National Landing Innovation District

Scoping Study Final Report

January 24th, 2025

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Technology and Industry Opportunities

1. Technology and Industry Opportunities

1.1. Introduction

1.1.1. Study Overview

Arlington County, the City of Alexandria, and the National Landing BID are developing both the concept and organizational structure for an Innovation District in National Landing. As part of this process, they are interested in identifying the industry sectors that the innovation district will focus on promoting and attracting. There is a particular interest in identifying these focus areas through the lens of emerging technologies (e.g., artificial intelligence, advanced robotics, etc.). Being able to articulate clear target industry focus areas for the innovation district is important for several reasons:

- Branding and identity of the Innovation District

- Signaling to prospective companies, tenants, and talent

- Programming, partnerships and intentionality

- Realizing economic growth potential

- Fostering additional R&D activity and investment across private, academic and institutional partners

- Informing the physical assets and infrastructure needed for a successful district

The analysis within this report provides a data-driven rationale for the three focus industries identified: Cybersecurity, Advanced Computing, and Defense Technology. Following this analysis, individual profiles are presented for each focus area, outlining its competitive strengths and opportunities for National Landing to support innovation in these specific industries. It also includes briefer profiles of additional industry and technology opportunity areas, as well as identification of some of the supporting innovation assets in and near the innovation district.

1.1.2. Methodology

The methodology developed to identify the focus industries for the innovation district has focused on three primary research questions:

1. **What industries and sectors do the region and local area already specialize in?**

This question is important because the focus areas for the innovation district need to have an existing economic competitive advantage in this region. Those industries that are already demonstrating an economic competitive advantage are identified by looking at industry specialization, or how concentrated a particular activity is in a local area. Specialization can be measured by calculating location quotients. A location quotient compares the proportion of employment (or businesses) in a particular sector at the local level compared to the national level. Any measure above 1.0 indicates specialization since employment (or businesses) are more concentrated in that particular sector at the local level compared to the national level.

Data for this analysis is drawn from the US Bureau of Labor Statistics as well as Data City, a private data provider that classifies companies using Real-Time Industrial Classifications (RTICs) rather than traditional North American Industry Classification System (NAICS) codes. Businesses are assigned to RTICs through an artificial intelligence-powered platform that allows for custom sectors to be defined and then identified using publicly available information provided online about each business.

2.   What are the important emerging technologies driving innovation and growth across the economy and how do they relate to local industry specializations?

Many of the high-value, fast growing sectors in today's global economy are driven by emerging technologies such as artificial intelligence, robotics, and the internet of things, amongst others. These technologies are summarized, and links are identified where they relate to the National Landing area, either in terms of assets or industries. The goal of this study is to identify focus areas linked to a sector specialism with technology-driven growth that will provide opportunities for new business growth, attracting private investment, and increased multi-sectoral R&D activity.
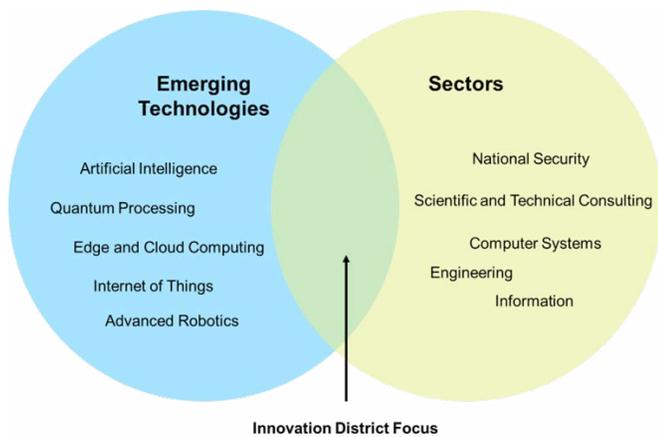
Figure: 1. Emerging Technology and Sectors

3.   What are the assets in the local area that support a strong innovation environment for particular industries?

This final research question is important because any focus area identified for the innovation district needs to not only be specialized in the area, but also needs to have the necessary supportive environment to enable innovation. While there is a wealth of academic literature on innovation systems, the diagram below (Figure 1.2) summarizes some of the fundamental components of a society and economy that are needed to support innovation.
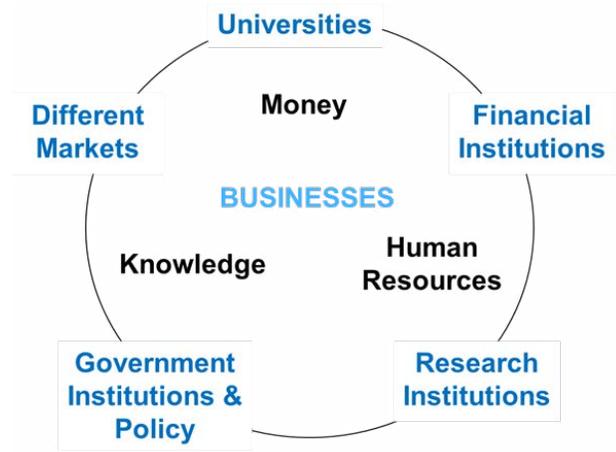
Figure: 2. Components of an Innovation Environment
Source: adapted from Akhunjonov, Umidjon & Obrenovic, Bojan & Amonboyev, Mahammadsidik. (2012). Understanding the Innovation Concept. Journal on Innovation and Sustainability. 3. 19-26. 10.24212/2179-3565.2012v3i3p19-26

At the center of this environment are businesses, who are the innovators and who need access to money (i.e., investment), knowledge (i.e., information, research), and human resources (i.e., workforce). Businesses must also be supported by and have access to the surrounding components including financial institutions, universities, research institutions, markets, institutions, and policy.

The methodology for this industry assessment therefore looks to identify, at a high level, some of the assets that support innovation in the focus industries. If an industry specialization is identified, and there is a strong innovation environment for that industry, this provides a strong rationale to be a target focus area promoted by the Innovation District.

This report is structured as follows:

- Chapter 2: Local and Regional Industry Strengths

- Chapter 3: Technology Verticals

- Chapter 4: Industry Focus Areas

- Chapter 5: Summary Findings and Potential Next Steps

1.2. Local and Regional Industry Strengths

1.2.1. Economic Development Policy

Regional studies for the Washington D.C., Maryland, and Virginia (DMV) area and policies confirm local industry strengths at the regional level and articulate support for their continued growth and investment. Cambridge Econometrics reviewed strategies such as the "2023 Growth and Diversification Plan Update" for GO Northern Virginia / Region 7, and the "Regional Economic Development Strategy" by Connected DMV.

Based on existing regional economic development plans and studies, the following sectors have been identified as priority sectors:

- Computer software (data sciences, artificial intelligence, and autonomy)

- Cybersecurity (services and products)

- Emerging Technologies (nano, material sciences, and quantum computing)

- Life Sciences (including biotech and pharma)

- Aerospace and defense

- National Security

- Aviation and Transportation

1.2.2. Local Industry Strengths

National Landing's employment base is concentrated in high-value, technology-related industries and supporting professional services.

There are a total of about 39,700 jobs currently based in National Landing. Over half of these jobs, or 52%, are based in high-value, knowledge intensive industries. The largest employment sector is Computer Systems Design (which includes a manual adjustment to include Amazon HS2 jobs). This is followed by the Federal Government and Management, Scientific and Technical Consulting Services.

Industry	Jobs	% Total
Computer Systems Design and Related Services	8,279	21%
Federal Government, Civilian	6,069	15%
Management, Scientific, and Technical Consulting Services	2,997	8%
Architectural, Engineering, and Related Services	1,457	4%
Federal Government, Military	1,264	3%
Management of Companies and Enterprises	706	2%
Other	18,958	48%
Total	39,728	

Figure: 3. National Landing Employment Base, 2024
Source: Lightcast Data provided by National Landing BID

Arlington County and City of Alexandria have high levels of employment concentrated in technology related sectors including computer systems, national security, and management scientific and technical consulting services.

The top employment sectors in Arlington Country and the City of Alexandria largely mirror the employment profile of National Landing. Delving further into the scientific research and development employment (5,300 jobs across Arlington and Alexandria) reveals that 67% of this employment is focused on R&D relating to physical, engineering, and life sciences (except nanotechnology and biotechnology). The remainder is focused on the social sciences and humanities.

Industry	Employment	Percent total	Location Quotient (employment)
Computer systems design and related services	20,400	8%	5.0
National security and international affairs	19,900	8%	20.0
Management, scientific, and technical consulting services	18,700	7%	5.8
Engineering and related services	7,900	3%	2.7
Information	7,200	3%	1.5
Scientific research and development services	5,300	2%	3.2

Figure: 4. Arlington and Alexandria, Industry Employment and Specialization, 2023
Note: The National Security and International Affairs employment includes Federal employees as well as private sector employees.
Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages

While the DC Metro region[1] has employment concentrations in similar sectors to those of Arlington and Alexandria, the level of specialization is lower compared to Arlington and Alexandria alone.

[1]   The DC Metro Region includes the following counties: Fairfax County, Virginia; Montgomery County, Maryland; Prince George's County, Maryland; Washington, District of Columbia; Prince William County, Virginia; Loudoun County, Virginia; Frederick County, Maryland; Arlington County, Virginia; Charles County, Maryland; City of Alexandria, Virginia; Stafford County, Virginia; Spotsylvania County, Virginia; Calvert County, Maryland; Fauquier County, Virginia; Jefferson County, West Virginia; Culpeper County, Virginia; City of Manassas, Virginia; Warren County, Virginia; City of Fredericksburg, Virginia; City of Fairfax, Virginia; City of Manassas Park, Virginia; Clarke County, Virginia; City of Falls Church, Virginia; Madison County, Virginia; Rappahannock County, Virginia.

Industry	Employment	Percent total	Location Quotient (employment)
Computer systems design and related services	171,100	5%	3.3
Management, scientific, and technical consulting services	111,300	4%	2.9
National security and international affairs	76,800	2%	6.1
Scientific research and development services	54,500	2%	2.2
Legal services	44,600	1%	1.2
Engineering services	43,500	1%	1.7

Figure: 5. DC Metro Region, Industry Employment and Specialization, 2023
Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages

1.2.3. Findings

The data analysis indicates that National Landing has an existing employment mix concentrated in Online Retail and Distribution (largely driven by Amazon's HQ2) and Defense and Security. These two areas make up almost half of all employment in the National Landing area. Other key employment sectors include Information and Technology, Scientific R&D, and Professional Services.

These employment sectors in National Landing are supported by the industry strengths of the broader Washington D.C. metro region. Both Arlington County and the City of Alexandria, which are home to National Landing, have employment specialization in National Security and International Affairs, Computer Systems and Design, and Management, Scientific and Technical Consulting Services. These areas of high employment concentration are mirrored at the wider regional level, showing a strong alignment at both the local and regional level and pointing towards the strongest near-term tech-driven industry opportunities for National Landing.

1.3. Technology Verticals

1.3.1. Emerging Technologies

The world's leading technologies driving growth and innovation across many industries are supported by existing assets and markets in and around National Landing. Based on interviews with a range of industry, academic, and institutional leaders and a review of past reports on National Landing, we have identified six technologies that are most frequently cited as driving growth and innovation in important growth sectors for the region.

The following analysis highlights the six identified emerging technologies and relevant information and assets related to their market opportunities in the National Landing Innovation District.

Artificial Intelligence & Machine Learning

Technology that enables computers and machines to simulate human intelligence and problem-solving capabilities.

- Identified research area for Virginia Tech's Innovation Campus.

- Primary driver of projected increase in global IT spending in 2024.

- A growing trend of more adoption of AI technology in defense and cybersecurity sectors (e.g., cyber defense, autonomous weapons, image recognition and video recognition).

Quantum Technology

Technology that works by using the principles of quantum mechanics (the physics of sub-atomic particles) and increasing processing power.

- Identified research area for Virginia Tech's Innovation Campus.

- Applications in areas including computing, communications, and sensing. Could offer unprecedented levels of security and encryption.

- Still an 'emerging technology', which has yet to be truly scaled due to challenges including high costs and technical complexities.

Telecoms and Next Gen Wireless

Next generation wireless cellular technology includes 5G, 6G, private cellular networks, and fiber.

- Virginia Tech is an international leader in wireless technology research.

- Identified research area for Virginia Tech's Innovation Campus.

- Underpins other technologies (e.g., artificial intelligence, Internet of Things, edge and cloud computing) as well as important sectors to the region such as defense.

- Digital infrastructure asset within National Landing through JBG Smith's investment in the 5G community.

Advanced Robotics

A combination of sophisticated programming and powerful hardware that make use of smart sensor technology (including ultrasonic, touch, and light sensors) to interact with the real world around it.

- Robotics market size grew by 144% between 2016-21.

- Often integrated with AI and machine learning and relies on wider digital infrastructure such as cloud and edge computing.

- Vast applications in many sectors including defense, such as drones and unmanned ground vehicles.

Edge and Cloud Computing

The capture, processing, and analysis of data at the edge of an organization's network, allowing them to work with urgent data in real time, often by only sending the most relevant data to the primary data center for faster processing.

- Enterprises that have deployed edge use cases in production will grow from about 5 percent in 2019 to about 40 percent in 2024.

- Supported by National Landing digital infrastructure.

- Vast applications across industries when paired with sensors and IoT technologies.

Internet of Things

A network of interrelated devices that connect and exchange data with other IoT devices and the cloud.

- Identified research area for Virginia Tech's Innovation Campus.

- Growth closely tied to artificial intelligence and cloud and edge computing.

- Boeing and Amazon both known for their IoT innovation in manufacturing and warehousing operations (and have a large presence in National Landing).

- Vast opportunity for diversification across sectors.

1.4. Industry Focus Areas

1.4.1. Introduction

Based on the local and regional analysis of industry concentration in Chapter 2 and emerging technologies in Chapter 3, the following industry focus areas for the innovation district have been identified:

- Cyber Security

- Advanced Computing

- Defense Technology

These three areas are at the intersection of regional industry strengths such as computer systems, national security, scientific and technical consulting, and engineering. These areas are also rapidly evolving and being shaped by the adoption of the emerging technologies including AI and machine learning, quantum computing, the Internet of Things, and cloud and edge computing. In addition, they are consistent with innovation assets for the district such as the Virginia Tech Innovation Campus, the Pentagon, and the existing presence of innovation-driven companies located in the district.

The profiles which follow provide an overview of the competitive strengths and rationale for National Landing being a location with a 'right to win' in these fields by growing and attracting businesses and R&D. Several important local assets that support the innovation ecosystem in National Landing are identified in the map below, including key existing applied research institutes, key transportation infrastructure, the US Department of Defense (Pentagon), and major corporate locations of technology companies.

Arlington

N1

N2

I6

A1 ●——— **Innovation District**

I5

A2 I4

N3

R2 I2

N4 R3

I1 **Ronald Reagan Washington International Airport**

●——— **Innovation Corridor**

R1 ●——— **Virginia Tech Innovation District**

N5 I3

H1

Alexandria

George Washington Mem Hwy

Richmond Hwy

Commonwealth Ave

Hwy 395

A1 Amazon HQ2
A2 Bloomberg Industry Group
H1 Inova Alexandria Hospital
I1 DCA Metro Rail Station
I2 Crystal City to DCA Intermodal Connector
I3 Potomac Yard Metro Rail Station
I4 JBG Smith Urban Data Center
I5 Crystal City Metro Rail Station
I6 Pentagon City Metro Rail Station
N1 Pentagon
N2 Boeing Company
N3 Lockheed Martin
N4 Leonardo DRS
N5 Institute for Defense Analyses
R1 Virginia Tech Innovation Campus
R2 Joint Innovation Lab
   ▪ AFWERX
   ▪ NAVALX
   ▪ Office of Strategic Capital
   ▪ Defense Innovation Unit (DIU)
   ▪ National Security Innovation Network
   ▪ National Security Innovation Capital
R3 Virtus Innovation Center

Tech Businesses
Healthcare
Infrastructure
National Defense
Research and Innovation
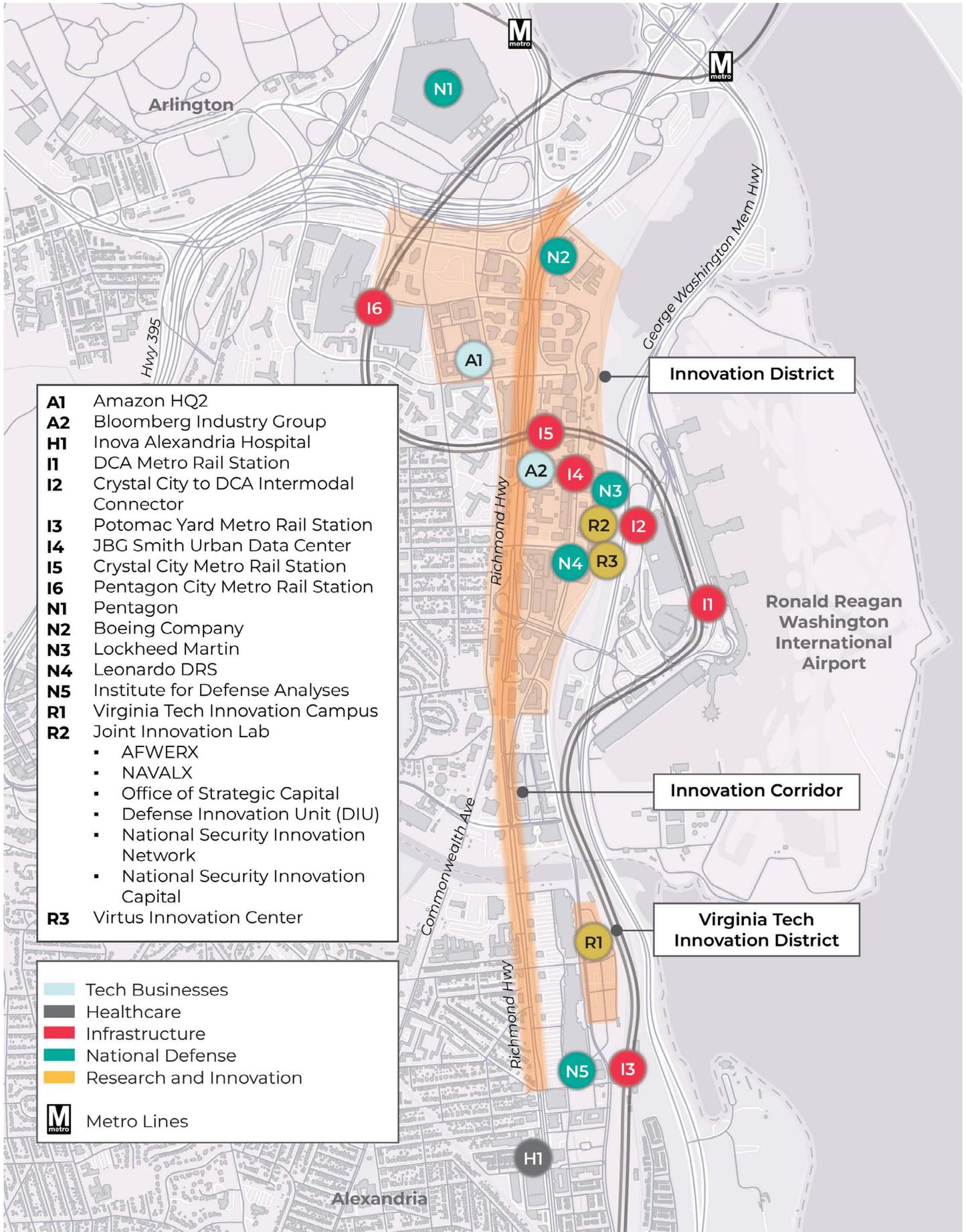
M metro   Metro Lines

Figure: 6. Industry Focus Area

1.4.2. Cybersecurity

Cybersecurity is an industry focus area that draws on the traditional sector specialisms of computer systems, engineering, and management, scientific and technical consulting. Cybersecurity is seeing a rapid increase in the adoption of new technologies including AI and generative AI. This sector services the needs of both the federal government as well as the private sector. Evidenced in the proceeding analysis, Cybersecurity is recognized as a major driver of regional economic growth, with many policy initiatives focusing on workforce and skills development.

The Northern Virginia Innovation Ecosystem for cybersecurity offers…

A strong concentration of cybersecurity businesses that is four times higher than the national average

- Fairfax, Arlington, and Loudoun have the highest concentration of cybersecurity companies in Northern Virginia.

- 40% of all cybersecurity companies across the entirety of Washington DC, Maryland, and Virginia are concentrated in Northern Virginia alone.

	Cybersecurity Business Concentration
Arlington County	4.7
City of Alexandria	2.7
Fairfax County	5.6
Loudoun County	4.2
City of Fairfax	3.8
City of Falls Church	1.4
Total	4.4

Figure: 7. Cybersecurity Business Concentration

Regional policies that identify cybertechnology as a priority growth industry

- Cybersecurity is a local strength and priority sector for growth and investment in economic development strategies of major localities in Northern Virginia.

- The R7 Northern Virginia Growth Strategy focuses on developing the cybersecurity talent pipeline with projects such as Virginia CyberSkills Academy, CyberGuild, and the Commonwealth Cyber Initiative.

Research and workforce development programs focused on Cybersecurity

- Fifteen Centers of Academic Excellence in Cyber Defense in the Washington D.C. – Baltimore area, including three based in Arlington: George Mason University, Marymount University, and Virginia Tech.

- The Commonwealth Cyber Initiative (CCI) Northern Virginia Node, which includes 10 universities and colleges focused on research, workforce development, and innovation at the intersection of cybersecurity, autonomous systems, and intelligence.

Venture capital and federal funding specifically focused on cybersecurity

- Three leading venture capital firms focused on cybersecurity are based in the local area - Sands Capital (Arlington, VA), Paladin Capital (Washington D.C.), and Gula Tech Adventures (Columbia, Maryland).

- Federal government funding and innovation programs, including the Defense Innovation Unit, the National Security Innovation Network, and the National Centers of Academic Excellence in Cybersecurity (NCAE-C) program managed by the National Security Agency (NSA).

Access to Federal Government customers and workforce

- The Department of Defense (Pentagon) represents one of the primary federal customers for cybersecurity services and is on the doorstep of the Innovation District.

- Other federal agencies with cybersecurity missions located in or near National Landing include the Air Force Office of Scientific Research (AFOSR), Defense Advanced Research Projects Agency (DARPA), Cybersecurity & Infrastructure Security Agency (CISA) and the Office of Naval Research (ONR).

The US Cybersecurity market is expected to grow by about 10% by 2030

- U.S. cybersecurity market size was valued at $67.7 billion in 2023[2].

- The U.S. accounted for 30.4% of the global customer experience management market.

- The move to cloud computing, the growth of existing and new networks, and work from home trends are a few significant drivers behind the growth of the U.S. cybersecurity market.

- Generative AI plays a significant and growing role in cybersecurity, helping to identify patterns and trends that help predict future threats.

National Landing has unique assets to support innovation in cybersecurity including...

The Sanghani Center for Artificial Intelligence and Data Analytics at the Virginia Tech Innovation Campus

- Twenty-three academic and research faculty and over 120 full-time graduate students conducting research in all areas of data science and artificial intelligence.

- Amazon-Virginia Tech Initiative for Efficient and Robust Machine Learning, an industry partnership with Amazon HQ2, located in National landing, that provides research funding, fellowships, and public research symposium focused on artificial intelligence-related research.

5G digital infrastructure within the Innovation District

- Ubiquitous fiber with pre-sired connections to almost all buildings, public areas, and street furniture.

- Plans for two urban edge data centers, acting as easy on-ramps to the cloud, locations for edge computing, and hubs for carriers and data aggregation.

- Indoor and outdoor 5G connections allowing for IoT connection, multi-gigabit speeds, and ultra-reliable low latency across the submarket.

- Over 70MHz of private CBRS mid-band spectrum, controlled by JBG Smith, available to users to enable private 5G networks for testing and scaling products on private secure cellular wireless networks.

1.4.3. Advanced Computing

Advanced Computing is an opportunity industry that sits at the intersection of sectors including Computer Systems and Engineering and a host of technologies ranging from edge and cloud computing, quantum computing, data centers, wireless, AI and more. This industry reflects the high level of digitization that has permeated across almost all sectors, and the need that individuals, businesses, and government bodies have for collecting, storing, processing, and analyzing more data, faster than ever. Amazon, an anchor company located in National Landing, is already a major provider of Advanced Computing solutions via Amazon Web Services. Its physical presence in the area and Advanced Computing offering creates a draw for supply chain and adjacent companies to co-locate The strong alignment between sector strengths at the local and regional level paired with the presence of Amazon and other local assets provide a strong rationale for the selection of this focus industry.

The Northern Virginia Innovation Ecosystem for Advanced Computing offers...

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2   U.S. Cybersecurity Market Size | Industry Report, 2030 (grandviewresearch. com)

CIC CAPTAINS OF INNOVATION
Delivering the global innovation community   ARUP   cambridge econometrics
clarity from complexity   14

A concentration of data infrastructure businesses that is three and a half times higher than the national average

- Data infrastructure, including data centers, is key to all digital activities. Data Centers house the necessary equipment and connections to store, process and distribute vast amounts of content and data.

- Northern Virginia's data center cluster routes about 70% of the world's internet traffic and is four times larger than the next largest US data center cluster.

	Data Infrastructure Business Concentration
Arlington County	2.4
City of Alexandria	1.7
Fairfax County	4.2
Loudoun County	5.5
City of Fairfax	2.9
City of Falls Church	2.0
Total	3.6

Figure: 8. Data Infrastructure Business Concentration

A concentration in the technology verticals driving the growing demand for Advanced Computing

- AI, robotics, and automation are all technologies that are driving the demand for Advanced Computing solutions due to the amount of data that is being generated and needs to be processed.

- AI businesses are concentrated in Northern Virginia – the concentration, measured by location quotient is highest in Loudoun (4.4), Fairfax (4.4), and Arlington (3.6).

- Robotics and automation businesses are concentrated in Northern Virginia and particularly in Arlington, which has a location quotient of 2.9.

Access to the federal contracting ecosystem

- Government and Defense is the largest market for Advanced Computing solutions, making access to federal government a major benefit of locating in the Northern Virginia area.

- Eight of the top ten defense contractors maintain a presence in Arlington, VA. Boeing, Raytheon, Airbus U.S. Space & Defense and Leonardo DRS are all headquartered in Arlington.

- The Department of Defense (Pentagon), which awards nearly two-thirds of all federal contracts by value, is on the doorstep of National Landing. Other key defense research agencies located in Arlington also include: the Air Force Office of Scientific Research (AFOSR), the Defense Advanced Research Projects Agency (DARPA), and the Office of Naval Research (ONR).

The global Advanced Computing market is expected to grow by a compound annual growth rate of 22.4% through to 2032

- The US Advanced Computing market was valued at USD 20.7 billion in 2023.

- Advanced Computing refers to new methodologies and technologies that are used to collect, store, and analyze large quantities of data. This includes cloud, quantum, and edge computing.

- Important drivers of growth include the increasing number of data centers and cloud computing and the rise of AI and generative AI, which require a large amount of computing power to train AI algorithms.

- Advanced Computing is fundamental to national security; Government and Defense uses represent the largest share (32%) of the US Advanced Computing market.

- Healthcare and life sciences represents the fastest growing segment for Advanced Computing solutions. The Covid-19 pandemic increased demand for computational resources in epidemiological modeling, biomedical research, and drug discovery.

National Landing has unique assets to support innovation in Advanced Computing...

The Virginia Tech Innovation Campus with four core areas of research focus that all support innovation in Advanced Computing

- The Sanghani Center for Artificial Intelligence and Data Analytics with twenty-three academic and research faculty and full-time graduate students researching data science and artificial intelligence.

- The Center for Quantum Architecture and Software Development supported by Northrop Grumman's $12.5 million investment to support quantum research and education.

- The Center for Human-Computer Interaction supported by Boeing's $50 million investment to support research in artificial intelligence, augmented reality, autonomous vehicles and more.

Amazon's HQ2, one of the leading providers of Advanced Computing solutions

- Through Amazon Web Services (AWS), Amazon has been providing advanced computing services ('compute services') to businesses for over 12 years.

- AWS invested $51.9 billion in Northern Virginia from 2011-21 in data center infrastructure. AWS has plans to invest an additional $35 billion in Virginia to establish multiple data center campuses across Virginia by 2040, further strengthening the infrastructure to support Advanced Computing.

5G digital infrastructure within the Innovation District

- Ubiquitous fiber with pre-sired connections to almost all buildings, public areas, and street furniture.

- Plans for two urban edge data centers, acting as easy on-ramps to the cloud, locations for edge computing, and hubs for carriers and data aggregation.

- Indoor and outdoor 5G allows for IoT connection, multi-gigabit speeds, and reliable low latency across the submarket.

- Over 70MHz of private CBRS mid-band spectrum, controlled by JBG Smith, available to users to enable private 5G networks for testing and scaling products on private secure cellular wireless networks.

1.4.4. Defense Technology

Defense Technology is a broad industry focus area, that capitalizes on the extensive presence of federal government defense and national security agencies located on the doorstep of National Landing. We know that the defense technology market is increasingly being disrupted by small, innovative technology companies, which are changing the landscape of innovation in the defense sector. The Department of Defense responded to their need for greater and faster innovation through their funding and innovation support programs such as those delivered by the Defense Innovation Unit (DIU).

National Landing's research capabilities in areas such as AI, Internet of Things (IoT), and edge and cloud computing, are all technologies fundamental to defense technologies. From a wider economic development perspective, it is also widely recognized that the dual-use nature of these technologies allows defense investments to have positive ripple effects in various sectors, including manufacturing, healthcare, transportation, and energy. As a result, growth in defense tech as the potential to support wider economic growth and development.

The Northern Virginia Innovation Ecosystem for Defense Tech offers…

A concentration of Defense Tech businesses that is six and a half times higher than the national average

- Arlington County alone has a concentration of Defense Tech businesses that is twice as high as Northern Virginia as a whole.

- A growing cluster of leading Defense Tech companies including Shield AI, SCOUT, Auterion, Morse, and Innovative Defense Technologies, amongst many others.

Proximity to the Department of Defense as a customer and funder of innovation

- The US Department of Defense (DoD) has taken steps to access commercial technology through new acquisition and budgeting authorities—for example, increasing the prominence of the Defense Innovation Unit and establishing the Replicator initiative.

- Federal government funding and innovation programs, including the Defense Innovation Unit, the National Security Innovation Network, and the National Centers of Academic Excellence in Cybersecurity (NCAE-C) program managed by the National Security Agency (NSA).

Access to the Federal contracting ecosystem

- Eight of the top ten defense contracting companies are based in Arlington County, as well as many other subcontracting companies.

- The DoD, which awards almost two thirds of all federal funding, is on the doorstep of National Landing. In 2023, 15% of all federal procurement dollars were awarded to companies in Northern Virginia and this has increased by 10% annually over the last five years.

- A multitude of innovation support organizations for working with both entrepreneurs and federal government, such as FedTech, the National Security Innovation Network and more.

	Defense Technology Business Concentration
Arlington County	13.1
City of Alexandria	3.2
Fairfax County	7.4
Loudoun County	3.6
City of Fairfax	6.5
City of Falls Church	5.0
Total	6.5

Figure: 9. Defense Technology Business Concentration

Workforce with federal government and military experience

- Some Defense Tech investors have signaled that they are interested in entrepreneurs who have a high 'defense IQ', meaning they come from a military background, or career service on the civilian side. This first-hand experience provides a higher ability to navigate the complexities of government procurement processes and improves chances of successfully engaging with the DoD.

- Northern Virginia is home to thousands of military veterans and service members who are transitioning to civilian life.

The Defense Technology market is rapidly evolving, with a rise of technology-focused start-ups providing innovative solutions to national security customers

- The US Defense Tech market has a projected CARG of 15.9% growing to an expected $184.7 billion by 2027.

- Defense Tech includes everything that the DOD and the broader national security infrastructure touches—including the systems infrastructure, communications and intelligence technology, cybersecurity, advanced manufacturing.

- The last decade has seen a rise of Defense Tech disruptors begin to contract with the DoD, challenging the traditional defense contractors such as General Dynamics, Lockheed Martin, and Northrop Grumman.

- The number of seed funding rounds for defense tech start-ups has increased from 22 between 2002-10 to 849 in 2018-23. Defense Tech start-ups are focusing on areas including sensing, connecting and security; advanced computing and software; biotechnology, autonomous systems, and space technology.

National Landing has unique assets to support innovation in Defense Tech including...

The Virginia Tech Innovation Campus with four core areas of research focus that all support innovation in Defense Tech

- The Sanghani Center for Artificial Intelligence and Data Analytics with twenty-three academic and research faculty and full-time graduate students researching data science and artificial intelligence.

- The Center for Quantum Architecture and Software Development is supported by Northrop Grumman's $12.5 million investment to support quantum research and education.

- The Center for Human-Computer Interaction supported by Boeing's $50 million investment to support research in artificial intelligence, augmented reality, autonomous vehicles and more.

5G digital infrastructure within the Innovation District

- Ubiquitous fiber with pre-sired connections to almost all buildings, public areas, and street furniture.

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- Over 70MHz of private CBRS mid-band spectrum, controlled by JBG Smith, is available to users to enable private 5G networks for testing and scaling products on private secure cellular wireless networks.

1.4.5. Additional Opportunity Areas

Through our analysis of regional economic data and conversations with stakeholders, we identified three additional innovation economy opportunity areas for future growth in National Landing, which are Healthcare and Life Sciences, Internet of Things, and Next Generation Wireless. It is worth noting that the area of Clean Tech was mentioned in several stakeholder interviews, particularly how it relates to the power demands to support certain industries, such as Advanced Computing via data centers. However, it was less frequently cited as a growing opportunity area for the innovation district specifically.

Further considerations on the three opportunity areas are provided below:

- **Healthcare and Life Sciences:** this sector is seeing the rapid adoption of new technologies (such as robotics) and is also driving the need for advanced computing solutions in the areas of medical research and drug discovery. With the presence of the National Institute of Health (NIH) in Washington D.C. and INOVA hospital within the innovation district itself, this area represents an opportunity area to explore for diversification and future growth. Nevertheless, it is important to note that National Landing's proximity to the existing life sciences cluster along the I-270 corridor in Maryland represents a challenge for growing this opportunity area. With demand for wet lab space extremely high in Montgomery County, Maryland, developer appetite for expanding into the National Landing area has been minimal to date.

- **Internet of Things:** this sector is closely tied to many of the emerging technologies identified. The application of IoT technology in the commercial market (e.g. warehousing, healthcare, manufacturing, etc.) is forecasted to grow and surpass the existing consumer market, which is largely driven by wearable technology. IoT has already been identified by Arlington County as a key industry, with several leading IoT companies such as DEEPSIG, FEND, and fw located in the county. Given the existing presence in the area and its close relationship with other major technologies that are a focus of the innovation district, IoT warrants further exploration as an opportunity for diversification and future growth.

- **Next Generation Wireless:** Virginia Tech is a world-leader in wireless technology research, and it has chosen this as one of its four research focus areas for its Innovation Campus in National Landing. It is well-known that wireless solutions are increasingly going to be provided as a bundled service along with cloud, telecom, hardware and software providers, including edge computing services, security and integration, and private network installation and operation. The opportunity for next gen wireless in National Landing is further supported with JBG Smith's investment in the 5G connectivity, wireless and private network infrastructure, and therefore should be further explored as a future growth opportunity.

1.5. Summary Findings and Potential Next Steps

1.5.1. Summary Findings

This analysis focused on identifying industry focus areas for the National Landing Innovation district by analyzing local economic data related to sector employment and business concentrations. It has also considered the role that emerging technologies play in those sectors already showing high levels of specialization in and around National Landing. Finally, it has identified several important assets already present in the area that will support a successful innovation environment. These strands of research have led to three proposed industry focus areas for the Innovation District:

- Cyber Security

- Advanced Computing

- Defense Technology

These innovation-driven target industry sectors represent the strongest near-term opportunities to focus business growth and attraction in National Landing, as well as partnering for investment and research funding to drive economic opportunities in the district. Other emerging technologies with strong potential for National Landing in the years ahead include health care and life sciences, the internet of things (IoT), and next generation wireless.

1.5.2. Potential Next Steps

Building from this initial phase of work investigating technology verticals and innovation-economy industry sectors, potential next steps include:

- **Completing a forward-looking economic and fiscal impact analysis** – Cambridge Econometrics will advance this work to help develop a forward-looking economic and fiscal impact analysis of the National Landing Innovation District. This will include high-level projections related to business and job growth, additional square feet of commercial building space, and tax revenue implications.

- **Establishing industry cluster groups and marketing/promotion materials** – to successfully promote and grow business/investment opportunities in the identified industry focus areas, it will be helpful to adopt best practices for industry clusters. Among potential initiatives, this could include establishing working groups of leaders/businesses in each focus area, developing industry-specific marketing and promotion materials, linking district efforts with regional target industries, convening meetings to highlight the strengths of these sectors, etc. Part of these marketing efforts will be to develop a clear 'unique selling proposition' (USP) for National Landing that articulates what sets it apart from nearby innovation districts. This can include the presence and access to large anchor companies such as Amazon, the type and pricing of physical space it offers, access to specific digital infrastructure, innovation-specific programs, and more.

- **In-depth study on space needs to support innovation start-ups and industry growth** – to further incubate, attract and support the growth of businesses in the key industries, it would be worth considering what types of spaces, including but not limited to traditional office, would most appeal to these firms and help to stimulate their growth. This could include, for example, makerspaces or low-cost incubators, as well as the programs or mentoring to help grow start-ups. Ultimately, this next step relates to establishing a broad understanding of the post-pandemic space requirements by specific industry and how the supply of certain types of space can further support and promote growth. For example, some tech-related companies (e.g., cybersecurity) report that they hire a disproportionate number of remote workers, which has implications for future physical office space needs.

- **Going deeper and further on industries, technologies and supporting analysis** – this phase of work has applied an evidence-based approach to identify tech-driven industry focus areas for the Innovation District, but much more analysis is possible to go further and deeper on these industry opportunities, profiling relevant businesses operating in each, generating more detailed estimates of local and regional economic impacts, etc. For example, this could include a deeper assessment of the stages of growth for the identified industry focus areas and technologies, and what are their needs at each stage (and what does National Landing offer?). Another idea is to go deeper on market competitiveness, how National Landing compares to other innovation districts and the region, and how to sharpen the innovation district's unique offer and differentiation from competitors.

- **Tailor innovation district programing to support industry growth –** understanding the stages of growth for businesses within the focus industries and their needs at each stage of growth should inform the wider innovation district programing plans as well as the space needs of companies within the target industries.
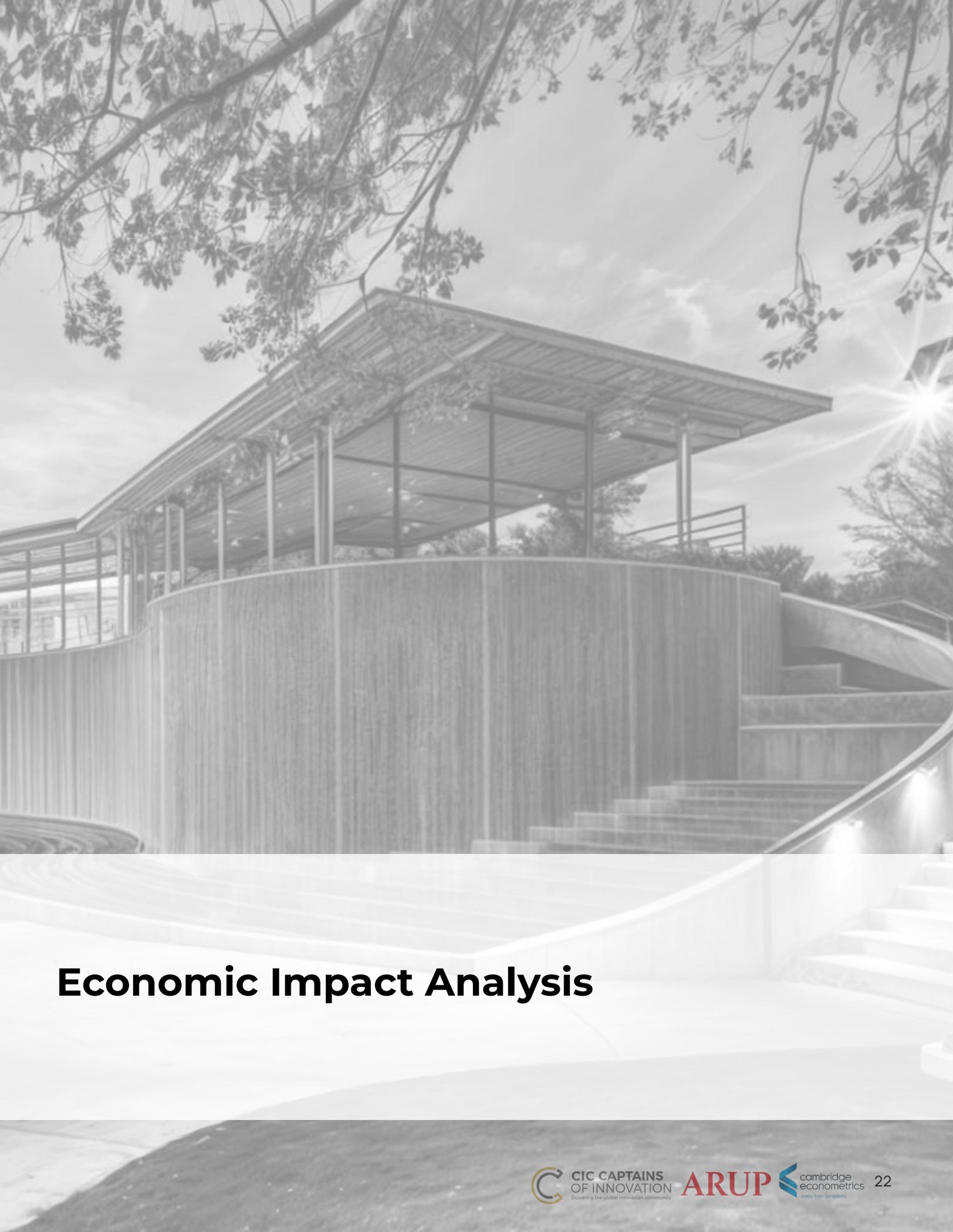
Economic Impact Analysis

2. Economic Impact Analysis

2.1. Introduction and Methods

2.1.1. Study Overview

Arlington County, the City of Alexandria, and the National Landing Business Improvement District (BID) are developing the concept and organizational structure for an Innovation District in National Landing. As part of this process, they are interested in understanding the economic impacts that could be supported by an innovation district.

This analysis considers the impact that an innovation district could have, relative to a scenario in which no innovation district is established. The impacts estimated in this analysis are quantified in terms of:

1. Number of jobs: the number of jobs based within the study area after five years and after 10 years.

2. Office space: the square feet (SF) of office space required based on the number of jobs in the study area.

3. Property tax: the estimated property tax revenue generated by the additional office space (due to job growth).

The purpose of this analysis is to provide an indication of the magnitude of the impacts that could be supported by an innovation district under different growth scenarios. Nevertheless, there are many factors at this stage that will dictate the actual impacts that are realized by establishing an innovation district. These factors range from real-time changes in the post-pandemic office market, with many industries still understanding what their in-person office needs are, to details of the district's programming and innovation support plans that will have a direct impact on business start-ups, job creation and business attraction.

2.1.2. Methodology

The methodology for this impact analysis draws on a number of datasets and follows the basic principles of an economic impact analysis.

Growth Scenarios

The analysis has modeled three specific scenarios:

1. Baseline in which there is no innovation district established,

2. Low Growth in which there is an innovation district but with modest growth, and

3. High Growth in which there is an innovation district with more accelerated growth.

The primary variable that is adjusted across all three scenarios is the rate of job growth – the innovation district scenarios have a higher growth rate applied to jobs in the innovation district focus industries[3] , compared to the rest of the local economy. These scenarios also have a higher growth rate applied to supporting industries, such as finance and accounting, which would serve the needs of the fast-growing focus industries. These elevated growth rates are adjusted between the innovation district 'low growth' and 'high growth' scenarios. The forecasted job growth for the 'no innovation district' scenario is sourced from Arlington County Employment Forecasts[4] for the years 2030 and 2035.

The employment growth rate is applied to the current number of jobs in National Landing, which is sourced from the HR&A 2024 National Landing Market Analysis developed for the National Landing Business Improvement District (BID). A key consideration is the existing and anticipated office and employment for the Amazon headquarters. The number of Amazon jobs has been carefully considered in this analysis and is included as a constant across all three scenarios. The assumption that the Amazon jobs numbers will be realized irrespective of whether there is an innovation district or not, is based on the existing job target agreement between Amazon and Arlington County. The Amazon job numbers are sourced from internal data shared by the client on October 15th, 2024.

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3   Focus industries were identified as Cybersecurity, Advanced Computing, Defense Tech in the accompanying report on technology and industry opportunities.
4   Arlington County Forecast: http://data.arlingtonva.us/dataset/232

Details of each scenario analyzed are provided in Figure: 10. Impact Scenario Growth Assumptions.

	Overall Assumptions	Job Growth Assumptions		
		Focus Industries	Supporting Industries	Rest of Economy
Baseline Scenario – No Innovation District	Employment across all sectors in National Landing grows in line with Arlington County projections.	2025-30: 6% 2030-35: 10%		
Innovation District – Low Growth	Focus industries and their supporting services grow at a rate moderately above the county projections. All other industries grow in line with county projections.	2025-30: 15% 2030-35: 25%	2025-30: 12% 2030-35: 20%	2025-30: 6% 2030-35: 10%
Innovation District – High Growth	Focus industries and their supporting services grow at a rate significantly above the county projections. All other industries grow in line with county projections.	2025-30: 35% 2030-35: 50%	2025-30: 25% 2030-35: 40%	2025-30: 6% 2030-35: 10%

Figure: 10. Impact Scenario Growth Assumptions

Office space assumptions

The demand for office space in the three scenarios is estimated using a ratio of square feet (SF) per employee. Based on the existing office space sourced from CoStar data provided by the Arlington/Alexandria client team on September 23, 2024, and the existing employment figures, the current ratio is 300 SF/employee in the National Landing area.

Research notes that post-pandemic trends are showing an average SF/employee ratio of between 200-250 SF, which reflects the trend towards hybrid and remote work (and thus less office space needed per employee). Based on this, two office space demand figures are calculated, one based on current employee density (300 SF/employee) and one using the midpoint of the hybrid/remote working range (225 SF/employee).

Office space demand is also shown in relation to the pipeline of office development projects in the National Landing area. The pipeline data has been provided by the client team. It is important to note that: a) 3.2 million SF of the pipeline represents Amazon's phase 2 building as part of its HQ2 plans; and b) completing office development projects in the pipeline is dependent on overall market conditions and the prevalence of large office user tenants.

Property tax revenue

The property tax revenue is calculated for the additional office space demand that would result from future job growth. This is calculated for all three scenarios in order to isolate the additional property tax revenue that would be generated from the innovation district scenarios. This analysis includes two types of property value and tax revenue effects: 1) new/expanded office tenants which increases the occupancy of existing buildings in the district, thus reducing the vacancy rate and increasing the value; and 2) potential for new office buildings to be constructed if and when expanded demand can justify new builds. Key assumptions underpinning this analysis include:

- A weighted average tax rate of $1.17 per $100 of property value is used based on the proportion of office space that is located in Arlington and Alexandria and the counties' respective property tax rates.[5]

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5   Arlington rate of 1.201 and Alexandria rate of 1.110

- An increase of 12% in assessed value is applied to office space that is currently vacant and will become occupied in future growth scenarios. This is based on research from the Washington D.C. Office of Revenue Analysis published in July 2024 on the relationship between vacancy and assessed value. [6]

- The assessed value for office space that has yet to be constructed, but would be needed to meet the demand of future job growth, is drawn from the average assessed value per square foot of office space in National Landing currently, which is $354 per SF. It is acknowledged that this is likely a conservative assumption and actual assessed value of new office space may be higher.

2.2. Economic Impact Results

2.2.1. Employment Impacts

The employment impacts estimate the number of jobs that could be based in the innovation district study area in the three scenarios after five and ten years.

As shown in Table 2.1, the Innovation District – High Growth scenario could lead to a 17% increase in jobs after 10 years in National Landing compared to the Baseline Scenario of no innovation district being established.

It is important to highlight that the increase in jobs compared to the 'Baseline Scenario' may seem low for National Landing, but this is due to the fact that the Amazon jobs are included in all three scenarios as a constant and represent 28,240 jobs across all three scenarios after 10 years. The fact that these jobs are held constant in all scenarios has the effect of lowering the difference between the 'Baseline Scenario' and the 'Innovation District – High Growth'. That said, the High Growth scenario would result in almost 11,000 more jobs in the district, with many of the jobs concentrated in the focus industries of cybersecurity, defense technology and advanced computing.

Existing Jobs	39,728			

Baseline Scenario	Total jobs	Innovation Industry Jobs		
Baseline +5 years	52,117	27,165		
Baseline +10 years	64,435	36,988		

Innovation District - Low Growth	Total jobs	Innovation Industry Jobs	Additional Jobs Compared to Baseline	% Change from Baseline
ID Low +5 years	53,249	27,840	1,133	2.2%
ID Low +10 years	67,829	39,025	3,394	5.3%

Innovation District - High Growth	Total jobs	Innovation Industry Jobs	Additional Jobs Compared to Baseline	% Change from Baseline
ID High +5 Years	55,740	29,340	3,624	7.0%
ID High +10 Years	75,331	43,432	10,896	16.9%

Figure: 11. National Landing Innovation District Employment Impact Results
Source: Cambridge Econometrics calculations and Arlington Country forecasts

2.2.2. Office Demand Impacts

The office space analysis begins with establishing the present-day situation in terms of office stock, vacancy level, and delivery pipeline in National Landing. These figures are important inputs to the office demand impact analysis and are set out in Figure: 12. Present Day Office Market Data for National Landing. National Landing's current office market comprises about 14.9 million SF with a vacancy rate of 20.8 percent.

	Office SF
Occupied	11,808,052
Vacant	3,102,000
Total Office	14,910,052
Pipeline	7,341,200

Figure: 12. Present Day Office Market Data for National Landing
Source: CoStar, National Landing Innovation District Client Team

The office space analysis builds on the employment analysis and considers what demand for space would be for each scenario after 10 years. It identifies a range for office demand depending upon the amount of space required per employee. Specifically, demand is calculated based on existing employment density (300 SF/employee) and based on densities with hybrid/remote work (225 SF/ employee densities). The latter reflects a lower amount of office space needed per employee with hybrid and remote working.

6   The Increasing Levels of Vacant Office Space: The Achilles' Heel of DC's Office Market | ora-cfo

As highlighted in Table 2.4, if existing office demand per employee densities (300 SF/employee) are maintained, all scenarios (including the baseline) would require more than half the pipeline to be delivered in order to meet projected demand. Based on existing office demand per employee, the high growth innovation district scenario would result in total office demand of 22.6 million SF, an increase of 10.8 million SF compared to today's office tenants in the district. In the baseline scenario, even without an innovation district but with existing space demand per employee, an additional 7.5 million SF will be required after 10 years.

However, if calculating office demand with a hybrid/remote work density (225 SF/employee), less office space is required in all scenarios. In this case, future office demand in the baseline scenario could be met by the existing stock. Whereas for the innovation district high-growth scenario, additional demand for 5.1 million SF would be created after 10 years. The low-growth scenario would see an additional demand of 3.5 million SF.

National Landing has a current office vacancy of about 3.1 million SF. Assuming a density of 225 SF per employee, between 0.4 million and 2 million SF of additional office space would be needed if the innovation district is established.

Existing office space demand per employee (300 SF / employee)

	Office Demand (SF)	Additional SF Compared to Existing Demand	Vacancy relative to		
			Current Office Stock	Current Office Stock + 25% pipeline	Current Office Stock + 50% pipeline
Baseline	19,336,155	7,528,103	-30%	-15%	-4%
ID Low (10 yrs)	20,354,506	8,546,454	-37%	-22%	-10%
ID High (10 yrs)	22,605,757	10,797,705	-52%	-35%	-22%

Hybrid/remote work office space demand per employee (225 SF / employee)

	Office Demand (SF)	Additional SF Compared to Existing Demand	Vacancy relative to		
			Current Office Stock	Current Office Stock + 25% pipeline	Current Office Stock + 50% pipeline
Baseline	14,497,905	2,689,853	3%	13%	22%
ID Low (10 yrs)	15,261,447	3,453,395	-2%	9%	18%
ID High (10 yrs)	16,949,395	5,141,343	-14%	-1%	9%

Figure: 13. National Landing Innovation District Office Demand Analysis
Source: Cambridge Econometrics calculations

It is important to note that at this stage, the office space demand estimates are illustrative of the order of magnitude of space requirement given employment levels. In practical terms, additional research should be conducted to understand what types of space will be most needed to best cater to the innovation needs of companies in the focus industries. The space demanded may not be traditional office space and instead could include flexible workspace, shared workspace or shared secure space. In addition, this analysis does not directly factor in the potential for non-profit research institutes, additional academic buildings or similar institutional users which are often prevalent in innovation districts and could add to the overall building footprint (and employees) in the district.

2.2.3. Property tax revenue

The property tax revenue analysis calculates the additional annual tax revenue that could be generated by the additional office space demand. This additional revenue is generated from both an increase in the assessed value of existing office space which is currently vacant but will become occupied, as well as from the construction of new office space.

As shown in Figure: 14. National Landing Innovation District Property Tax Revenue below, the tax revenue generated by the additional office demand is highly dependent upon the amount of office space required and therefore the SF/employee density. Considering office demand in a hybrid/remote work scenario, the innovation district could generate between $1.7 million to $8.7 million additional tax revenue, depending upon the pace of job growth. It is worth noting that these are projections that would reach this level in 10 years but represent an annual impact.

Existing office space demand per employee (300 SF / employee)

	Existing Vacant Floorspace Now Occupied (SF)	Additional New Floorspace Needed (SF)	Total Tax Revenue from Additional Office Demand	Tax Revenue Additional to Baseline
Baseline - 10 years	3,102,000	4,426,103	$ 19,912,868	$ -
ID Low - 10 years	3,102,000	5,444,454	$ 24,138,969	$ 4,226,101
ID High - 10 years	3,102,000	7,695,705	$ 33,481,542	$ 13,568,674

Hybrid/remote work office space demand per employee (225 SF / employee)

	Existing Vacant Floorspace Now Occupied (SF)	Additional New Floorspace Needed (SF)	Total Tax Revenue from Additional Office Demand	Tax Revenue Additional to Baseline
Baseline - 10 years	2,689,853	-	$ 1,339,530	$ -
ID Low - 10 years	3,102,000	351,395	$ 3,003,045	$ 1,663,515
ID High - 10 years	3,102,000	2,039,343	$ 10,007,940	$ 8,668,410

Figure: 14. National Landing Innovation District Property Tax Revenue
Source: Cambridge Econometrics calculations

2.3. Summary Findings

At this stage of the project, the economic impact analysis should be considered as an illustrative example of the magnitude of impacts that could be seen if a successful innovation district is established and supports business growth in National Landing. The analysis purposefully considers several different scenarios, in terms of employment growth rates and office space densities, to highlight the significant range of impacts that could be achieved depending upon these key variables. Important findings and takeaways from the analysis include:

- Establishing a successful innovation district could see total jobs in the National Landing area reach 75,300 after 10 years, which would be a 17% increase compared to a scenario in which no innovation district is established.

- The innovation district could create demand for an additional 5.1 million – 10.8 million SF of office space, depending on the SF per employee densities used. Taking current office into account, and the additional space that would need to be built, this demand could lead to additional annual tax income of between $20.3 million - $31.8 million compared to the scenario in which no innovation district is established.

- The amount of office floorspace that could be required to meet demands of additional employment growth in the study area is extremely sensitive to density assumptions. The analysis highlights that testing office densities that range between 225 SF/employee and 300 SF/employee has a significant impact on the amount of additional office space required and the additional tax revenue generated.

- Further work should be done to understand the type of space that the focus industries will want and that will attract them to locate in National Landing. Once a clearer picture on the type of space required is established, the real estate demand analysis can be refined and quantified.

- Amazon's Phase 2 office development included in the pipeline has a significant impact on the extent to which additional office development will be needed, particularly in the baseline scenario and low-growth innovation district scenario. When the demand for office space in these two scenarios is calculated at higher density occupation (225 SF/employee), the additional space required (2.6 million SF in the baseline and 3.5 million SF in the low-growth scenario) is almost entirely met by Amazon's committed Phase 2 building.

- Any impacts stemming from the creation of an innovation district are wholly dependent upon successful implementation of special programming, business incubation, marketing, business attraction, and fostering of innovation activities above and beyond the area's current activity.

Strategic Roadmap for Vertical Development

3. Strategic Roadmap for Vertical Development

3.1. Introduction

3.1.1. Overview

This document contains a roadmap to drive development within one or more of the target industries within National Landing that have been identified:

- Cybersecurity

- Advanced Computing

- Defense Technology

These three focus industries have been determined utilizing a data driven rationale which has shown National Landing to have a unique advantage in these sectors, over markets worldwide. Our development strategy is focused on identifying targeted verticals within these industries and activating areas where these verticals and industries are naturally clustered throughout the innovation district. We propose achieving this through programming and partnerships, while also establishing physical space dedicated to these verticals, referred to as vertical hubs.

Figure: 15. Target Hub

A vertical hub is designed to foster creativity, entrepreneurship, and technological advancement, all catering to a hyper-focused vertical or technology within a given industry. These hubs are both physical and programmatic: place-based initiatives that bring together various stakeholders, including startups, investors, government bodies, research institutions, and corporations, to support the development of new ideas, products, and services.

Vertical hubs exist within the broader innovation district and serve to concentrate talent, ideas, and capital. An innovation district may have one or more vertical hub, depending upon the district's size and concentration of assets. Programming plays an important role in driving the goals of a hub forward. As part of an innovation district, these hub-specific programs are complemented by other activities with more agnostic goals of uniting communities of innovators.. This encourages a "bump and connect" environment of serendipitous idea exchange that is crucial to drive innovation.

3.1.2. Rationale

An essential principle of innovation is that density of talent and the energy derived from dynamic interactions of individuals are fundamental drivers of the innovation process. This idea has been reinforced by several landmark studies that highlight the importance of physical proximity in fostering collaboration and creativity.

For instance, a 2017 study conducted by MIT[7] examined how the geographical proximity of faculty offices influenced the rate of patent collaboration. The findings revealed that faculty members whose offices were located closer together were more likely to engage in meaningful, productive partnerships. This study echoed the findings of an earlier research project conducted by Bell Labs[8] in 1988, which similarly explored the relationship between physical space and innovation. Bell Labs discovered that breakthroughs were often born from casual, spontaneous interactions among scientists working in close proximity to one another.
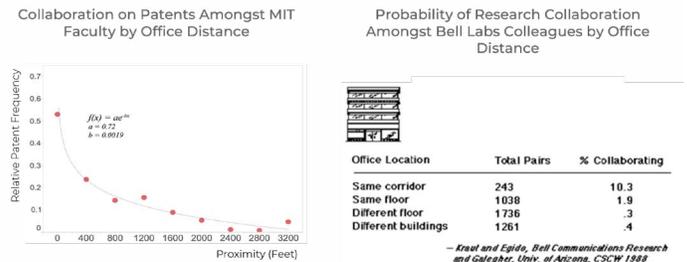

Figure: 16. Collaboration on Patents Amongst MIT Faculty by Office Distance

7 .   "An Exploration of Collaborative Scientific Production at MIT through Spatial Organization and Institutional Affiliation." Claudel, Matthew, et al. PLOS ONE, vol. 12, no. 6, 2017
8   Kraut and Egida, Bell Communications Research and Galegher, University of Arizona, CSCW 1988

Both studies underscore the critical role that physical density and the energy generated from face-to-face encounters play in accelerating innovation. Whether in academic settings or corporate environments, these insights suggest that innovation thrives in spaces where frequent, informal collaboration is encouraged — environments where ideas can easily flow and evolve through spontaneous discussions, serendipitous encounters, and the cross-pollination of ideas across disciplines. As such, creating spaces that foster high energy and close proximity should be a priority for any organization or community striving to drive innovation.

In the aftermath of the COVID-19 pandemic, the emergence of remote and hybrid work environments has brought renewed focus on the importance of physical closeness. According to their 10-year-anniversary update to their influential report, The Rise of Innovation Districts, Bruce Katz and Julie Wagner share that innovation districts are driving density.

> **Unlike many office districts, innovation districts have survived the pandemic's acceleration of remote work. Inventors in many sectors of the economy need access to technologically complex and expensive equipment and infrastructure, which is impossible to reconstruct in the proverbial garage of start-ups.**
>
> *(The Next Wave of Innovation Districts, Katz & Wagner, 2024)*

Their article maintains the importance of proximity, while noting that access to specialized tools and resources can be a valuable asset to bring people together in the post-pandemic work environment.

In examining the benefits of close proximity as it relates to vertical hubs, improvements in vertical development can be defined along the following categories:

Knowledge Sharing & Collaboration

- **Proximity fosters collaboration:** When companies, research institutions, and startups are geographically close, it's easier for them to share ideas, skills, and knowledge. Informal meetings, networking events, and joint projects happen more naturally.

- **Cross-industry innovation:** Different industries can collaborate to create new products and services, sparking creativity and innovation that might not occur in isolation.

Access to Talent

- **Attracting a skilled workforce:** Vertical hubs tend to attract top talent due to the concentration of job opportunities. Being near multiple innovative companies makes the region attractive for experts, entrepreneurs, and innovators.

- **Talent mobility:** Skilled professionals can easily move between companies within the hub, which promotes the transfer of knowledge and best practices.

Productivity & Efficiency

- **Reduced costs:** Businesses within a hub often benefit from reduced transportation and supply chain costs, as suppliers, manufacturers, and customers are all close by.

- **Faster innovation cycles:** The close proximity of firms and research institutions means that new ideas can be tested, iterated, and commercialized more quickly.

Access to Funding & Resources

- **Attracting investors:** Investors are more likely to be attracted to a region with a high concentration of innovative companies. This leads to increased funding opportunities which, in turn, draws in more high-quality startups – creating a beneficial cycle.

- **Shared infrastructure:** Vertical hubs often share essential infrastructure like labs, testing facilities, or specialized equipment, lowering costs and barriers for startups.

Ecosystem Synergies

- **Supportive environment:** When businesses cluster together in a vertical hub, ancillary service providers like legal, marketing, financial consulting, and logistics firms tend to co-locate around them, forming a supportive ecosystem.

- **Government and institutional support:** Governments are more likely to invest in infrastructure, incentives, and policies that support vertical hubs and clusters, as the economic and innovation potential is amplified.

Global Competitiveness

- **Enhanced reputation:** A strong, well-known vertical hub can enhance a region's reputation globally, making it a destination for international businesses, talent, and investment.

- **Global partnerships:** Companies in vertical hubs are more likely to form partnerships with global firms, leading to increased export opportunities and market reach.

In essence, the clustering effect of a vertical hub creates a self-reinforcing ecosystem that drives innovation, productivity, and economic growth.

Vertical hubs stand to benefit from close proximity to other hubs focused on complementary verticals. Industries and technologies may differ, but shared entrepreneurial values and community resources increase the benefit of being part of any singular hub. Hubs support each other towards accomplishing the overall goal of advancing an innovation economy. In districts with more than one vertical hub, a win for one hub is a win for all.

3.2. Strategic Roadmap | Develop Strategic Partnerships

Implementation Timeline: Month 0 – ongoing

3.2.1. Overview

As the innovation district continues to evolve, partnerships will naturally grow alongside it. Numerous potential and current collaborators can be found within the National Landing area, leveraging the district's strong local assets. However, it is equally important to explore partnerships on a broader scale, considering both national and global opportunities to maximize the district's reach and impact.

3.2.2. Actions

Identifying target verticals is crucial for shaping the direction of partnership network development. When strategically aligned, the narrative of National Landing's growth can be built around these verticals, creating an open invitation for key players in each vertical to actively engage as partners and attracting talent and investment globally.

It's worth examining a broader regional landscape to identify nearby stakeholders, even beyond National Landing's current boundaries, who may possess strengths in one or more of these focus areas. By fostering strategic partnerships, there are opportunities to expand National Landing's reach while maintaining its innovation density.

On a larger scale, consider establishing connections with other hubs across the nation and globally that are centered on complementary verticals. Tapping into developed innovation districts and ecosystems can unlock mutually beneficial partnerships, accelerating progress in shared areas of innovation.

Additionally, the federal government could prove to be a valuable ally if the innovation district aligns with its objectives. Engaging agencies like the Department of Defense and other relevant entities could help support the district's development, paving the way for collaborative innovation.

Strategic partnerships that provide access to funding sources will also be important. A key driver of success for any startup ecosystem, especially in an innovation district like National Landing, is access to early-stage capital. For startups to take their first steps, they need financial resources to develop prototypes, test concepts, and build their teams. Early-stage funding, whether through venture capital, angel investors, or seed funds, plays a critical role in enabling these startups to turn ideas into viable businesses.

Without sufficient early-stage capital, even the most promising startups can struggle to gain traction. The benefits of strong early-stage capital support include:

Fueling Growth: Capital enables startups to invest in research and development, scale operations, and enter new markets.

Reducing Risk: Investors who provide early-stage funding often bring strategic guidance, reducing the operational risks that founders face.

Attracting Talent: With funding in place, startups can attract top talent needed to build high-performing teams and execute their vision.

Strengthening the Ecosystem: A robust pipeline of early-stage capital attracts more startups, making the ecosystem more dynamic and fostering a culture of innovation.

Bridging to Later-Stage Funding: Early capital gives startups the runway to build traction, making them more attractive for later-stage investments and helping them secure follow-on funding.

For National Landing to thrive as an innovation hub, a strong foundation of early-stage capital is essential. Establishing relationships with angel investors, venture capitalists, and public-private funding initiatives will ensure startups have the financial support they need to grow and scale within the district.

3.3. Strategic Roadmap | Identify Hub Focus & Location

Implementation Timeline: Month 0 – 6

3.3.1. Overview

Driving innovation and development within each of the three focus industries hinges on achieving density. Therefore, it's essential to identify where key areas of activity for these industries already exist and a level of focus on a vertical within those industries that creates critical mass. By capitalizing on the concentration of resources and expertise within a specific industry vertical, each industry can establish a thriving vertical hub.

3.3.2. Actions

Work with key stakeholders to align on the proper focus for each vertical. The goal is to focus activity precisely enough so that the vertical hub attracts talent, partners, and sponsors. If the focus is too wide, these parties may have difficulty seeing the benefits of being a part of the hub. If the focus is too narrow, there may be an inability to achieve the density necessary to support innovation. To find the proper balance, consider the unique resources and specialized equipment that can be leveraged to make this hub stand out as the top location in the world for activity related to the vertical focus. To aid with perspective, consider what would make individuals in the global innovation ecosystem want to expend substantial resources in order to be a part of the hub.

Existing talent clusters can be leveraged by locating the hub where there is already a concentration of activity and innovation assets within the vertical. Consider locations with a high concentration of corporations, educational institutions, and innovation programs that already support the target vertical and/or broader focus industry.

Consider the vertical hub within the broader context of the district and region to find opportunities for collaboration. While each hub will be designed to achieve density and contribute significantly to its respective vertical and overarching industry, there is enough overlap between the three identified target industries (and therefore, likely enough overlap between the vertical hubs) to encourage cross-pollination of ideas. To maximize collaboration, consider the connection points and mobility between these hub locations.

3.4. Strategic Roadmap | Launch Innovation Programming

Implementation Timeline: Month 0 – 9 (to initial launch of programming)

3.4.1. Overview

World-class programming is a crucial element of successful innovation districts. Programming can activate communities at each hub and furthermore it can also bridge the hubs and bring members of each community together to create serendipitous interactions and collaboration. In a resource-rich area like National Landing, programming takes on even greater significance, connecting high-caliber universities, startups, corporations, venture capitalists, government agencies, and other key players in the innovation ecosystem.

Equally important, in a region where valuable assets are spread across Arlington and Alexandria and are not always contiguous, programming serves as the essential glue that unifies these dispersed resources and initiatives. It fosters a cohesive and collaborative innovation environment.

3.4.2. Actions

Even before vertical focuses are identified, strategic activities that will support the launch of programming can commence. Consider what programming already exists in the area within the focus industries or target verticals (when identified). In some cases, existing programming may need to be enhanced or supplemented to align with the development goals for each focus vertical. When analyzing existing programs and deciding upon new ones, important considerations include:

Alignment with Vertical Needs: Ensure the programming addresses the specific challenges and opportunities within each vertical. Programs should focus on fostering skills, knowledge, and networks that directly support vertical growth and innovation.

Cross-Sector Collaboration: Look for programming that encourages collaboration across different sectors — startups, corporations, academia, and government. This can lead to greater knowledge exchange and a more integrated ecosystem.

Opportunities for Networking and Mentorship: High-quality programming should provide ample opportunities for networking and mentorship, connecting innovators with industry and vertical leaders, investors, and mentors who can help guide their growth.

Frequency and Variety: A diverse and frequent array of events — workshops, hackathons, speaker series, pitch competitions — ensures consistent engagement and ongoing learning for community members.

Inclusivity and Accessibility: Programs should be accessible to a wide range of participants, fostering diversity and inclusion. Engaging different demographics strengthens the innovation community and brings fresh perspectives.

Scalability: Look for programming that can scale as the district grows, allowing for the seamless integration of new partners, participants, and ideas.

Global Connections: Programs that link the local ecosystem to national and international networks are crucial for expanding influence and fostering global partnerships in the focus verticals.

Commercialization of Research: Prioritize programming that helps transition research and intellectual property from academic or institutional settings into viable commercial products or services. This could include incubators, accelerators, and workshops focused on technology transfer, patenting, licensing, and securing venture funding.

3.5. Strategic Roadmap | Operate Physical Space

Timeline: Month 6-15 (to launch of vertical hub)

3.5.1. Overview

In most successful innovation districts, proximity and density are catalyzed by the presence of a central physical gathering space. This co-location of key players — researchers, startups, corporations, and institutions — creates an environment where ideas can flow freely, collaboration is organic, and innovation is accelerated.

For each of National Landing's focus verticals, establishing a dedicated, central hub should be a priority. These gathering spaces will serve as the heart of activity, offering a place where entrepreneurs, industry and vertical experts, investors, and academics can convene regularly.

This physical co-location will have several advantages:

Fostering Collaboration: A central space encourages serendipitous encounters, informal conversations, and collaborative problem-solving. Proximity increases the likelihood of spontaneous interactions, which are often the birthplace of innovative ideas and partnerships.

Resource Sharing: Certain specialized amenities can be out-of-reach to typical start-ups – for example wetlabs, a machine shop, or other state-of-the-art equipment. Shared spaces facilitate the pooling of resources that provides access to these tools, which wouldn't be available otherwise. This same concept extends further to also include knowledge-sharing and networks. This efficiency not only reduces costs but also speeds up the process of innovation as participants have easy access to what they need to advance their work.

Community Building: A dedicated hub fosters a sense of belonging and shared purpose among members of each vertical. Regular events, such as industry and vertical roundtables, hackathons, workshops, and informal meetups, can create a vibrant community where individuals feel connected and invested in the broader mission.

Attracting Talent and Investment: A well-designed, strategically placed hub can serve as a beacon for talent and capital. Entrepreneurs and innovators are drawn to spaces where innovation is visibly happening, while investors are more likely to support startups located in vibrant, collaborative environments.

Strengthening Identity: For each vertical, a central gathering space becomes a physical representation of the vertical's identity and mission. It provides a focal point for activities and messaging, reinforcing the vertical's importance within the district and beyond.

To maximize the potential of these hubs, careful thought should be given to the design, location, and function of each space. The goal is to create an environment that is not only functional but also inspiring — one that drives creativity and innovation while encouraging people to come together in new and meaningful ways.

3.5.2. Actions

A top-tier third-party operator should be considered for each of the spaces that are developed. A suitable space can be identified in partnership with the operator and a developer that shares the mission of the innovation district and hub.

A successful space for this endeavor should consider the following aspects of successful operation:

Physical

Equipment and Technical Facilities: Rare, unique, or merely very expensive equipment or facilities capabilities that startups in the given focus vertical would find compelling to have.

Beautiful Design: Build a place that is so beautiful and attractively designed, that people just want to be there. An example is the Salk Institute in La Jolla, CA.

Functional Design: Build a place that is so well designed from a functionality standpoint that people rave about working there.

Transport connections: Maximize the ease of getting to and away from the destination. And consider subsidies that shift the balance.

Amenities: Create the opportunity for participants to achieve a unique lifestyle. Amazing gym facilities, terrific food, safe streets, great school for their kids, amazing executive housing that interfaces well with work and schools, opportunities for spouses.

Community

Great members: Select and filter for members who are warm and collaborative, who you would imagine wanting to work alongside.

Culture: Recruit and develop a team that is warm, welcoming, and collaborative, that fosters a similar culture in the innovation community as a whole.

Celebrity participants: Recruit famous community participants, who are a draw because of who they are, to be based there. This is often what universities trade on. Members are often wooed with the other things on this list, but celebrity participants become attractors in their own right.

Global awareness: Select team with language and cultural skills that makes individuals of any cultural background feel at home and welcome. Use the space to create a "bubble" of healthy global culture.

Global Interconnectivity: A place will be more attractive to the extent that it is deeply connected to innovation all around the world, supporting entrepreneurs to find capital and customers and to grow internationally.

Programs & Structure

Convening: Organize gatherings (including bringing in experts from elsewhere) that transform the location into a recognized "hub" of activity and knowledge transfer in the target vertical.

Leader: Recruit an amazing person to run the operation, who has the creativity and talent to make it successful through their skills and hard work.

Customers: Build a program structured so that companies "accepted" into the location/program automatically get a "customer" as part of the deal. Some part of the network apparatus agrees to buy/pilot/use the product or service in question.

Price and Flexibility: Make the space attractively priced, and with flexible contract terms.

Funds: Create mechanisms to give participating companies unique access to capital that they couldn't get elsewhere, such as seed and first-round investment programs.

Governance Recommendation

4. Governance Recommendation

4.1. Introduction

While this report seeks to distill legal concepts, CIC and CIC Captains of Innovation do not provide legal advice. Decisions should be tested and confirmed with qualified legal and tax professionals.

4.1.1. Report Overview

This report explores various organizational structures that could be suited for the National Landing innovation district, evaluating each option's advantages and disadvantages to determine the optimal governance model. With a focus on fostering sustainable growth and effective decision-making, the report recommends a structure best aligned with the district's innovation goals and outlines proposed frameworks for its organizational design, including board structure, composition, and decision-making processes. Additionally, the report offers an implementation roadmap, detailing the essential steps for establishing the new organization and ensuring its long-term success in driving innovation and collaboration within the district.

4.1.2. Guiding Perspectives for Determining the Optimal Governance Structure

Determining the optimal structure and governance model for the National Landing innovation district requires careful consideration of several guiding perspectives. These perspectives ensure that the organization's foundation aligns with its mission, funding, execution needs, and future scalability.

Funding Sources

The selected governance structure should enable the innovation district to attract and manage a wide range of funding sources, including public, private, and philanthropic contributions. This flexibility will support the district's long-term financial sustainability, allowing it to engage in high-impact projects that enhance its innovation ecosystem. A structure that can facilitate partnerships with various stakeholders—including government entities, institutions, corporates, startups, private investors, and community organizations—will maximize funding opportunities and allow for more comprehensive development and programming initiatives.

Mission & Scope

The organization's structure should prioritize the innovation district's mission to drive economic growth, foster collaboration, and promote equitable development, rather than being solely focused on profit maximization. This includes ensuring that the scope of the organization allows it to provide cross-jurisdictional support throughout its boundaries, encompassing Arlington County and the City of Alexandria – both of which are host to significant innovation assets. This mission-driven approach will enable the district to focus on social and economic impacts that align with its long-term vision and serve the community.

Speed of Execution

To compete in the fast-evolving landscape of technology and innovation, the governance model should be equiped for efficient, decisive, and inclusive decision-making. It should be nimble and able to respond to new opportunities and challenges, whether they be regulatory change, partnership opportunities, or new technologies. An effffective governance model will support the innovation district's ability to remain agile and proactive.

Scalability

Lastly, the organizational structure should be designed to accommodate future expansion. As the district grows, the governance model should remain adaptable to new projects, stakeholders, and areas of development without needing fundamental restructuring. A scalable design will ensure that the organization can expand its reach and services over time, allowing the innovation district to grow sustainably while maintaining alignment with its core mission and objectives.

Balancing these guiding perspectives is essential to developing a governance structure that supports the district's diverse goals, enabling it to attract funding, advance its mission, execute efficiently, and scale effectively as it evolves.

4.1.3. Peer Innovation Districts as Benchmarks

Examining the governance structures of peer innovation districts provides valuable insights into the models that may be most effective for National Landing. Each peer district operates with a unique governance framework that reflects its institutional partnerships, funding sources, and community objectives. At the same time, each district shares a common theme in the important role of top tier universities, along with complementary organizations that come together to drive and support the district.

Kendall Square (Cambridge, MA)

Kendall Square is governed primarily by the Kendall Square Association (KSA), a 501(c)(6) nonprofit organization. The KSA is focused on fostering a collaborative environment among local stakeholders, including startups, research institutions, and corporations. The KSA receives strong institutional support from the Massachusetts Institute of Technology (MIT), which enhances credibility and resource access within the district. In addition to the KSA, the Cambridge Redevelopment Authority also supports Kendall Square, facilitating development and urban planning to optimize the area's innovation potential.

Figure: 17. Key stakeholders within peer innovation districts. From left to right: Kendall Square, University City, Tech Square

University City (Philadelphia, PA)

University City is largely supported by the University City District (UCD), a 501(c)(3) nonprofit organization. University City's governance is bolstered by institutional support from both the University of Pennsylvania and Drexel University, providing access to academic resources, research initiatives, and a steady flow of students and faculty who contribute to the district's vitality. Another important supporting organization is the University City Science Center, which provides a platform for collaboration across physical space and facilitates partnerships and resource-sharing among research institutions and technology firms.

Tech Square (Atlanta, GA)

Tech Square is primarily led by the Midtown Alliance, a 501(c)(3) nonprofit organization that emphasizes both economic development and community improvement. Georgia Tech provides institutional support, connecting the district with a robust pipeline of tech talent and research expertise. The Midtown Alliance works in tandem with the Midtown Improvement District, which provides funding and strategic guidance for infrastructure improvements and public space enhancements within Tech Square.

These peer innovation districts demonstrate a common theme across many innovation districts – the existence of an organization dedicated to driving the success of the innovation district, complementary organizations that support the district, along with foundational support from an anchor institution. Kendall Square, University City, and Tech Square lend insights into how the governing organization of National Landing can be structured and how it can relate to the landscape of organizations within the district.

4.2. Consideration | Governance Options

4.2.1. Governance Structures Considered

In evaluating the optimal governance structure for the National Landing Innovation District, we examined three possible models. Our process was informed by the guiding perspectives, peer innovation districts, as well as the latest thinking in innovation district governance strategy. Governance options include (1) having the National Landing Business Improvement District incorporate NLID goverance under the BID or through a new subsidiary, (2) creating a new Public Benefit Corporation, or (3) creating a new a 501(c)(3) non-profit. Each option offers advantages and challenges, reflecting different aspects of governance, funding flexibility, and alignment with district objectives.

National Landing Business Improvement District (BID)

The National Landing BID is a 501(c)(6) organization currently dedicated to promoting and enhancing the area's business, retail, restaurant, and residential community. Similar to support organizations in peer innovation districts, such as the Kendall Square Association in Cambridge and the Midtown Improvement District in Atlanta, the National Landing BID plays an essential role in activating the district and driving local engagement. The National Landing BID broadly supports all member businesses within its district. However, the currently proposed boundary excludes the Alexandria portion that was previously included within the district boundary.

Public Benefit Corporation* (New Entity):

A public benefit corporation (PBC) attempts to blend private sector efficiency with a mission-oriented focus, allowing it to balance profit maximization with social and economic impact. This model could provide the district with flexible funding mechanisms, including both private investment and public funding, while mandating a public benefit purpose aligned with the innovation district's goals. A PBC could make rapid, business-like decisions while staying accountable to its mission, balancing the need for swift execution with the flexibility to support community-centric projects. A PBC may face challenges in accessing certain grants or philanthropic funds that are sometimes only available to 501(c)(3) nonprofit entities.

*Virginia introduced the Benefit Corporation structure in 2011 under the Virginia Stock Corporation Act. As defined within the Act, a Virginia Benefit Corporation is required to: 1) have a material positive impact on society and the environment; 2) have an expanded fiduciary duty that requires consideration of non-financial interests; and 3) report on its overall social and environmental performance assessed against a third-party standard.

501(c)(3) Nonprofit Organization (New Entity):

A 501(c)(3) nonprofit organization dedicated to overseeing development and district governance would provide a mission-driven structure, prioritizing the district's long-term economic, social, and environmental goals without the constraint of profit-generation requirements. This structure would offer access to a wider range of funding sources, including grants and charitable donations, and would align with the governance models seen in peer districts like University City and Tech Square, where nonprofit governance models have enabled mission-focused development. A nonprofit model may encounter more procedural requirements that can slow the decision-making processes, however, their decision-making process is usually more inclusive of viewpoints and perspectives.

4.3. Analysis | Benefits & Challenges

4.3.1. Benefits and Challenges of Each Governance Option

	National Landing BID	Benefit Corporation	501(c)(3) Non-Profit
Funding Sources	● Community property tax assessment in place ● Tax exempt; No tax deduction for donors / grantors	● Access to traditional capital source, including impact investors ● Not tax exempt; No tax deduction for donors / grantors	● Access to grants and donations ● Private sector developers responsible for equity ● Tax exempt; Donors / grantors eligible for tax deductions
Mission & Scope	● Mission-driven control and board oversight ● Scope includes support within the boundaries of the district (excludes Alexandria)	● Legally protects the prioritization of the mission alongside profitability ● Scope dedicated to supporting innovation within target industries and district boundaries (includes Alexandria)	● Mission-driven control and board oversight ● Scope dedicated to supporting innovation within target industries and district boundaries (includes Alexandria)
Speed of Execution	● Organization already established ● Board oversight can slow down actions	● Generally simple to setup and operate ● Balancing profit and mission can slow decisions	● Board oversight can slow down actions ● Board results in more inclusive decision making
Scalability	● Complex board oversight may slow down decision-making, complicating efforts to scale efficiently	● Ability to scale similarly to a traditional corporation	● Complex board oversight may slow down decision-making, complicating efforts to scale efficiently

Figure: 18. Summary comparison of possible governance models, evaluated along the four key areas for success

4.3.2. National Landing BID

Funding Sources

Benefits from having an existing revenue source via community property tax assessments and the organization is tax exempt. However, as a 501(c)(6), it does not allow tax deductions for donors/grantors.

Mission & Scope

Benefits from being mission-driven with board oversight, however its scope excludes the Alexandria portion of the innovation district and includes activities beyond those focused on innovation.

Speed of Execution

The organization can start supporting an innovation district quickly because it is already established, but in the long-term, board oversight may slow actions.

Scalability

Board oversight and other programming can slow scaling.

4.3.3. Public Benefit Corporation (New Entity)

Funding Sources

As a for-profit organization, it can receive access to traditional corporate capital sources, which can include eligible grant opportunities. It can receive donations but lacks tax exemptions for donors.

Mission & Scope

A unique advantage is that a benefit corporation's responsibilities extend beyond merely profit interests to include intentional community benefits. This helps to legally balance mission and profitability. The corporation can be established to cover any district boundaries, including operations within both Arlington and Alexandria.

Speed of Execution

Simple to set up the organization to begin supporting the district. Long-term challenges may arise while working to balance profit and mission.

Scalability

Similar scalability potential to a traditional corporation.

4.3.4. 501(c)(3) Nonprofit (New Entity)

Funding Sources

As a charitable organization, it can access grants and donations that are only available to 501(c)(3) organizations. High-net worth donors may benefit from eligible tax deductions. Innovation districts that are nonprofits typically engage private sector developers to implement a physical masterplan. The developers are responsible for bringing equity to projects and creating a capital stack that advances real estate projects. Public funding is typically coordinated with the nonprofit on behalf of private developers on a project or district basis.

Mission & Scope

Nonprofits are mission-driven with board oversight and can be set-up to cover any geographic boundaries, including support for both Arlington and Alexandria.

Speed of Execution

Board oversight and compliance requirements can slow decisions. However, boards are typically comprised of diverse institutions, companies, public agencies, and community organizations, resulting in a more inclusive, concensus decision making process.

Scalability

Once a masterplan is in place, nonprofit staff are responsible for its implementation. Adequate staffing levels are required to advance the masterplan in a timely fashion, as understaffing slows district implementation. Best practice board policies recommend having a minimum of three, rotating classes of directors with each class serving for multiple years. This brings new ideas and experience to the nonprofit while also providing the vision and mission continuity necessary for efficient scaling.

4.4. Recommendation | Establish a Non-Profit 501(c)(3)

4.4.1. Recommendation: Non-Profit 501(c)(3)

Our recommendation for the NLID governance structure is to establish an independent non-profit 501(c)(3). This structure allows for the convening of a broadly representative board comprised of anchor institutions, companies, public agencies, and community organizations. In addition, it will provide access to diverse operational and project funding streams. This should be done using the following six-month process implemenetation roadmap.

4.5. Roadmap | Establish the Organization

4.5.1. Steps to Establish the Non-Profit 501(c)(3)

Creating a non-profit corporation for National Landing's innovation district involves a series of sequential steps that will ensure a solid, legally compliant goverance structure is created. Below is an outline of the necessary key steps for the leadership team to follow over a 6-month timespan.

1. **Create an organizational business plan that defines the purpose and priorities of the entity – Month 1**

   - Establish an operational plan describing the activities and programs the entity will carry out.

   - Define the scope, goals, and outcomes expected from the programs and activities in the district.

   - Consider examples of successful programs and activities conducted by peer entities.

   - Consider for how the activities and programs will complement and differ from existing local and regional organizations.

   - Create an organizational structure detailing the governance model and staffing plan.

   - Define performance measurements of the entity's effectiveness and impact.

2. Decide on the Basic Governance Structure of the NLID Nonprofit – Month 1

- Number of board members, both voting and nonvoting.

- Determine a list of board committees that will be required to effectively implement the innovation district.

- Finalize the vision and goals which will be included in formal organizational filings.

- Determine the term of office for members (i.e., 3 classes, 3-year terms for each class, each member can serve 3 terms before rotating off).

- Determine whether to constitute an Advisory Board that can provide advice and input as needed, as some public agencies may be prohibited from serving on a nonprofit and some invited organizations/individuals may politely turn down an invitation to serve on the board.

- Draft bylaws with legal assistance. A lawyer familiar with nonprofits will identify for the leadership team operational questions that need to be answered, which will inform board recruitment. Sample bylaws of innovation districts will be provided by CIC.

3. Formalize Boundaries – Month 1

- Before establishing a governance structure, a final decision needs to be made on the boundaries of the NLID.

- The leadership team should review the logic behind boundary scenarios, including what assets are within the boundaries and what is outside the boundaries. Thought should be given as to how the district will be promoted based on assets within and outside the boundaries.

- Then boundaries should be confirmed.

4. Identify Potential NLID Board Members & Stakeholders – Month 1

- Prior to setting up meetings with potential NLID nonprofit board members and stakeholders, the leadership team should construct a list of who ideally should be invited to serve on the nonprofit governance board based on the set boundaries.

5. Develop Background Informational Materials Prior To Meeting with Board & Stakeholder Prospects – Month 1 & 2

- Determine the expectations and responsibilities of board members, including possible financial contributions and a meeting schedule in the first year so that members will know what accepting the invitation entails.

- Reconfirm the vision and goals statements.

- Develop a draft, three-year budget.

- A PowerPoint overview should be prepared in advance of holding prospect meetings that includes the background information prepared by the leadership team.

6. Funding Strategy & Securing Startup Capital Commitments – Months 2-4

- A funding strategy and roadmap should be developed that includes corporate, public, and philanthropic prospects and goals to pursue.

- Most tech companies that fail do so because their visionary technology fails, they are undercapitalized, and/or they are understaffed in the initial years of the venture. Innovation district failures often occur for similar reasons… their vision missed the mark, they were undercapitalized, and/or they were understaffed in the early years.

- Startup funding for a minimum of three years should be identified, as it will take at least that long to establish a track record required to secure broader, sustainable funding. Many foundations want to ensure the entity is stable before giving grants, and then they often tie their funding to specific programs versus general operating budget support.

- Founding partners and stakeholders will need to be the source of startup funding prior to the district achieving fundable milestones that will broaden grant opportunities.

7. Meet With Potential NLID Board Members & Stakeholders – Months 2-4

- Once the above steps are completed by the leadership team, meetings should be scheduled with each of the prospects. In addition to providing an NLID overview, prospects should be informed that a nonprofit will be established and a public launch event held in Spring 2025.

- Ideally, these should be one-on-one meetings to get candid feedback, but a group meeting can also be considered.

- The category of stakeholders should include elected officials. Meetings should be held with each to solicit their support, as well as to explore their willingness to advocate for local, state, and federal funding.

8. Finalizing the Initial Governance & Advisory Boards (Month 5)

- Once meetings have been held with all prospects and their decisions made known to the leadership team, the team should reconvene to begin implementation efforts.

- Individuals should be identified to serve as the initial Board Chair, Secretary, and Treasurer for incorporation purposes. Though not required for incorporation, a Vice Chair should also be considered, as well. Getting sign-off will likely require going back to the individuals you wish to serve in these positions to invite them and secure their approval.

- When these steps are completed, the organization's by-laws, Articles of Incorporation, and an IRS 501c(3) application should be finalized.

9. Formally Launching the Nonprofit (Month 6)

- An initial Board meeting should be scheduled to formally review and vote on the following:

  - Election of board officers

  - Approve the district boundaries

  - Approve the draft by laws

  - Approval of the Articles of Incorporation and IRS application

  - Approve committee structure and identify committee chairs

  - Approve the first-year budget

  - Approve establishing bank accounts

  - Discuss and approve a plan for a public launch event

- Following the initial Board meeting, the Articles of Incorporation and IRS applications should be filed by legal counsel.

- During the 6th month, a website should be created as it will be necessary to begin formal fundraising following the public launch.

- The leadership team should convene a public launch event by the end of the 6th month.

10. Next Steps – Post 6 Months

- Following the formal public launch, key employees should be hired.

- With the above steps now implemented, the nonprofit will be well positioned to begin implementing the fundraising strategy. Note though corporates and foundations can make decisions sooner, typically the lead time until funding is released is 12-18 months.

- Develop and begin to implement a strategic plan to market and recruit district tenants. Strategically differentiating the district from other locations will be key to attracting attention that translates into tenancy. Everyone has land...why is NLID unique?

- Focus heavily on developing district programming. Innovation-related program offerings will be critical in the early years, allowing NLID to maintain a public voice, interest, and enthusiasm before district development milestones are manifested. Programming is the lifeblood of innovation districts.

Steering Committtment Feedback & Alignment

5. Steering Committee Feedback & Alignment

5.1. Introduction

5.1.1. Feedback & Alignment Summary

CIC Captains of Innovation (Captains) conducted a series of meetings, interviews, and workshops with a pre-selected group of steering committee members for the development of the National Landing innovation district. At times, these sessions also included the National Landing innovation district project team – the group guiding this phase of work, and whom Captains also met with regularly, outside of these targeted steering committee sessions.

These sessions took place between June and November of 2024. A list of the members that makeup the project team and the steering committee are listed below. This report summarizes the feedback and key insights we received from each of the steering committee meetings.

Project Team

Ashley Labadie, *Senior Manager, Planning & Economic Development,* **National Landing BID**

Christina Mindrup, *Vice President, Real Estate,* **Alexandria Economic Development Partnership**

Malaika Scriven, *Vice President of Planning & Development*, **National Landing BID**

Marian Marquez, *Senior Vice President,* **Alexandria Economic Development Partnership**

Michael Stiefvater, Director, *Business Investment Group,* **Arlington Economic Development**

Tally Wolff, *Manager, Innovation Ecosystem,* **Arlington Economic Development Partnership**

Steering Committee

Andrea Murray, *Senior Vice President,* **JBG Smith**

Angela Hartley, *Executive Vice President,* **National Industries for the Blind**

Brandy Salmon, *Associate Vice President for Innovation and Partnerships,* **Virginia Tech**

Brian Stout, *Senior Manager, U.S. Policy,* **Amazon**

David Schiff, *Regional Engagement Principal,* **National Security Innovation Network**

Joe Oyler, *Senior Manager, State & Local Government Operations,* **Boeing**

Kurt Schaubach, *Chief Technology Officer,* **Federated Wireless**

Lawrence Nunn, *Co-Founder & CEO,* **Cyberspatial**

Luke Knapp, *Senior Manager,* **Institute for Defense Analyses**

Melissa Riddy, *Director, Government & Community Relations,* **Inova Health System**

Rob Ganim, *Director of Government Affairs,* **Starburst Aerospace**

Ryan Touhill, *Director,* **Arlington Economic Development**

Stephanie Landrum, *President & CEO,* **Alexandria Economic Development Partnership**

Tara Palacios, *Director,* **BizLaunch, Arlington Economic Development**

Tracy Gabriel, *President & Executive Director,* **National Landing BID**

Zach Beecher, *Chief of Staff,* **America's Frontier Fund**

5.2. Workshop | Steering Committee Launch

June 5, 2024, 2 hours; In-person in Arlington, VA

Attended by **Steering Committee Members** and **Project Team Members**

5.2.1. Workshop Goals

1. Introduce the steering committee to the project and have them understand their role within the scope of this first phase of work.

2. Teach the principles of innovation districts so that each steering committee member has the same baseline understanding.

3. Receive feedback from and facilitate dialogue between the steering committee members.

5.2.2. Findings & Themes

Committee Formation: This meeting was the first time these steering committee members had been brought together – and for many, it was their first time learning about the project in detail. Many noted that they enjoyed being able to connect with this group and foster broader connections in National Landing, while working on something that they and their organizations are invested in.

Assets & Connection: It was noted several times by attendees that there is an abundance of assets and resources in the area. However, it was also shared that there's a lack of collaboration and connections between the people who work in National Landing (for example, most of the steering committee members reported having never met one another prior to this meeting). There was difficulty pointing to precisely why that was, but some examples that came up were lack of entertainment and after-hours networking locations, and security clearance concerns.

Cost of Living & Talent Growth: Many steering committee members shared a desire to drive more talent to the area to support their organizations, however most also held some concern about the cost of living in the area. For some, the current housing prices contributed to long commutes and / or talent being unwilling to relocate to National Landing.

5.3. One-on-One | Steering Committee Interviews

June 17, 2024 – July 19, 2024, 1 hour (30 minutes dedicated to vertical analysis); Virtual

Attended by **Steering Committee Members**

5.3.1. Interview Goals

1. Receive individually-focused, candid views from the steering committee members (the project team was not present in meetings to assist in this aim).

2. Understand steering committee member priorities and the importance of this innovation district – both for their organization and for them personally.

3. Utilize information received to assist in grouping like-minded individuals together in a focus group to align on a vision and mission for the district.

5.3.2. Findings & Themes

Talent: For 6 of the 14 (43%) steering committee members interviewed, talent was discussed as a top priority for them and their organization – something they would want to address with an innovation district. Specifically there was interest in making National Landing a more attractive place to attract talent to want to relocate. Methods to achieve this included addressing the cost of living, creating a more attractive live-work-play environment, and bringing in more high-quality corporations to improve opportunities to move between organizations.

Density & Programming: Following talent, the second and third most common priorities were density. Density was a top priority for 3 members while mentioned as a secondary priority by 6 additional members (64% combined). Much of this centered around a desire to reduce vacancy, increase the number of workers coming to the office, and to have more activity in the district. Meanwhile, 2 members shared programming as a top priority with 5 more holding it as a secondary priority (50%). This group also had a desire for more activity in the district, specifically focused on innovation and increasing the connection points that many feel are lacking in the area. Also mentioned as either primary or secondary priorities were entertainment (2) tax revenue(1), and DEI (1).

Double Down on Defense or Diversify the Focus: A common theme amongst steering committee members is centered around how to treat the area's relationship with the Department of Defense (DoD). Home to the Pentagon and several DoD agencies, the area has had strong economic ties to the defense industry – but some questioned how closely aligned the district should remain. This concept was discussed with 11 of the steering committee members with 5 (46%) leaning towards diversification into the private sector, and 4 (36%) leaning towards focusing on supporting the DoD (this is a spectrum with varying levels of support for either direction). One member was distinctly undecided and noted benefits of both, while another member was agnostic – noting that their organization's role is the same either way.

5.4. Focus Groups | Distric Vision & Mission

August 19, 2024 – August 27, 2024, 1 hour; Virtual

Attended by **Steering Committee Members** *and Michael Stiefvater,* **Arlington Economic Development**

5.4.1. Focus Group Goals

1. Educate the members about vision and mission statements using examples from innovation districts to bring everyone to a baseline understanding.

2. Reach alignment on a vision and mission statement within a like-minded group that has similar priorities.

3. Build teamwork and camaraderie among the steering committee members.

5.4.2. Findings & Themes

Federal Government: While the groups met independently, all the groups recognized that the proximity of National Landing to the Federal Government was a crucial asset. There were differences in how to integrate the district's mission with that of the government. For some groups, there was a desire to focus on the Department of Defense while others opted to view the vision more broadly to include other agencies of the federal government. Similarly, some preferred to focus the district on impacting the nation, while others saw the global reach of the Department of Defense as an opportunity to impact the world.

Collaboration: All groups also shared an emphasis on collaboration. This includes the non-profit, government, corporate, venture capital, and educational organizations / institutions / agencies in National Landing. Groups came to agree that this collaboration was essential for success.

People: When it comes to describing how National Landing will achieve its vision, there was alignment on focusing on the people in the district: connection, talent pipeline, and inclusivity. A desire for a focus on both increasing opportunities for diverse groups of people and finding ways to bring them together. At the same time, growing the pipeline of talent in the region through educational opportunities, entertainment options, and affordability.

5.5. Workshop | District Vision & Mission

5.5.1. Workshop Goals

1. Bring the themes from the focus groups together into alignment on a vision and mission statement.

2. Have steering committee members meet with a new, more diverse small group to strengthen alignment across perspectives and build a prospective vision and mission statement.

3. Collaborate together, in-person, to continue building relationships amongst the committee.

5.5.2. Findings & Themes

Alignment: After spending time in new groups, four vision and mission statements were developed by the steering committee. In group discussion, there was attraction to a single vision statement: "To be the nation's innovation hub where the world's greatest thinkers converge to take on global challenges to build the future". The accompanying mission statement also received broad support: "Accelerate the national capital's ecosystem that empowers innovators through world class programming, access, and connections to unlock opportunity". Still, the group did not find either statement to be a final version.

Uniqueness: A member of the steering committee pointed out that the statements should make the district's location clear to the reader. The thought was that wIthout any language that points to what makes National Landing different, the statement could be interpreted as relating to any innovation district. As an attempt to address this concern, "national capital" was added.

Additional Information: Due to the nature of this phase of work, the vision and mission statements have been worked on by the steering committee prior to their review of the findings from the vertical analysis and economic impact. This information will be shared in the November 6th follow-up meeting to aid in creating the vision and mission statements.

5.6. Workshop | Study Findings, Vision and Mission

5.6.1. Workshop Goals

1. Provide an overview of the findings of the industry analysis and economic impact studies.

2. Reach final alignment on the vision and mission, given more complete reference information.

3. Continue building relationships among committee members and get a sense formembers' willingness to invest more (or less) in this work and the development of the innovation district.

5.6.2. Findings & Themes

Momentum: After reviewing the industry analysis, a member of the steering committee shared about an RFI that had recently been put out by the Defense Innovation Unit (DIU) related to that agency's OnRamp innovation hub program. Several others in the workshop agreed that this seemed like a great opportunity for National Landing. The willingness to be on the lookout for opportunities, share them openly across the group, and be met with receptive minds highlighted a shared trust, alignment, and investment in the creation of the innovation district.

Diversification: A desire to retain focus on areas beyond the defense industry was reiterated by a steering committee member who shared that defense technology was not the top priority of their organization. This sentiment had also been shared by additional steering committee members in previous meetings. This remains a challenge for the innovation district as it develops the appropriate level of focus across the industries highlighted in the report.

Definition: The steering committee spent considerable time making significant adjustments to add clarity to the vision and mission statements. At the conclusion of the meeting, the statements looked like the following:

Vision

National Landing will be the nation's innovation hub based in **[what location?]** where the world's greatest thinkers converge with the federal government to take on national and global challenges **[which challenges?]** to build the future.

Mission

Accelerate and strengthen the defense technology, cybersecurity, and advanced computing ecosystems **[what location?]** to empower innovators through world-class programming **[what type?]**, access **[to what?]**, and connections **[to whom?]** to unlock unparalleled opportunity **[in what?]**.

For each statement, the steering committee continued the conversation of how best to define each of the bracketed words shown above. Considerable progress has been made since the previous workshop and it was clear that there was general alignment on level of aspiration (global impact) and the need to identify and leverage National Landing's unique assets (e.g. proximity to the Federal Government and Department of Defense).

Outcome: The steering committee received a survey outlining the top 4 vision and mission statements that were developed during the meeting. Below are the top vision and mission statements that were identified through this process. There are two vision statements because of a tie in the voting.

Vision 1

National Landing is the nation's innovation hub based in **the Washington DC** region where the world's greatest thinkers converge with the federal government to take on national and global challenges **to build a peaceful and prosperous** future.

Vision 2

National Landing is the nation's innovation hub based in **Northern Virginia** where the world's greatest thinkers converge with the federal government to take on national and global challenges **in defense technology, cyber security, and advanced computing to build the future.**

Mission

Accelerate and strengthen the district's defense technology, cybersecurity, and advanced computing ecosystems to empower innovators **to unlock unparalleled growth opportunities globally through connections to federal decision-makers, access to specialized equipment, and world-class programming that engages the community.**

Funding Sources Analysis and Budget Projection

6. Funding Sources Analysis and Budget Projection

6.1. Introduction

This report provides a detailed budget projection over the first three years of the organization, outlining estimated costs for key areas such as labor, programming, support and other operational expenses. a comprehensive review of funding sources and financial mechanisms to support the successful launch and growth of the governing organization for the National Landing innovation district. It includes a comprehensive review of funding sources and financial mechanisms to support the successful launch and growth of the governing organization for the National Landing innovation district. The goal is to present a clear financial roadmap that will enable the operational planning for the establishment of the organization and to identify sustainable funding avenues for long-term impact.

6.2. Budget | 3-Year Budget Projection

	Year 1	Year 2	Year 3
LABOR			
CEO or Managing Partner	$ 175,000	$ 350,000	$ 350,000
Bus. Dev. Senior Leader	$ -	$ -	$ 250,000
Programming Manager	$ -	$ 115,000	$ 115,000
Fundraiser / Resource Developer	$ -	$ 115,000	$ 115,000
Administrative Assistant	$ 40,000	$ 80,000	$ 80,000
Total Labor (est.)	$ 215,000	$ 660,000	$ 910,000
OPERATIONS			
Programming Expense	$ 200,000	$ 300,000	$ 300,000
Marketing Expense	$ 100,000	$ 150,000	$ 150,000
Rent Expense	$ 6,000	$ 24,000	$ 36,000
Total Operations (est.)	$ 306,000	$ 474,000	$ 486,000
SUPPORT			
Consultants	$ 450,000	$ 450,000	$ 300,000
Misc. SG&A	$ 250,000	$ 250,000	$ 250,000
Pro Bono Stakeholder Support	$ -	$ -	$ -
Total Support (est.)	$ 700,000	$ 700,000	$ 550,000
Total Cost	$ 1,221,000	$ 1,834,000	$ 1,946,000

Figure: 19. 3-Year Budget Projection

6.2.1. Budget Notes

Rationale

These expense categories and figures are anchored by budgets for similar innovation districts and adjusted based on reported salary figures in the National Landing area. It is focused only on innovation district operations (not vertical hub operations) and includes no major capital expenditures related to development nor significant leasing of space, due in part to the level of development already in place within National Landing. The budget does not include any potential revenue figures that may come from district operations, donations, sponsorships, grants or other funding mechanisms.

Ramp-Up Period

The budget provided takes into account a ramp up period as the organization is established. In the initial stages of district development, staffing will grow (as will associated office space needs), first beginning with the hiring of a CEO who has the gravitas required to drive the vision and mission of the district forward – along with administrative support. Additional consulting support is utilized while the district management team is built out. As the team grows, it is reasonable to assume that the need for consulting support will lessen.

Vertical Hub Considerations

At this stage, the relationship between the innovation district governing body and a vertical hub has not been defined. This budget reflects only costs directly related to managing an innovation district. It is possible that through future work, it is determined that the vertical hub should be nested within the innovation district organization. In this case, it can be expected that the labor and programming categories will be affected. For one, different management positions may be required (e.g. hub operations manager) and there may be an increased need for someone with specialized skills within the target vertical. Also, while this expanded scope would likely mean an increase in costs associated with both labor and programming, there may be synergies between the operations of the district and hub that allow for lower costs in these categories compared to a scenario where the two organizations are kept separate. This should be examined at a later phase as the vertical hub is developed.

6.3. Funding Sources | Public

To effectively fund the innovation district governing organization, there are several funding types to consider. For each type of funding, a principled strategy for identifying sources can create a mutually beneficial funding structure for the organization and the donors. The first type of funding outlined in this report is public funding.

6.3.1. Sources of Public Funding

Federal, state, and local agencies and initiatives that are highly relevant and focused on either innovation or economic and urban development (or both) should be targeted as potential funding sources of the innovation district. These include:

Federal Agencies and Initiatives

Several federal agencies provide targeted funding aimed at fostering innovation, economic growth, and urban development. By aligning with the mission and goals of these agencies, the innovation district organization can leverage federal resources to support foundational and growth activities. Key federal sources include:

National Science Foundation (NSF) – Innovation Engines

This NSF initiative funds programs and projects that drive research-based innovation and address national economic priorities, making it a fitting match for this innovation district. Support from the NSF can bolster the district's resources and reach.

Economic Development Association (EDA) – Build to Scale

The EDA's Build to Scale program specifically funds projects that contribute to economic development through entrepreneurship and technology. This aligns closely with the goals of National Landing.

Build Back Better Program

This program offers funding through grants and infrastructure investment for projects that promote economic recovery, especially in underserved communities. Targeting this initiative can support the innovation district's development goals and drive inclusive economic growth.

CHIPS Act

The CHIPS Act provides federal funding to strengthen domestic manufacturing, supply chain security, and R&D efforts. This funding source can be instrumental in building a competitive edge in tech.

State and Local Agencies and Initiatives

State and local government initiatives offer additional funding streams tailored to regional economic and urban development needs. Relevant sources may include:

Virginia Innovation Partnership Corporation (VIPC)

VIPC supports innovation and entrepreneurial ecosystems within Virginia, offering grants and investment opportunities aimed at fostering economic growth. Funding from VIPC can support a range of district needs.

Department of Defense (DoD) Initiatives

Through partnerships and funding for research, innovation, and technology transfer, the DoD provides financial support for initiatives that have national security or defense applications. These funds can enable development in areas like cybersecurity and dual-use technology.

6.3.2. Mechanisms for Public Funding

To secure funding from these sources, the innovation district organization can leverage various funding mechanisms, each suited to different project needs and stages:

Grants

Grants are a key funding mechanism provided by federal, state, and local agencies, often requiring specific alignment with the goals of the funding agency. These funds do not require repayment, making them highly attractive for projects such as infrastructure, educational programming, or economic development activities that align with government objectives.

Request for Proposal (RFP) Awards

Agencies may issue RFPs for specific projects that align with national or regional priorities. The innovation district organization can respond to RFPs from agencies like the NSF or DoD, presenting project proposals that fulfill these strategic objectives. Successful bids provide directed funding that is often substantial and can support large-scale development efforts.

Tax Credits

Government entities may offer tax incentives to encourage investment in urban development, innovation, and research. By qualifying for these credits, the organization can reduce its overall tax liability, allowing more resources to be dedicated to project development. Tax credits are particularly useful for attracting private investment and partnerships within the district.

Tax Increment Financing (TIF)

TIF is a public financing method that uses the projected increase in property tax revenues from the district to finance its initial development. By channeling these funds into infrastructure, TIF allows the district to make significant upfront investments without relying solely on external grants or loans.

6.4. Funding Sources | Corporate

Corporate funding is another critical source of financial support for the innovation district organization, offering the potential for sustainable partnerships and investments from companies aligned with the district's goals. By targeting corporations that have a vested interest in the district's focus areas and potential innovations, the organization can tap into resources that not only provide funding but also contribute to the district's relevance and market positioning.

6.4.1. Sources of Corporate Funding

When approaching corporate partners about supporting the funding of the district, the most successful approach is likely to include a focus on the following types of organizations:

Industry Leaders in the Selected Industry and/or Vertical Focus Area

Corporations that are established leaders within the district's industry focus—such as defense technology, advanced computing, or cybersecurity—are often motivated to support hubs that foster innovation within their sector. These industry leaders may provide funding to support research, development, and infrastructure within the district, helping ensure that advancements in their field are successful – while providing them with a front row seat to the latest innovations. Partnering with these corporations can also attract further investment and enhance the district's reputation as a bona-fide center of cutting-edge innovation.

Companies with a Strategic Interest in Tackling a Shared Problem

Companies with a strong interest in solving the same issues that the district's entrepreneurs seek to solve have an incentive to be involved in the district's success. For instance, corporations facing sector-specific disruptions or competitive pressures may find it beneficial to fund projects that could yield transformative solutions. This type of corporate funding often takes the form of direct investments, collaborative research funding, or in-kind support, such as technology access or expertise, which can directly enhance the district's capabilities.

Potential Buyers of Innovation Solutions

Corporations that are potential end-users or buyers of the innovations developed within the district present another significant funding opportunity. These companies often seek access to emerging technologies or solutions that align with their strategic needs, positioning them as ideal partners. By investing in the district, these companies can gain early access to relevant innovations and establish partnerships with local startups,

helping to bridge the gap between research and commercialization. Funding from these corporations can take various forms, from venture investments to sponsorships, and may also include commitments to pilot projects or early product adoption.

6.4.2. Mechanisms for Corporate Funding

Sponsorship of the District, Programming, and Space (Vertical Hubs)

Sponsorships allow corporations to visibly align with the district's mission and brand. Corporations can sponsor various elements of the district, including vertical hubs and key programs, in exchange for branding and recognition opportunities. By sponsoring dedicated spaces or programming events, companies gain a consistent presence within the district, which reinforces their commitment to innovation and can attract additional industry interest. Sponsorships can also contribute directly to the district's operational budget and capacity-building efforts.

Pro-Bono Work / In-Kind Donations

Corporations can support the district through pro-bono work and in-kind donations, offering expertise, resources, and services without monetary exchange. This form of support is often structured around specific tasks or needs that the district might otherwise lack the resources to address. Examples of valuable in-kind contributions include:

Governance Formation

Companies with experience in organizational strategy or governance can assist the district in establishing the organization, providing expertise that ensures long-term stability and efficient management.

Event Space

Corporations with suitable facilities can offer event space to the district for hosting conferences, workshops, and networking events, helping to establish the district as a central hub for innovation activities and reducing the cost of organizing events.

In-kind contributions and pro-bono support allow corporations to have a tangible impact on the district's growth while also reducing operational expenses. These mechanisms foster mutually beneficial relationships, providing the district with critical resources while enabling corporations to engage with a community dedicated to pioneering solutions.

6.5. Funding Sources | Philanthropic

Philanthropic funding provides an essential resource for advancing the mission and sustainability of the innovation district organization. By engaging with mission-aligned foundations, organizations, and individuals, the district can secure funding that supports long-term growth while aligning with broader social impact goals.

6.5.1. Sources of Philanthropic Funding

Mission-Aligned Foundations and Funds

Foundations and funds focused on economic development and innovation, are well-suited philanthropic partners. By identifying organizations whose mission aligns with the district's objectives, the organization can seek grants and contributions from entities committed to promoting social and economic progress. Examples might include foundations focused on workforce development, or one of the innovation district's focus industries and / or verticals, which complement the district's core initiatives.

Social Impact Organizations

Nonprofit organizations and impact-focused groups that share the district's goals can provide targeted funding for specific projects or programs. These organizations often prioritize partnerships that enhance community resilience, improve access to opportunities, and drive economic growth, making them ideal collaborators. Support from social impact organizations may be directed toward programming, community outreach, or workforce development within the district.

Individual Philanthropists and Donors

Individual donors committed to the district's mission and vision can be a powerful source of funding, particularly when they have a personal or professional interest in innovation, urban development, one of the target industries, or the region in general. High-net-worth individuals, industry leaders, or local philanthropists who share a passion for the district's goals may contribute through one-time donations or ongoing support. Engaging individual donors also helps to foster a network of advocates and champions for the district's initiatives.

6.5.2. Mechanisms for Philanthropic Funding

Direct Financial Donations

Financial donations from philanthropic sources are a core funding mechanism, offering flexible and often unrestricted funds that can be allocated toward the district's highest-priority needs. These donations may be structured as one-time contributions, annual gifts, or multi-year commitments, providing the district with predictable revenue streams that support its operational and programming goals. Financial donations from foundations, organizations, or individuals allow the district to address immediate needs while building capacity for long-term growth.

In-Kind Contributions

Philanthropic partners may also provide in-kind contributions, offering resources, services, or expertise that support the district's activities. In-kind donations can include equipment, supplies, consulting, or other forms of non-monetary support essential for district operations. These contributions from philanthropic partners reduce costs and enable the district to allocate more resources toward innovation and development projects.

6.6. Funding Sources | Institutional

Institutional donors play a pivotal role in supporting the innovation district organization, particularly through partnerships with nearby universities and major research institutions. These entities not only provide vital funding but also stand to benefit from an enhanced research and development pipeline that fosters innovation and collaboration.

6.6.1. Sources of Institutional Funding

Nearby Universities

Universities such as Virginia Tech and George Mason, which are in close proximity to the innovation district, are likely to seek to strengthen their ties within the innovation community in the district and enhance their research capabilities. These institutions may have dedicated funds for partnerships, research initiatives, or community development projects that align with the district's objectives. By collaborating with universities such as these, the district can tap into a wealth of academic expertise, resources, and networks, fostering a relationship that drives a cycle of innovation and educational opportunities.

Major Research Centers

Major research centers can also serve as significant sources of institutional support. These organizations typically focus on advancing knowledge and technology across various fields and may be interested in supporting projects that contribute to a robust R&D ecosystem. Institutional donors can enhance the district's research capabilities by providing funding and facilitating access to specialized knowledge and technologies.

6.6.2. Mechanisms for Institutional Funding

Financial Donations

Institutional donors can provide direct financial donations to support the innovation district's initiatives, programming, and operational costs. These donations may be structured as one-time gifts or ongoing financial commitments that help sustain the district's activities. By securing financial contributions from universities and research institutions, the district can enhance its capacity to implement innovative programs, support startups, and conduct impactful research that benefits both the district and the donors.

In-Kind Donations of Space & Programming

In addition to financial support, institutional donors often contribute in-kind resources, such as access to facilities, research labs, or educational programming. For instance, universities may offer classroom space for workshops or events, while research institutions might provide access to specialized equipment for experimentation and development. In-kind contributions can significantly reduce operational costs for the district, allowing for a more efficient allocation of resources toward strategic initiatives. Moreover, joint programming efforts with universities can enhance educational offerings, networking opportunities, and collaboration on research projects, creating a vibrant ecosystem that benefits all parties involved.

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