provided technical assistance and grant writing support during the REI project performance period for 4 successfully funded regional and 1 statewide competitive GO Virginia proposals that advance priorities and projects identified in the above section.

The first grant supported a second year of funding for The Advancement Foundation's Innovation Mill program that supports early-stage startups in line with the Startup Pathways recommended project area. During the following GO Virginia cycle, VIC provided support for RAMP's "Pivot and RAMP Up" grant proposal under the Economic Resilience and Recovery track so that the accelerator could continue to provide its pre-acceleration and acceleration programming during the pandemic. The Roanoke-Blacksburg Technology Council's Experiential Learning in Tech Employment (ELITE) managed talent development experience program was the third successful proposal submitted with the support of VIC staff under the REI. This grant seeks to address some of the regional tech talent needs identified in VIC's 2019 *IT and Software Development Talent Report* and highlighted in the Tech Talent for Hire project section above. The other grants supported included a proposal for a feasibility study on regional wet lab space by the Virginia Tech Foundation and Corporate Research Center and the statewide competitive project, Virginia Bio-Connect, from Virginia Bio both support the development of the health and life sciences industry cluster in the region.

In addition to GO Virginia funding, VIC successfully won a $982,442 US Economic Development Administration Build to Scale grant for its proposal, *Growing our Innovation Ecosystem: Scaling the Success of RAMP*. Through grant and matching resources, this $2.08 million project incorporates support for the *PitchPlus* program, *Startup Pathways*, a new Health and Life Sciences industry-specific accelerator cohort that started March 2021, and the *Exit RAMP* program.

VIC continues to work with regional stakeholders to advance other initiatives that will strengthen the regional entrepreneurial ecosystem. It is in the process of applying for a Regional Innovation Fund grant from the Center for Innovative Technology that will continue to support ecosystem building and accelerator activities and a grant from the Truist Foundation that would support an expanded *PitchPlus* program that would provide technical assistance and educational resources for entrepreneurs and startups to access capital. VIC is also working with Truist to identify possible opportunities for the bank to sponsor a slot in the accelerator that would help to address the early-stage capital needs related to non-dilutive funding. Further, conversations have been ongoing with Hollins University and the Roanoke Regional Small Business Development Center over the last year regarding a possible women's entrepreneurship center or related programming and with The Advancement Foundation and Bedford County in late 2020/early 2021 on a proposed food and beverage processing/agtech shared workspace in the Town of Bedford.

Summary

The Commonwealth's Regional Entrepreneurship Initiative guidelines specified several desired outcomes from the REI coordination work VIC has been conducting on behalf of the Region 2 GO Virginia Council:

- a regional entrepreneurial investment plan,
- a structure or strictures to advance the entrepreneurial ecosystem, and
- strategies to build implementation capacity.

To meet the first outcome, this strategic investment plan outlines ten (10) projects that have been identified and prioritized by Region 2 stakeholders that would advance the innovation ecosystem across the region. To meet the second identified priority, VIC has formed and facilitated three (3) sub-regional innovation + entrepreneurship (I+E) coalition groups and one regional coalition to obtain input on the investment plan and provide vehicles for continuous planning and collaboration building. Progress is being tracked with annual Innovation + Entrepreneurship Ecosystem in Review reports (see 2020 report attached).

Further, the engagement of sub-regional ecosystem coalitions and a cross-regional group is improving communications and connections at both sub and cross-regional I+E ecosystem levels. The I+E Region 2 Newsletter being distributed to 270 stakeholders is also serving to communicate, connect and raise awareness about advances in our innovation and entrepreneurial ecosystem.

Success in building regional I+E implementation capacity and a pipeline of potential projects will ultimately be measured by the number of GOVA and non-GOVA grant proposals focused on resourcing and implementing identified I+E priority areas. VIC has already enjoyed early success in this regard by supporting several collaboration partners including VTCRC, RAMP, The Advancement Foundation, Roanoke-Blacksburg Technology Council (and its partners Exeleration and Maxx Potential) and Virginia Bio with grants from GO Virginia and the U.S. EDA exceeding $3.5 million. Further activity will occur to identify and seek resources needed for the projects identified in this strategic investment plan in order to further build capacities in Region 2.

We look forward to continuing our role as the Region 2 coordinator of the REI initiative and appreciate the support of the Region 2 GO Virginia Council and the Virginia Tech Office of Economic Development.

Appendix A

Survey Instruments

Survey Questionnaire (Ecosystem Organization Survey)

Name of your organization _________

Which cities and counties in Region 2 does your organization serve? (Click all that apply)

1. Alleghany County
2. Amherst County
3. Appomattox County
4. Bedford County
5. Botetourt County
6. Campbell County
7. Craig County
8. Floyd County
9. Giles County
10. Montgomery County
11. Pulaski County
12. Roanoke County
13. Covington City
14. Lynchburg City
15. Radford City
16. Roanoke City
17. Salem City
18. Other Areas Beyond Region 2

Which of the following innovation- and entrepreneur-related services do you provide? (Click all that apply)

1. Start-up Accelerator
2. Business Competition
3. Business Planning
4. Business Recruitment
5. Capital Consulting
6. College/University Student Entrepreneurship Education
7. Connecting businesses to markets
8. Connecting Entrepreneurs to Regional Resources
9. Entrepreneur Education
10. Infrastructure
11. K-12 Student Entrepreneurship Education
12. Mentorship
13. Proof of Concept/Intellectual Property
14. Providing Office Space
15. Public Advocacy
16. Research/Tracking Regional Progress
17. Subject Matter Expertise
18. Other

Do you provide other services to entrepreneurs/startups not listed above? If so, please describe below. _______________________

What do you view as the top three most critical un- or under met needs for innovation-based entrepreneurship in our region?

1. Access to Capital
2. Access to Quality Mentors
3. Access to Affordable and Convenient Workspace
4. Accelerator Programming
5. Qualified Talent
6. Entrepreneurial Mindset Education
7. Institutional Support for Research Commercialization
8. Other __________

Comments on identified priority areas for innovation-based entrepreneurship in your service area: _______________________

Which industry clusters do you view as the top 2 most promising for start-ups and other companies in our region?

1. Health and Life Sciences
2. IT and Software Development
3. Food and Beverage Processing
4. Advanced Manufacturing
5. Autonomous Systems
6. Blockchain/Distributed Ledger Systems
7. Telecommunications/Wireless Technologies
8. Nuclear Technologies
9. Other __________

Please explain why you think these are the most promising clusters for our region.

____

Where is your clientele in the investment readiness pipeline? Please select all that apply.

1. Level 1: Founding team established and important problem to solve identified.
2. Level 2: Founding team has a vision for how they will solve their problem.
3. Level 3: Team has initial validation that their solution is valuable through customer discovery. Testing with early prototypes
4. Level 4: Clear market opportunity with reliable data indicating total addressable market over $1 billion and well positioned to enter market.
5. Level 5: Business has paying customers, are lowering acquisition costs, and they can reach positive unit economics.
6. Level 6: Have customers beyond early adopters and ready to show product-market fit.
7. Level 7: Proven profitability and ready to scale.
8. Level 8: Company is scaling rapidly with validated business model, product, and value proposition.
9. Level 9: Company has acquired substantial market share and are an industry leader. Ready for exit or additional capital

Comments on the investor readiness levels of the companies your organization serves:

____

Where is your clientele in the Technology Readiness Level (TRL) pipeline? Please select all that apply.
1. Level 1: Basic Principles observed and reported.
2. Level 2: Technology concept and/or application formulated--Invention begins.
3. Level 3: Active R&D to validate each element/component separately.
4. Level 4: Components are integrated into early "low-fidelity" prototype using ad-hoc pieces.
5. Level 5: Higher-fidelity prototype of integrated components tested in simulated environment.
6. Level 6: Prototype tested in high-fidelity lab environment or simulated operational environment.
7. Level 7: Prototype at/near operational form and demonstrated in operational environment.
8. Level 8: Technology proven to operate in final form and under expected conditions.
9. Level 9: Technology applied in final form under real operational conditions.
10. NA--Focused on Main Street or other non-tech companies.

Comments on the TRLs of companies your organization serves. ______________________

First Name _____________

Last Name ______________

Phone ____________

Email Address _______________

Survey Questions (Entrepreneur & Founder Survey)

What do you view as the top 3 most critical un- or under-met needs for innovation-based entrepreneurship in our region?

1. Capital Funding
2. Technical Assistance to Access Capital (grants, venture capital, etc.)
3. Access to Quality Mentors
4. Access to Affordable and Convenient Workspace</div>
5. Accelerator Programming
6. Attracting and Retaining Qualified Talent
7. Entrepreneurial Education
8. Institutional Support for Research Commercialization</div>
9. Access to Service Providers (attorneys, accountants, etc.) with deep experience working with entrepreneurs.
10. Opportunities to connect with peer entrepreneurs.

What do you view as the top 3 most critical un- or under-met needs for innovation-based entrepreneurship in our region?

1. Capital Funding
2. Technical Assistance to Access Capital (grants, venture capital, etc.)
3. Access to Quality Mentors
4. Access to Affordable and Convenient Workspace
5. Accelerator Programming

6. Attracting and Retaining Qualified Talent
7. Entrepreneurial Education
8. Institutional Support for Research Commercialization
9. Access to Service Providers (attorneys, accountants, etc.) with deep experience working with entrepreneurs
10. Opportunities to connect with peer entrepreneurs

Please identify your company's primary industry sector:

1. Health and Life Sciences
2. IT and Software Development
3. Food and Beverage Processing
4. Advanced Manufacturing
5. Autonomous Systems
6. Blockchain/Distributed Ledger Systems
7. Telecommunications/Wireless Technologies
8. Nuclear Technologies

Please indicate your company's stage of development using the MoneyTree™ classifications as defined below:

1. Seed/Start-Up Stage--The initial stage. The company has a concept or product under development but is probably not fully operational. Usually in existence less than 18 months.

2. Early Stage--The company has a product or service in testing or pilot production. In some cases, the product may be commercially available. May or may not be generating revenues. Usually in business less than three years

3. Expansion Stage--Product or service is in production and commercially available. The company demonstrates significant revenue growth but may or may not be showing a profit. Usually in business for more than three years.

4. Later Stage--Product or service is widely available. Company is generating on-going revenue, probably positive cash flow. More likely to be, but not necessarily profitable. May include spin-offs of operating divisions of existing private companies and established private companies.

Where is your company located?

- Alleghany County
- Amherst County
- Appomattox County
- Bedford County
- Botetourt County
- Campbell County
- Craig County
- Floyd County
- Franklin County
- Giles County
- Montgomery County
- Pulaski County

- Roanoke County
- Covington City
- Lynchburg City
- Radford City
- Roanoke City
- Salem City
- Beyond Region 2

Year Founded: _______

Current number of employees at your company:

1. No employees--founder only
2. 1-9
3. 10-49
4. 50-99
5. 100-249
6. More than 250

Company Ownership:

1. Private
2. Public--Traded on a Stock Exchange
3. Other

How has COVID-19 affected your company's 2020 revenues to date?

1. 10%
2. Up 1-10%
3. Down 1-10%
4. Down 11-20%
5. Down >20%
6. NA

When does your company expect revenues to rebound to pre-COVID-19 levels?

1. Q3 2020
2. Q4 2020
3. Q1 2021
4. Q2 2021
5. Q3 2021
6. Q4 2021
7. 2022
8. Beyond 2022

Has your company had to lay off employees due to COVID-19 revenue loss?

1. Yes
2. No
3. Did not have employees pre-COVID

What level of staffing cuts have been made?

1. 1-25%

2. 26-50%
3. 51-75%
4. 76-100%

Which sources of capital has your company used to date through Q2 2020? (select all that apply)

1. Self-Funded/Bootstrapping
2. Friends & Family
3. Sales
4. Grant Funding
5. Angel Investors
6. Institutional Venture Capital
7. Bank Financing
8. Revolving Loans
9. Customer Advances or Investments

Which sources of capital does your company plan to pursue to meet its needs over the next 3 years (Q3 2020-2022)? (select all that apply)

1. Self-Funded/Bootstrapping
2. Friends & Family
3. Sales
4. Angel Investors
5. Institutional Venture Capital
6. Bank Financing
7. Revolving Loans
8. Customer Advances or Investments

Is your company currently raising or planning to raise capital through angel or VC investments in 2020?

1. Yes
2. No

How much capital does your company intend to raise in 2020 through angel or VC investments?

$0-500,000

$500,000-$1,000,000

$1,000,00 - $3,000,000

$3,000,000 - $10,000,000

>$10,000,000

What is the status of your company's angel or VC capital raising efforts?

1. Seeking term sheet
2. Term sheet issued, but unsigned
3. Term sheet issued, and signed

What is the status of your company's deal?

1. Canceled by investor
2. Lead investor has become unresponsive
3. The due diligence and closing process is moving as expected
4. The due diligence and closing process has slowed down
5. The funding closed and company received money

Does your company plan to raise capital through angel or VC investments in the 2021-2022 time frame?

1. Yes
2. No

How much capital does your company plan to raise through angel or VC investments in 2021-2022?

1. $0-500,000
2. $500,000-$1,000,000
3. $1,000,00 - $3,000,000
4. $3,000,000 - $10,000,000
5. >$10,000,000

Does your company intend to pursue any grants to help fund your company in the next 3 years (Q3 2020-2022)?

1. Yes
2. No

Which types of grants does your company intend to pursue?

1. SBIR (Small Business Innovation Research)
2. STTR (Small Business Technology Transfer)
3. State commercialization assistance and matching grant programs (e.g. CIT)
4. Local government grant programs
5. Foundations

For SBIR/STTR grants, to which federal agencies does your company intend to submit proposals? (please select all considerations)

1. Department of Defense (including Army, Navy, Air Force, etc.)
2. National Science Foundation (NSF)
3. Department of Health and Human Services/National Institute of Health (NIH)
4. Department of Agriculture (USDA)
5. Department of Energy (DOE)
6. National Aeronautics and Space Administration (NASA)
7. Environmental Protection Agency (EPA)
8. Department of Homeland Security (DHS)
9. Department of Education
10. Department of Commerce
11. Department of Transportation
12. We will decide based on which RFP(s) are the best fit with our innovation rather than targeting a specific agency

Any additional comments/suggestions about your experiences starting/leading a company in Region 2: ________

The last few questions will help us to better understand the demographics of entrepreneurs in our region who have taken the survey. As with all other questions in the survey, your responses are optional but would be greatly appreciated!

Please identify your primary role within your company:

1. Founder/Co-Founder
2. Chief Executive Officer
3. Chief Technical Officer
4. Chief Financial Officer
5. Chief Medical Officer
6. Other (please specify)

Founder--Gender Identity:

1. Man/Male/Masculine
2. Woman/Female/Feminine
3. Other

Founder--Race/Ethnicity (Please select all that apply):

1. American Indian or Alaska Native
2. Asian
3. Black or African American
4. Hispanic, Latino, or Spanish Origin
5. Middle Eastern or North African--For example Lebanese, Iranian, Egyptian, Syrian, Moroccan, Saudi Arabian
6. Native Hawaiian or other Pacific Islander
7. White

Appendix B: Coalition Members by Subregion

Roanoke Valley - Alleghany Highlands Coalition Member List

Name	Organization	Type
Aisha Johnson	Roanoke City	Government
Amanda Forrester	Small Business Development Center (SBDC)	Support Organization
Amy White	Virginia Western Community College (VWCC)	Higher Ed
Annette Patterson	The Advancement Foundation	Support Organization
Antwyne Callaway	SERCAP	Support Organization
Britni Arrington	SERCAP	Support Organization
Carole Tarrant	VWCC	Higher Ed
Cindy Snider	Virginia Community Capital	Support Organization
Hal Irvin	Fralin Biomedical Research Institute at VTC	Higher Ed
Heather Fay	SBDC	Support Organization
Hope Cupit	SERCAP	Support Organization
Jill Loope	Roanoke County	Government
John Phillips	RBTC	Support Organization
Joyce Waugh	Roanoke Chamber	Support Organization
Karen Messer- Bourgoin	Hollins University	Higher Ed
Katherin Elam	Junior Achievement	Support Organization
Keith Hartman	Botetourt Chamber	Support Organization
Ken McFadyen	Botetourt County	Government
Lauren Mason	SERCAP	Support Organization
Lisa Garcia	Virginia Tech	Higher Ed
Luke Campbell	Botetourt County	Government
Marc Nelson	Roanoke City	Government

Mary Miller	RAMP	Support Organization
Mike Abbott	Cambrian Design and Development	Support Organization
Nathan Flinchum	Roanoke City Public Libraries	Government
Pam Bailey	Bedford County	Government
Prachi Joshi	Carilion Clinic	Other
Sam English	CIE Partners	Support Organization
Sarah Lyon-Hill	Virginia Tech	Higher Ed
Shannon Dominguez	The Advancement Foundation	Support Organization
Sheri Winesett		Other
Steve Baker	Roanoke College	Higher Ed
Terri McClung	Alleghany Highlands	Support Organization
Tom Rowley	Roanoke County	Government
Troy Keyser	Carilion Clinic	Other
Wayne Strickland	Roanoke Valley Alleghany Regional Commission	Government
Will Stranch	SERCAP	Support Organization

New River Valley Coalition Member List

Name	Organization	Type
Amanda Forrester	SBDC	Support Organization
Andrea Hammond	COgro	Support Organization
Andrew Warren	Town of Christiansburg	Government
Annette Patterson	The Advancement Foundation	Support Organization
Brenda Rigney	Montgomery County	Government
Brian Hamilton	Montgomery County	Government
Cheryl Tucker	SBDC	Support Organization
Chris Lawrence	Town of Blacksburg	Government
Cindy Snider	Virginia Community Capital	Support Organization
Derick Maggard	Apex Center at VT	Higher Ed
Diane Akers	Blacksburg Partnership	Support Organization
James Cabler	Onward NRV	Support Organization
Jason Piche	Virginia Tech	Higher Ed
Jessica Wirgau	The Community Foundation of the New River Valley	Support Organization
John Phillips	RBTC	Support Organization
Joyendu Bhadury	Radford University	Higher Ed
Kevin Byrd	NRV Regional Commission	Government
Mark Mondry	Virginia Tech	Higher Ed
Mary Miller	RAMP	Support Organization
Nichole Hair	Town of Pulaski	Government
Nicole Luth	VT Corporate Research Center	Support Organization
Patrick O’Brien	NRV Regional Commission	Government
Sarah Lyon-Hill	Virginia Tech	Higher Ed

Sean Collins	Apex Center at Virginia Tech	Higher Ed
Shannon Dominguez	The Advancement Foundation	Support Organization
Steve Childers	Radford University	Higher Ed

Greater Lynchburg Coalition List

Name	Organization	Type
Annette Patterson	The Advancement Foundation	Support Organization
Bill Gilliam	Innovate Lynchburg	Support Organization
Bob Bailey	CAER	Support Organization
Cathie Brown	Innovate Lynchburg	Support Organization
Cheryl Giggetts	Innovate Lynchburg	Support Organization
Dean Rodgers	Amherst County	Government
Gary Christie	Central Virginia Planning District Commission	Government
Jason Ferguson	Central Virginia Community College (CVCC)	Higher Ed
John Phillips	RBTC	Support Organization
Keith Cook	Virginia CareerWorks Central	Support Organization
Keith Hartman		Other
Lori Saunders	Amherst County	Government
Mary Miller	RAMP	Support Organization
Mary Zirkle	Town of Bedford	Government
Megan Lucas	Lynchburg Regional Business Alliance	Support Organization
Mike Davidson	Campbell County	Government
Muriel Mickles	CVCC	Higher Ed
Nina Rezai	Campbell County	Government
Pam Bailey	Bedford County	Government
Rebecca Booth	University of Lynchburg	Higher Ed
Robert Stolle	Center for Innovative Technology (CIT)	Support Organization
Sara McGuffin		Government

Sarah Grant	Virginia CareerWorks Central	Support Organization
Sarah Johnson	Campbell County	Government
Scott Pleasants	Innovate Lynchburg	Support Organization
Sean Mallon	CIT	Support Organization
Shannon Dominguez	The Advancement Foundation	Support Organization
Terri Ripley	Innovate Lynchburg	Support Organization
Traci Blido	Bedford County	Government

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