



# Case Studies in Innovation District Planning and Development

Dustin C. Read, Ph.D., J.D.  
Assistant Professor of Property Management  
and Real Estate  
Virginia Tech  
Blacksburg, Virginia

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and the Virginia Tech Program in Real Estate**

By  
Dustin C. Read, Ph.D., J.D.  
Assistant Professor of Property Management and Real Estate  
Virginia Tech  
Blacksburg, Virginia

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NAIOP, the Commercial Real Estate Development Association, is the leading organization for developers, owners and related professionals in office, industrial, retail and mixed-use real estate. NAIOP comprises some 18,000 members in North America. NAIOP advances responsible commercial real estate development and advocates for effective public policy. For more information, visit [naiop.org](http://naiop.org).

The NAIOP Research Foundation was established in 2000 as a 501(c)(3) organization to support the work of individuals and organizations engaged in real estate development, investment and operations. The Foundation's core purpose is to provide these individuals and organizations with the highest level of research information on how real properties, especially office, industrial and mixed-use properties, impact and benefit communities throughout North America. The initial funding for the Research Foundation was underwritten by NAIOP and its Founding Governors with an endowment fund established to fund future research. For more information, visit [naioprf.org](http://naioprf.org).

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## **About the Author**

Dustin C. Read serves as an assistant professor of property management and real estate within the College of Liberal Arts and Human Sciences at Virginia Tech. He primarily teaches courses in asset management, commercial leasing and real estate development. Read's research interests include land use policy, economic development strategies and public-private partnerships.

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## **Disclaimer**

The data collection measures included in this report should be regarded as guidelines rather than as absolute standards. The data may differ according to the geographic area in question, and results may vary accordingly. Local and regional economic performance is a key factor. Further study and evaluation are recommended before any investment decisions are made.

This project is intended to provide information and insight to industry practitioners and does not constitute advice or recommendations. NAIOP disclaims any liability for action taken as a result of this project and its findings.

# Introduction

Many municipal governments, real estate practitioners and nonprofit organizations throughout the U.S. have invested in the development of innovation districts in recent years to promote the formation and growth of knowledge-intensive businesses. This approach to economic development operates under the assumption that entrepreneurship and innovation can be stimulated by creating an environment that satisfies the space needs of companies in different lifecycle stages, while simultaneously encouraging their employees to engage in formal and informal interactions facilitating the exchange of ideas. Innovation district investments are expected to yield substantial returns in terms of economic diversification, job growth and the commercialization of new ideas in post-industrial cities, where competitive advantage often stems from product and process improvements made possible by collaboration.

The research presented in this report seeks to provide those interested in innovation district development with a better understanding of the factors contributing to the success of these projects, as well as the challenges they must frequently overcome. It also examines the structure of these transactions in terms of their design features, financing structures, partnership arrangements, leasing strategies and policy objectives in an attempt to determine how each of these elements effects a project's outcomes. Both goals are accomplished through in-depth case studies of four unique innovation districts in different phases of development. These include Cortex in St. Louis, Missouri; SkySong in Scottsdale, Arizona; Tech Center at Oyster Point in Newport News, Virginia; and Technology Square in Atlanta, Georgia. Valuable insights can be gained from all of these examples.

The next section provides an overview of academic and practitioner-oriented literature relevant to the study of innovation districts. The section headed "Research Questions, Data and Methodology" discusses these aspects of the study. This is followed by the four case studies. The final section offers concluding remarks and suggests some best practices for innovation district planning and development.



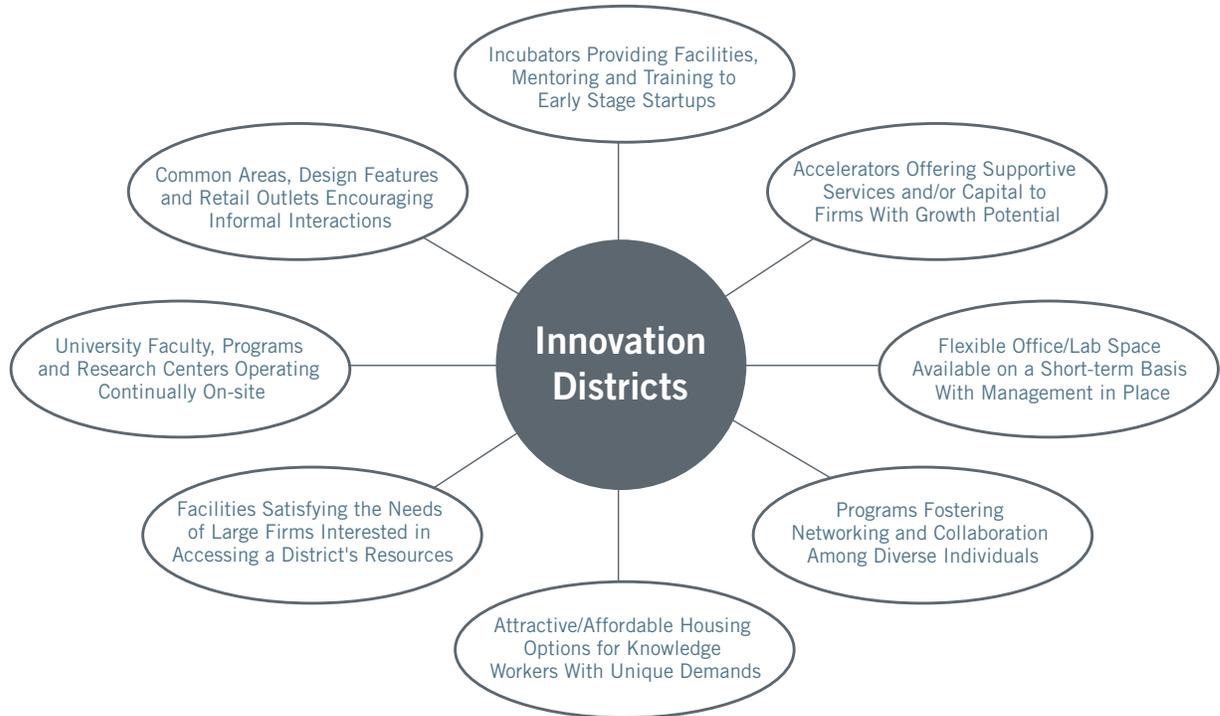
# Literature Review

The term “innovation district” is often used to describe relatively small geographic areas within cities that have high concentrations of innovative firms and entrepreneurial activity.<sup>1</sup> Some of these areas evolve organically over time, while others are the product of strategic planning on the part of both the public and private sectors.<sup>2</sup> Planned innovation districts take on a variety of different forms, but often include mixed-use development, supportive services such as training programs and networking events for emerging businesses, and design features such as activated common areas and pedestrian-friendly elements that encourage highly skilled individuals to interact on a regular basis.<sup>3</sup>

Tenants may include a combination of multinational corporations, startup firms, capital providers, universities and government entities all hoping to benefit from the exchange of ideas.<sup>4</sup> Bringing these parties together in an environment conducive to knowledge sharing is anticipated to yield significant benefits in terms of business formation, economic diversification, job growth, commercialization of intellectual property and tax-base expansion when appropriate resources and governance structures are in place.<sup>5</sup>

An influential Brookings Institution report by Bruce Katz and Julie Wagner further refines the concept of an innovation district by presenting three unique forms: “anchor-plus models,” “reimagined urban areas” and “urbanized science parks.”<sup>6</sup> The first involves relatively dense mixed-use development around an institutional anchor, such as a university or research center, that offers space for companies in related industries and supportive amenities. The second is characterized by revitalization efforts that leverage underutilized urban land and its proximity to existing nodes of economic activity. The third involves the redevelopment of low-density office or research parks into more integrated environments replete with housing, retail outlets and attractive common areas. All three types of innovation districts share some or all of the features presented in Figure 1. A combination of public and private sector financing is frequently used to incorporate these features. The resulting mix of economic assets, design elements and programs drive the causal mechanisms through which innovation districts promote economic development.

Figure 1  
**Common Features of Innovation Districts**



Successful innovation districts offer an ecosystem where knowledge-intensive businesses can thrive across multiple stages of development. For example, an entrepreneur with a compelling idea for a technology startup may initially be attracted to an innovation district by the strategic planning courses and subsidized office space available within a small business incubator. Should the venture prove viable over time, the company may move on to a nearby accelerator that provides access to venture capital, executives in residence and other resources needed to scale the enterprise. Businesses ultimately equipped to stand on their own can transition into a managed workplace environment on-site where tenants or licensees can leverage administrative support, shared-use facilities and dedicated office space at market rates with extremely flexible terms.

The company has an incentive to remain in the innovation district as it grows because the environment is comprised of entrepreneurial firms, established global corporations, research centers and government entities, all of which serve as potential sources of financial and human capital. Housing, retail outlets, recreation facilities and other amenities are also available on-site. These appeal to the knowledge workers employed by the technology company.

Furthermore, the owners and operators of the innovation district create opportunities for the technology company to actively engage with all of the resources available on-site through planned activities and design features that encourage highly skilled individuals to “collide” on a regular basis and share ideas.

The concept of an innovation district offers a lens that can be used to examine urban development projects with specific characteristics. However, bringing the aforementioned assets together in close geographic proximity in the hopes of stimulating entrepreneurial activity and innovation is an idea that has evolved over several decades in the economic development and urban planning literatures.<sup>7</sup> Figure 2 outlines a number of theoretical paradigms and contemporary economic development practices that support this proposition. Each contributes to an understanding of innovation districts by shedding light on the variables that impact the ways in which individuals and companies collaborate, compete and share knowledge. This body of work serves not only as a theoretical foundation for innovation district development, but also as a starting point to explore the potential determinants of their success or failure.

Figure 2  
**Linking Theory to Practice in the Study of Innovation Districts**  
(Relevant Concepts From the Economic Development Literature)



## **Agglomeration Economies**

Agglomeration economies have been discussed by scholars for well over a century.<sup>8</sup> Work done in this area focuses on the benefits companies in the same industry capture by locating in close proximity to each other, as well as the productivity gains that emerge across industries when a significant number of diverse companies operate in the same concentrated geographic area.<sup>9</sup> The ability to share factors of production, the development of specialized labor pools and knowledge spillovers among individuals working in both the same and disparate industries are put forth as the root causes of these outcomes.<sup>10</sup> The magnitude and pervasiveness of agglomeration economies serve as an explanation for the economic vitality of many large cities despite high land costs and traffic congestion that could impinge upon their ongoing growth.<sup>11</sup> Most modern economic development strategies, including those involving the development of innovation districts, attempt to leverage agglomeration economies in some way or another to create jobs, expand the tax base and enhance the competitiveness of the local workforce.<sup>12</sup>

## **Planned Business, Commercial and Industrial Parks**

Planned business, commercial and industrial park development began at the turn of the 20th century and continues to this day.<sup>13</sup> Early parks offered manufacturers and distributors little more than convenient access to transportation networks and the ability to reduce facility costs by sharing infrastructure.<sup>14</sup> The format of these parks has changed over time, however. Those responsible for developing these projects now devote a considerable amount of attention to amenities, design and the creation of a complementary tenant mix.<sup>15</sup> These features are extremely important to municipal governments subsidizing or supporting the development of these parks, because they dictate whether localized competitive advantages emerge.<sup>16</sup> Modern iterations of planned business, commercial and industrial parks include design elements and programs encouraging the formation of synergistic relationships among tenants. They are predecessors of innovation districts in the sense that they encourage co-location of producers as opposed to co-location of innovators.<sup>17</sup>

## **Research, Science and Technology Parks**

The development of research, science and technology parks accelerated dramatically in the 1960s and 1970s in an attempt to create stronger linkages among entrepreneurs, established firms, universities and the public sector.<sup>18</sup> These projects often offer deeply discounted office/lab space to startup companies on a short- or long-term basis, along with shared-use facilities and programs fostering collaboration among tenant groups.<sup>19</sup> Universities often participate in the development of such parks to obtain external funding, accommodate technology transfer between academia and industry as well as to monetize their intellectual property by selling or licensing it to the private sector for product development, marketing and distribution.<sup>20</sup> Entrepreneurs are attracted by the resources available on-site

and the ability to legitimize their operations through affiliations with sophisticated companies and institutions of higher education.<sup>21</sup> Established corporations choose to locate some or all of their operations in these parks to lower their production costs and address human resource shortfalls.<sup>22</sup>

The success of a research, science or technology park as a whole is typically measured in terms of business formation, patent production and employment growth in technology-intensive industries.<sup>23</sup> Some of these parks have evolved into innovation districts over time through the inclusion of housing, retail outlets and amenities catering to knowledge workers.<sup>24</sup>

### **Public-private Partnerships and Neoliberal Urban Policy Agendas**

Public-private partnerships designed to promote entrepreneurship and innovation through real estate development are to some degree a manifestation of neoliberal urban policy agendas, which started to grow rapidly in number in industrialized countries from the 1980s onward.<sup>25</sup> These policies reflect the contention that cities are replacing countries as the geography of importance in the global economy, as barriers preventing the free flow of financial and human capital have fallen.<sup>26</sup> Cities must therefore proactively transform their built environments in ways that are conducive to the accumulation of these resources if they hope to grow and prosper.

Local governments frequently rely on this underlying logic as a justification for supporting speculative real estate development projects through the provision of subsidies, infrastructure improvements and assistance throughout the regulatory entitlement process.<sup>27</sup> These investments are commonly defended on economic grounds as a means of generating positive externalities such as urban revitalization and addressing market failures like high transaction costs and imperfect information that historically serve as impediments to business formation in urban areas.<sup>28</sup> The theoretical underpinnings of innovation district development largely conform to neoliberal ideology.

### **Innovative Milieus**

The study of innovative milieus dates from the mid-1980s and is a product of interest in why some areas tend to be more economically dynamic than others.<sup>29</sup> This theoretical paradigm readily acknowledges that companies co-locate to share resources and take advantage of agglomeration economies, but it places more emphasis on the formation of formal and informal governance structures such as interfirm relationships and codes of conduct that develop over time to support collaborative activities.

Geographic proximity is hypothesized to reinforce behavior norms, create trust and establish a common sense of purpose among companies, facilitating cooperation and the exchange of ideas.<sup>30</sup> Firms operating within innovative milieus become accustomed to responding collectively to shared challenges and opportunities, which makes them more competitive in the global economy.<sup>31</sup> The geographically constrained competitive strengths derived

from this type of environment are particularly attractive to local policymakers because they are difficult to reproduce elsewhere.<sup>32</sup> Innovation district advocates tend to embrace many perspectives of innovative milieu theorists.

### **Economic Development Clusters**

Cluster theory gained prominence in the early 1990s as a means of explaining the disparate economic conditions of cities and regions throughout the world, despite the relative ease of transmitting information across long distances and globally sourcing factors of production such as capital, labor and materials.<sup>33</sup> It differs from its predecessors by attributing the economic success of geographic areas to fierce competition among local firms, which requires them to continually innovate in order to satisfy the discerning demands of their customers.

Competition, rather than collaboration, is put forth as the primary driver of product and process improvements that strengthen the global market position of local firms and, in turn, enhance the economic vitality of the cities and regions in which they are located. Related and supportive industries are anticipated to emerge in a cluster around these competitive firms, thereby contributing to an area's long-term economic growth. Policymakers can ballast these clusters by ensuring that specialized human capital, infrastructure and institutions are in place to support the specific interests of the cluster.<sup>34</sup> Cluster theory, like innovative milieus and innovation districts, appeals to local policymakers because global competitive advantage is hypothesized to have local origins that can be nurtured.<sup>35</sup> Investments in relatively small geographies may therefore translate into global competitiveness.

### **Knowledge Worker Attraction and Retention Strategies**

Terms such as the “creative class” and the “knowledge worker” became part of the popular lexicon in the early 2000s.<sup>36</sup> Both describe highly skilled and imaginative individuals who have a great deal of discretion as to where they work and live. Many local governments continue to invest heavily in creating environments anticipated to be attractive to members of these broadly defined groups, because of the increasing mobility of human capital and the growing recognition of the role innovation plays in post-industrial economies.<sup>37</sup>

Common strategies involve public support for private sector real estate developments offering walkable environments, high-end amenities and a mix of land uses that blur the lines of demarcation between work and recreation. Proximity to a dense urban core may make little difference, so long as highly skilled workers are provided with the technological infrastructure required to do their jobs, access to diverse housing options and recreational amenities catering to their unique tastes, income level and stage of life.<sup>38</sup> The ability to attract knowledge workers is fundamental to innovation district development.

## **Knowledge-based Urban Development Policies**

Knowledge-based urban development policies implemented at the municipal level have been widely discussed in the academic literature since the mid-2000s. They have three prongs.<sup>39</sup> The first prong involves the endogenous development of human capital through the provision of training programs and access to institutions of higher education. The second prong involves the attraction of exogenous human capital through the development of amenities, housing options, infrastructure and other physical assets expected to appeal to knowledge-workers. The third prong involves systematic efforts to create opportunities for highly skilled individuals to communicate and exchange ideas on a regular basis.

All three of these interrelated goals are hypothesized to be advanced when multiple knowledge-creating enterprises are anchored in the same geographic area in a physical environment that encourages interaction among startups, larger firms, capital providers, universities and supportive governmental institutions such as economic development agencies.<sup>40</sup> Creating the right mix helps local centers of economic activity plug into global economic networks. Many innovation districts are the product of knowledge-based urban development policies.

## **Design Elements Encouraging Tacit Knowledge Exchange**

Competing and complementary theories of economic development offer a robust discussion of the benefits that knowledge-based enterprises capture by locating in close geographic proximity to each other. Nonetheless, most have little to say about the physical characteristics of places that encourage individuals to share ideas.<sup>41</sup> These features of the built environment are important because tacit or implied knowledge exchange appears to occur most effectively via face-to-face communication.<sup>42</sup> Architecture and urban design scholars have addressed this gap in the literature in recent years by presenting a series of recommendations.

Some of these recommendations pertain to the design of tenant space, while others pertain to the design of common areas. In the aggregate they focus on encouraging impromptu collisions among innovative people.<sup>43</sup> Examples include liberally mixing land uses such as housing, office and retail space; incorporating common areas where people can meet; pushing parking facilities to the periphery of projects to promote pedestrian mobility; limiting the size of private meeting rooms to force tenants to use shared spaces; creating large and inviting public areas; providing co-working space available to both individuals working on-site and visitors; and explicitly taking into account the housing and recreational needs of the younger adults who comprise a large portion of the knowledge workforce.<sup>44</sup> These features can help maximize the impact of innovation district development.

## Tenant Mix Optimization

Economic development theory suggests that real estate developers and policymakers who hope to create environments supportive of entrepreneurial activity and knowledge diffusion must devote a significant amount of attention to tenant mix optimization, in addition to design features. The presence of too many large firms may stifle the growth of smaller ones because of disparities in their respective abilities to attract human capital and capture institutional resources.<sup>45</sup> At the same time, the absence of large firms may draw a project's legitimacy into question and discourage startups from locating in the area.

Decisions must also be made about the diversity of the tenant mix. Too much diversity may dissuade individuals or companies from working together because they operate from different cognitive frameworks, while too little diversity may prevent product or process innovations that are only possible through cross-industry collaboration. These factors may require innovation district developers to ensure that all leasing decisions advance the mission of their projects, while also managing the amount of cognitive distance among tenants.<sup>46</sup>

# Research Questions, Data and Methodology

How are innovation district development transactions structured? What factors contribute to their success? The case studies in this report address both of these questions. Figure 3 offers a brief description of each. These innovation districts were chosen because they are geographically dispersed, involve different developers and are located in dissimilar spatial environments. These points of differentiation are advantageous in an effort to identify generalizable best practices in the planning and development of innovation districts that are applicable across contextual settings.

Figure 3  
**Innovation Districts Examined in This Report**



## **Cortex**

Cortex is located on approximately 200 acres in Midtown St. Louis, Missouri, and will include over 4.5 million square feet of office, lab, multifamily and retail space at buildout. It is a product of a partnership among BJC HealthCare, the Missouri Botanical Garden, St. Louis University, the University of Missouri-St. Louis and Washington University. Some of the key tenants include Dupont, Ikea and Square, as well as entities affiliated with several members of the development team.



## **SkySong**

SkySong is located on a 42-acre site in Scottsdale, Arizona, and will include over 1.2 million square feet of commercial space at buildout, in addition to 325 luxury apartment units. Arizona State University partnered with the city of Scottsdale, The Plaza Companies, UAA Real Estate and Holoaloe Companies to bring the project to fruition. Some of the key tenants include Solugenix, Theraanos, Ticketmaster and Yodle, along with a host of other emerging technology and research firms.



## **Tech Center at Oyster Point**

Tech Center at Oyster Point is a development project currently underway in Newport News, Virginia, that will include a Whole Foods-anchored retail center, integrated research park and 288 luxury apartments on 100+ acres of land at completion. The city of Newport News partnered with a development team comprised of W.M. Jordan Company, S.J. Collins Enterprises and Ellis-Gibson Development to complete the transaction. Professionals affiliated with the Virginia Tech Corporate Research Center were also brought in to guide the marketing and leasing efforts.



## **Technology Square**

The first phase of Technology Square was completed in 2003 and included over 1.3 million square feet of commercial space on eight city blocks. Gateway Development Partners, Georgia Tech, the Georgia Tech Foundation, Kim King Associates and the University Finance Foundation participated in the project to better connect Georgia Tech's main campus to Midtown Atlanta. Tenants include Barnes and Noble, the Scheller College of Business and several corporate research centers.

Information about the four innovation districts profiled in this report was obtained through archival research, as well as through a series of semi-structured interviews conducted on an opportunistic basis with individuals participating in or familiar with one of the aforementioned projects. In total, 40 people were interviewed; these included development team members, other real estate professionals, elected officials, urban planners, economic developers and other knowledgeable stakeholders. Data collected from each of these sources was used to construct a chronological account of each project, to explore its determinants of success and to identify potential challenges moving forward.

The interviews were guided by a series of open-ended questions addressing various facets of innovation district planning and development. Interviewees were asked to discuss the characteristics of the project with which they were familiar, the stakeholders involved and the features included to promote innovation. In addition, interviewees were encouraged to identify things that could have been done better in a given project and to recommend best practices to others interested in innovation district development. Participants were given considerable flexibility to talk about any issues they deemed important. The interview results and archival research are presented in the following four case studies.

# Case Study: Cortex Innovation Community

The Cortex Innovation Community is an innovation district comprised of approximately 200 acres in the heart of Midtown St. Louis. It is the product of a partnership between BJC HealthCare, the Missouri Botanical Garden, St. Louis University, the University of Missouri-St. Louis (UMSL) and Washington University in St. Louis.<sup>47</sup> These institutions banded together in 2002 to transform a once blighted industrial area into a setting ripe for entrepreneurial activity in the life sciences and biotechnology fields. An ambitious master plan calls for approximately 4.5 million square feet of mixed-use space, 13,000 jobs and over \$2 billion in capital investment. Over 1 million square feet of office, lab and retail space have already been constructed at a cost exceeding \$500 million. Land for additional development remains available.



Cortex 1, the first multitenant office/research facility in the Cortex district, includes approximately 177,000 square feet and was completed in 2006.

*Image courtesy of Washington University in St. Louis Magazine*

## Inception

Concentrated efforts to develop an innovation district in St. Louis began in earnest with the work of BioSTL, an organization that was formed in 2001 as the Coalition for Plant and Life Sciences to promote entrepreneurialism in that sector of the economy. Its leadership embraced the idea of an economic development strategy led by a consortium of local institutions after visiting Kendall Square in Cambridge, Massachusetts. They became convinced that a similar environment could be created in St. Louis by leveraging its extant resources.

Several of the city's major universities and life science research centers agreed to provide approximately \$125,000 in funding for preliminary planning activities, which ultimately resulted in the formation of Cortex as

a nonprofit corporation in 2002. BioSTL supported the initiative by establishing a committee comprised predominately of local real estate professionals to evaluate the space needs of emerging biotech companies and prevailing market demand. After conducting considerable market research and evaluating alternative locations, the committee chose a development site in Midtown St. Louis comprised largely of functionally obsolete industrial buildings.

The Midtown site was selected primarily because of its close proximity to the campuses of BJC HealthCare, the Missouri Botanical Garden, St. Louis University and Washington University. It also benefits from nearby green space in Forest Park, several impressive public museums and the Central West End MetroLink (light rail) Station. All of these features supported existing efforts to promote entrepreneurial activity in the area.

The Center for Emerging Technologies (CET), a state-designated innovation center offering incubator space and support services to startups, already operated two buildings in the district. The first of these is owned by the city of St. Louis and leased to CET at a nominal rate, while the second is a historic redevelopment project funded with a combination of Historic Tax Credits and New Markets Tax Credits. CET had an established track record of launching technology-driven firms, but struggled to expand the scope of its operations because of resource constraints. Development of an innovation district offered the nonprofit group an opportunity to reinvent itself as one piece of a much more comprehensive economic development strategy.

### **Putting the Resources in Place**

Partnering institutions made financial commitments to move Cortex forward. Washington University and UMSL invested \$15 million and \$4 million, respectively, while St. Louis University and BJC HealthCare each contributed another \$5 million. These resources allowed Cortex's board of directors to begin marketing the district and acquiring land on an opportunistic basis to support future development. BioSTL contributed by persuading the state of Missouri to award \$12 million in tax credits to further aid in land assembly.

The district's first major break came in 2005, when Stereotaxis, a successful medical technology company launched at CET, agreed to serve as the anchor in a new multitenant office/research facility located in the Cortex district. Just over a year later, the 177,000-square-foot Cortex 1 building was delivered to the market at a cost of \$36 million, with Cortex serving as the developer and Clayco as the general contractor.

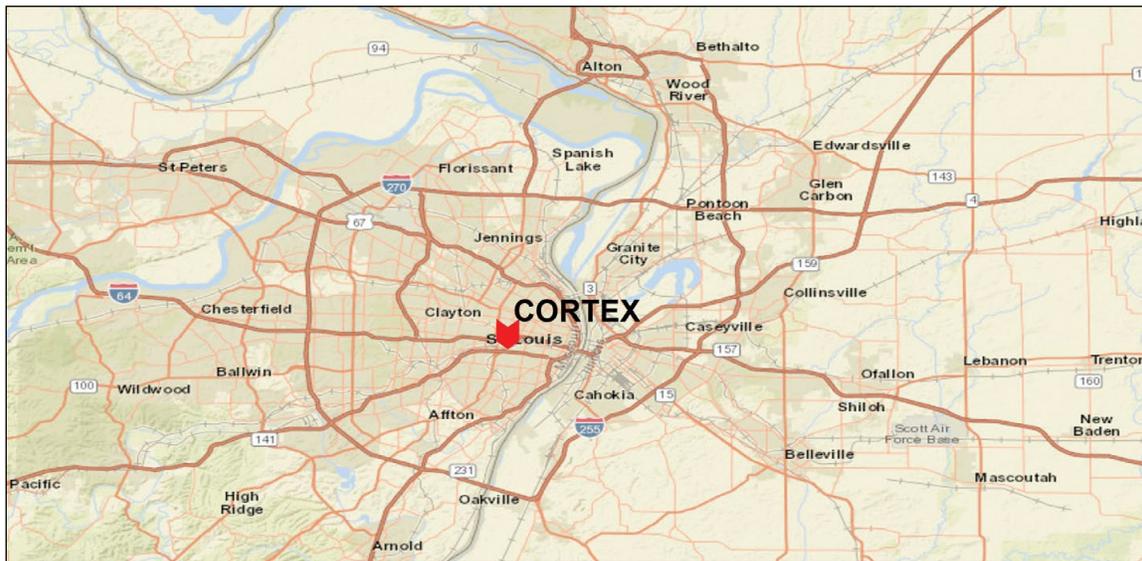
A second major break came in 2006, when the city of St. Louis granted Cortex zoning authority, eminent domain power, the ability to offer tax abatements and permission to enter into binding development agreements governing the use of land within its jurisdiction. This made it possible for the organization to control the character of development throughout the district, even though it owned very little of the property located within it.

A third major break followed shortly thereafter when Solae, a subsidiary of DuPont specializing in soy protein research, agreed to move its world headquarters to Midtown St. Louis.<sup>48</sup> Cortex negotiated a 15-year lease with

the company before conveying the development rights to Clayco, which served as both the general contractor and developer of the project. The 175,000-square-foot project was completed in 2008 and soon after sold to Equity Capital Management for \$44 million.

### Experienced Leadership and Public Sector Support

After facilitating the development of two buildings and assembling over 30 acres of land, Cortex maxed out its ability to further advance its interests while relying exclusively on the efforts of a volunteer board of directors. The board therefore appointed a full-time executive in 2010 to oversee the non-profit group's operations. Strong, experienced, centralized leadership proved to be just what the organization needed to move into the next phase of its evolution after two years of stagnation.



Cortex's location in Midtown St. Louis was chosen to take advantage of an underutilized parcel of urban land in close proximity to several of the institutional partners participating in the development project.

Source: ESRI; image courtesy of Spencer Shanholtz

BioSTL helped reorganize CET as a subsidiary of Cortex and, in 2012, Cortex unveiled a new master plan emphasizing the need to create a dynamic mixed-use environment throughout the district. Key elements included enhanced access to public transportation, the attraction of retail amenities and the integration of attractive common areas into a research park setting. The refined objectives helped Cortex obtain approval for approximately \$168 million in public aid from the St. Louis Tax Increment Financing Commission.<sup>49</sup> The district was split into 10 project areas, allowing it to access TIF bond proceeds over time in response to new development proposals, with Cortex serving as the master developer responsible for implementing the vision.

The opportunity to defray some of the costs associated with infrastructure improvements and land assembly via TIF funding sparked a second wave of development throughout the Cortex district. BJC HealthCare commenced

construction of a 220,000-square-foot administrative office building at an estimated cost of \$44 million. Shriners Hospital for Children commissioned a 90,000-square-foot orthopedic center at a cost approaching \$50 million. Plans also were put in place for an 8.4-acre common area offering outdoor seating, recreational spaces and a variety of programs. These projects were delivered over a three-year period following implementation of the new master plan.



Adaptive reuse projects found throughout Cortex, such as the @4240 building, serve as home to both emerging technology companies and established firms of significant scale.

*Image courtesy of Jordan Read*

Cortex also entered into a partnership with Baltimore-based Wexford Science & Technology to help energize the district and make it a more attractive option for startup companies. Wexford agreed to acquire the Cortex 1 building and invest \$5 million to retrofit it in accordance with the needs of entrepreneurial technology firms. It also obtained the right to redevelop a historic warehouse previously acquired by Cortex into a \$73 million multitenant building comprised of 183,000 square feet of office and lab space. Washington University made the latter of these projects, called @4240, possible by master leasing 40 percent of the space, moving its Office of Technology Management and Research Administration from its main campus to Cortex and aiding in the procurement of debt financing via mortgage guarantees.

### **Activating the District With Innovation Centers, Retail Space, Housing and Urban Amenities**

In addition to CET, Cortex frequently refers to four other so-called innovation centers that emerged throughout the planning and development of the Cortex district. Each offers a unique means of stimulating creativity and entrepreneurialism. The first of these resulted from an agreement with Cambridge Innovation Center, now known as CIC, to lease 30,000 square feet in the @4240 building to operate its first facility outside of Kendall Square in Cambridge, Massachusetts. CIC offers office and lab space to companies through short-term membership agreements ranging in cost from \$200 per month for co-working space to \$1,200 per month for a two-person

private office. Membership includes access to conference rooms, concierge services, printing/copying facilities, kitchens and high-speed internet. All are made available to the companies in residence to minimize the burden of facilities management.

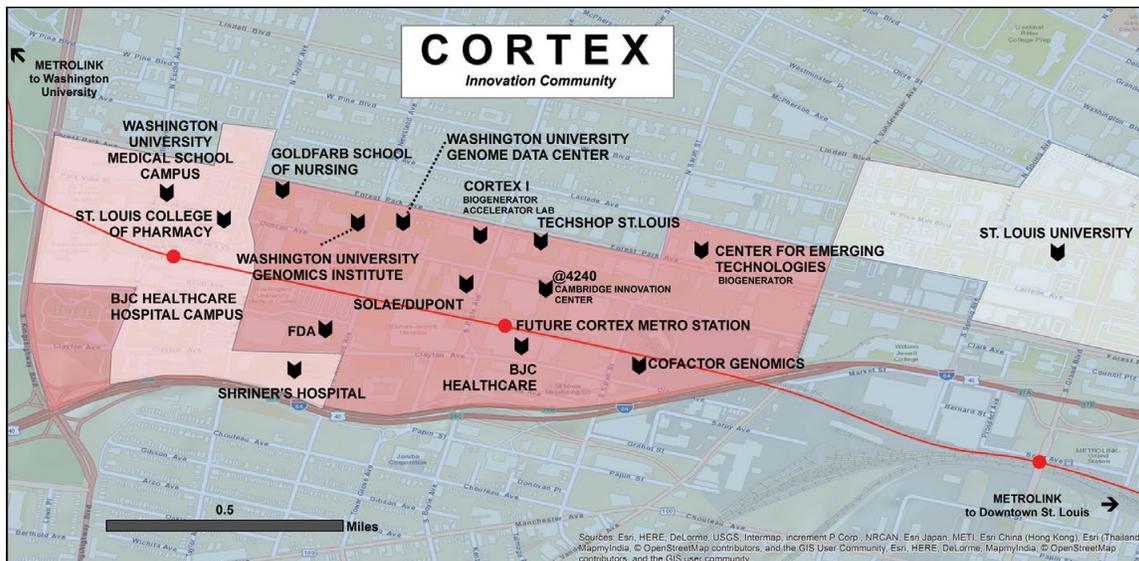
CIC also took over the operation of approximately 88,000 square feet of co-working, office and lab space previously operated by CET, thereby freeing up CET to focus on the delivery of training programs designed to help startup companies develop business plans, identify market opportunities and access capital. One such program, Square One (SQ1), offers a 10-week boot camp and two four-week Ignite training programs to support early-stage entrepreneurs interested in monetizing their ideas. Another program, Advance St. Louis, assists more established companies by providing them with continuing education. CET also runs a variety of other workshops to support venture growth, including National Institutes of Health (NIH) Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR) training activities to improve the likelihood that local companies can successfully compete for federal research grants.

The remaining innovation centers include BioGenerator, Venture Café and Tech Shop. BioGenerator is a nonprofit subsidiary of BioSTL created to support high-potential biotech firms on a competitive basis through the provision of lab space, access to executives in residence and investments made in the form of debt financing convertible into equity. It serves approximately 50 companies operating in Cortex and regularly collaborates with St. Louis University and Washington University to provide startups with access to institutional research facilities.

Venture Café is a weekly program developed by the Venture Café Foundation and operated on-site by CIC. It attracts as many as 500 attendees to listen to speakers and engage in informal networking. Venture Café simultaneously serves as a meeting place for those working at Cortex and an access point for external parties interested in leveraging the district's resources.

Tech Shop operates fabrication studios across the country that are equipped with machinery and software used in the design and production of prototypes. The company plans to bring 18,000 square feet of makerspace to the Cortex district in August 2016.<sup>50</sup>

Cortex's leadership sought to further activate the district through the attraction of a major retailer. These efforts paid off in late 2013, when Ikea announced plans to build a 380,000-square-foot store in the district. The \$80 million facility opened in 2015. Ikea used \$32 million in TIF proceeds to reduce the cost of assembling and developing a 20-acre site.<sup>51</sup> This project served as yet another catalyst for development throughout the Midtown submarket, which will include several planned residential projects serving the area's growing population. Notable examples in the vicinity of Cortex include projects proposed by Cornerstone Development, Hallmark Communities and Landmark Properties that are expected to bring hundreds of multifamily housing units to the area.<sup>52</sup> The projects target a combination of students, young professionals and other knowledge workers.



The developers of Cortex plan for over 4.5 million square feet of mixed-use space on approximately 200 acres of land upon project completion.

*Image courtesy of Washington University in St. Louis Magazine*

A number of other urban amenities are planned in and around Cortex to complement the emerging mixed-use environment. Funding is in place to connect the district to the Great Rivers Greenway in 2017, and St. Louis' first new MetroLink station in over a decade is scheduled to open on-site in the same year. These projects represent only a small portion of over \$100 million in planned public infrastructure improvements. Spillover real estate development immediately outside of the Cortex district continues at a torrid pace and is expected to eclipse the value of projects completed within the district in the years to come. Cortex as an organization has recognized this trend by strategically acquiring land outside its jurisdictional boundaries. It recently purchased 3.5 acres of land across the street from Ikea for \$3 million to accommodate future development supporting its mission.<sup>53</sup>

### Factors Contributing to Success

Many of those involved in the planning and development of the Cortex Innovation Community attribute its success to the long-term commitments made by its institutional partners, coupled with enthusiastic and effective leadership in both the public and private sectors. Consistent efforts were made to leverage St. Louis' competitive strengths and sufficient financial resources were put in place to produce visible signs of progress in the early stages of development. These decisions, among others, helped the development team and the development concept build credibility in the marketplace, contributing to the project's economic viability. Political support was garnered by taking into account social policy goals such as workforce participation and urban revitalization within the framework of a comprehensive economic development strategy. Control over regulatory approvals and construction activity throughout the district as a whole also allowed Cortex as an organization to implement its development strategy over a multiyear period.

Cortex devoted a significant amount of attention to creating a tenant mix comprised of large corporations and startup enterprises. The large corporations helped legitimize the district and provide it with a strong foundation, while the startups created energy. The combination has not only proven attractive to life science and biotechnology companies, but has also appealed to those in other industries interested in innovation. Boeing, for example, moved its innovation group, known as Boeing Ventures, from its Hazelwood, Missouri, campus to a 7,500-square-foot suite in the @4240 building in 2014 to take advantage of the entrepreneurial climate there.<sup>54</sup> The group focuses on commercializing technologies developed by the company's engineers that fall outside the aerospace industry.<sup>55</sup>

Technology firms including Pandora, Square and Uber moved operations to the district in 2015. These operations range in size from relatively modest co-working space to a 17,000-square-foot facility.<sup>56</sup> Square opened its fourth domestic office in the district, housing approximately 200 employees, largely because it needed to operate in an environment attractive to the millennial workforce.<sup>57</sup> Pandora's and Uber's decisions to open smaller regional sales and marketing offices in Cortex were influenced by similar factors.<sup>58</sup> These additions helped @4240 approach full occupancy, with over 60 companies operating on-site by mid 2015.<sup>59</sup>

Efforts to promote social equity and environmental sustainability can also be observed throughout the Cortex district. Projects funded with TIF proceeds are subject to workforce participation goals requiring 25 percent of labor hours to be performed by minorities, 5 percent by women and 15 percent by apprentices participating in approved programs. Partnerships are emerging with the public school system to increase awareness of career paths in the science, technology, engineering and math (STEM) disciplines and to provide access to makerspace available in the district's innovation centers.

These endeavors complement the work of nonprofit organizations such as LaunchCode, which operates on-site to help individuals with nontraditional credentials obtain training and entry-level employment in the field of computer programming. A commitment to environmental sustainability is reflected in LEED-certified buildings on-site, as well as a number of historic redevelopment projects serving the space needs of technology firms. Ikea boasts one of the largest solar roofs in the state. Cortex Commons benefits from an innovative stormwater capture system. These examples represent just a few of the steps taken by Cortex and its partners to address social equity and environmental issues.

## **Challenges Moving Forward**

Cortex has significant momentum and is making great strides to encourage entrepreneurialism and innovation in the St. Louis region. Nonetheless, managing expectations remains a very real challenge for the organization's leadership. Some members of the community expect immediate returns on the sizable public sector investment made in the project, despite the fact that it may take 20 to 30 years for it to reach its full potential. The need to

negotiate with a disparate group of landowners within the district can also slow the pace of progress and increase the number of factors that must be taken into account before important decisions are made. These considerations complicate the development process even though Cortex has a clear vision, significant resources and an enviable amount of control over what goes on within its jurisdiction. The organization must continually encourage community engagement, maintain an atmosphere of cooperation and trust among stakeholders and operate transparently to address these concerns.



Institutional partners such as BJC HealthCare demonstrated a commitment to Cortex by establishing a durable presence on site through the construction of new facilities.

*Image courtesy of Jordan Read*

A second challenge for Cortex relates to the prioritization of programming. Real estate decisions were all-consuming in the district's early stages, when much less attention was devoted to encouraging meaningful interaction among the companies, individuals and institutions working on-site. This initial misstep has been addressed in a variety of ways, including the Venture Café program and the opening of Tech Shop. However, several of those involved in the development acknowledge a need to keep an eye on the “bigger picture” and continually focus on promoting synergistic interactions among tenants. This can prove difficult in the presence of intense pressure to attract capital investment and stimulate construction activity. The long-term viability of Cortex as an innovation district is likely to depend on its leadership's ability to let programming continue to drive real estate decisions instead of the other way around.

Only by remaining mission driven and focusing on defined economic development goals can Cortex address a final challenge, which relates to maintaining its identity. The project started as a concentrated effort to promote entrepreneurship in the life sciences and biotech fields. The tenant mix has diversified greatly over time, however. This type of growth is advantageous because it facilitates knowledge spillovers across industries that lead to innovative new products and services. It can, nonetheless, be difficult to manage because it creates a need to build trust and a common culture among individuals with very different professional backgrounds, while clearly articulating a value proposition that is applicable to companies with very different characteristics. Resources are in place to respond to these challenges at Cortex, but they must remain a priority.

# Case Study: SkySong, the ASU Scottsdale Innovation Center

The ASU Scottsdale Innovation Center, commonly known as “SkySong,” is a mixed-use development project in Scottsdale, Arizona, that will include over 1.2 million square feet of commercial space at buildout. It is located on a 42-acre tract of land at the intersection of McDowell and Scottsdale roads, where a defunct regional mall once stood.

Arizona State University (ASU), the ASU Foundation for a New American University (ASU Foundation) and the city of Scottsdale joined together in 2005 to redevelop the property in hopes of revitalizing the area through the attraction of rapidly growing technology firms. The city raised over \$81 million through the issuance of municipal bonds to acquire the site and pay for needed infrastructure improvements, including two parking decks. It then transferred legal control of the site to the ASU Foundation through the execution of a 99-year ground lease, subject to the conditions that it construct at least 150,000 square feet of new office space every three years and repay the city’s principal investment over time as the project generates positive cash flow. Plaza Companies agreed to serve as the center’s master developer in 2006 after successfully responding to an RFP. USAA Real Estate was concurrently brought into the transaction as a joint venture equity provider.



SkySong’s unique design elements and amenities, along with the convenient access it offers to university resources, has helped it remain one of the most attractive office environments in the market over the last decade.

*Image courtesy of Lee & Associates*

## Getting Started

The first phase of development commenced in 2006 after traditional construction financing was obtained for SkySong 1 and SkySong 2, two four-story office buildings. Each contains 150,000 square feet of LEED-certified space. Preleasing requirements were satisfied rather quickly after

ASU agreed to occupy 80,000 square feet throughout the buildings on a long-term basis. The university planned to use its space for a business incubator and accelerator, as well as to accommodate the needs of over a dozen academic units interested in offering programs and services there.

A significant amount of ASU's square footage was also set aside for meeting rooms capable of seating as many as 400 individuals for conferences and professional presentations. The purpose of these rooms is to provide innovative companies and their employees with better access to the university's resources in an effort to spawn collaboration.

The concept proved attractive to many technology-driven companies in search of space. Some of SkySong's earliest tenants included American Solar, Canon and Ticketmaster. Each of these tenants occupied from 9,000 to more than 30,000 square feet at market rates. In addition, the conference space brought an extensive number of businesses and business-oriented nonprofit organizations to SkySong for over 500 monthly events and meetings.



The site chosen for the development of SkySong helped Arizona State University better serve a part of the metropolitan area where it had a limited presence, while also providing the city of Scottsdale with an opportunity to encourage economic development in the southern portion of its jurisdiction.

Source: ESRI; image courtesy of Spencer Shanholtz

A visually striking tensile structure exceeding 120 feet in height was incorporated into the center of SkySong to divide the development site into quadrants. Each quadrant was intended to represent one of the project's primary goals: collaboration, imagination, innovation and technology. While serving as a metaphorically rich architectural element, the structure was also designed to produce 50,000 square feet of shade from the intense sun in order to facilitate outdoor meetings, networking and spontaneous idea sharing through social interactions.<sup>60</sup> Members of the development team expected this feature to contribute to SkySong's brand and simultaneously help it fulfill its mission as an innovation district by promoting tacit knowledge exchange.



The visually striking tensile structure located at the center of the SkySong site offers 50,000 square feet of shade for networking events and informal interactions among those working on-site.

*Image courtesy of Lee & Associates*

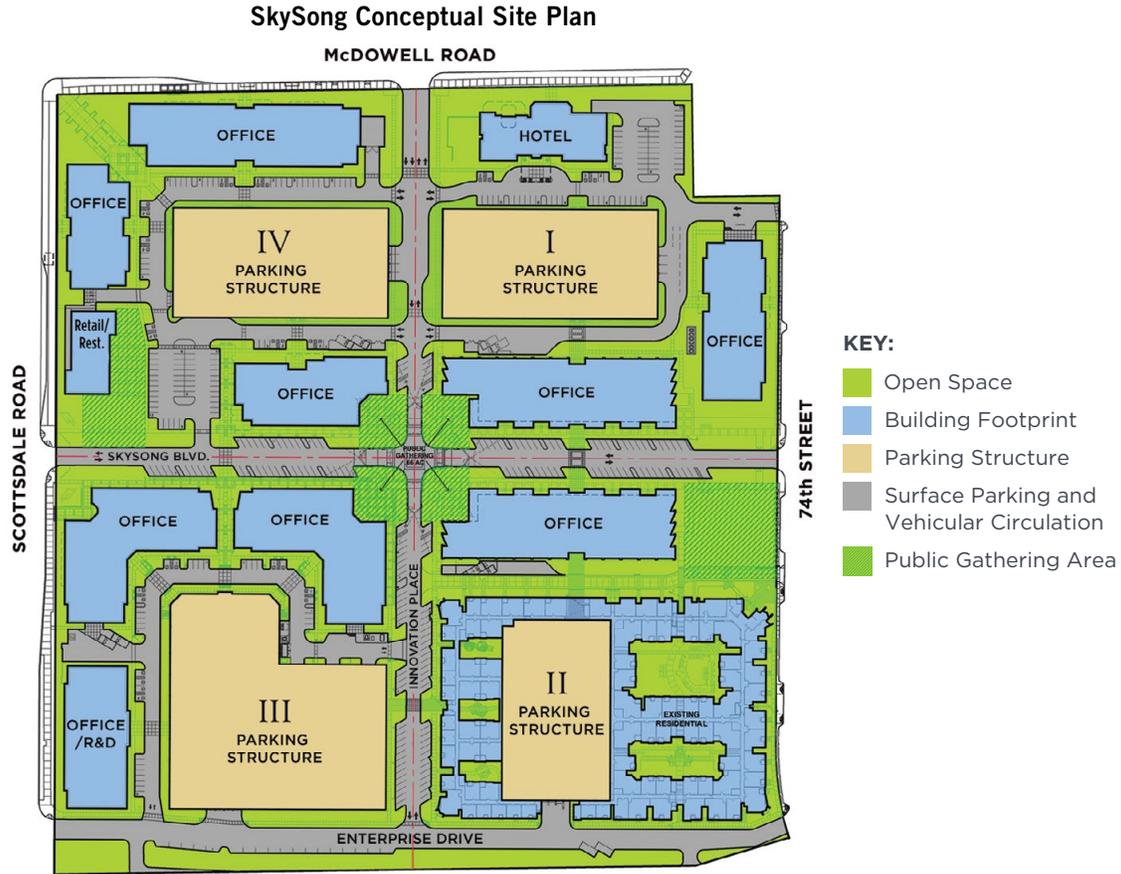
SkySong initially achieved gross lease rates ranging from \$27 to \$28 per square foot after the first two buildings were delivered in 2008, but the economic recession soon took its toll. Rents fell to \$19 to \$20 per square foot in the following year, in response to a dramatic decline in demand for office space. Nonetheless, the project was able to maintain positive absorption in this challenging period by offering aggressive lease terms and unparalleled connectivity to the region's largest research institution. Few, if any, office properties located nearby could boast this level of success. SkySong approached stabilized occupancy in late 2010 and continued to outperform the vast majority of its competitors throughout the remainder of the economic downturn. By 2011, the project was well positioned for the next stage of its evolution as a mixed-use innovation district.

### **Adding Multifamily Housing and More**

USAA Real Estate and the ASU Foundation recognized an opportunity to bring housing to SkySong in 2011 and began development of a \$44 million, 325-unit apartment complex. Completed in 2013, it was delivered to strong market demand among the area's growing technology workforce and quickly leased to stabilized occupancy levels.

That same year, USAA decided to divest its interest in SkySong 1 and 2 by selling to a Tucson-based private equity firm, Holoaloe Companies, for \$68.75 million.<sup>61</sup> Improving real estate market conditions encouraged this new equity provider to partner with the ASU Foundation and Plaza Companies in the development of SkySong 3, another 150,000-square-foot office building similar to its predecessors. This \$32.6 million facility was completed in 2015, with ASU occupying 40,000 square feet as the anchor.<sup>62</sup>

SkySong continues to thrive and serves as a notable example of university-led real estate development. Preleasing activities are currently underway for the fourth 150,000-square-foot office building and market demand for the



SkySong will include over 1.2 million square feet of office, lab and meeting space at buildout, along with 12,000 square feet of retail space and 325 apartments serving the area's knowledge workforce.

*Image courtesy of Lee & Associates*

product appears relatively robust.<sup>63</sup> While the original terms of the ground lease with the city were revised following the Great Recession to provide the development team with more time to complete the project, it is now ahead of schedule in terms of delivering the requisite amount of new office space in three-year intervals over the next decade.

USAA Real Estate and the ASU Foundation realized an enviable profit in 2015 with the sale of the SkySong Apartments to Mid-American Apartment Communities for \$67.50 million.<sup>64</sup> Plans are now in the works to attract a limited-service hotel to the site to complement the existing product mix. Predevelopment activities are also in progress for an unusual 12,000-square-foot restaurant complex that will be constructed on a pad site subleased to Phoenix-based Wetta Ventures, a retail developer specializing in infill projects throughout the Scottsdale market that are occupied by an eclectic mix of tenants not typically found in strip shopping centers.<sup>65</sup> These elements are anticipated to further SkySong as a location of choice for technology companies and their highly skilled employees.

## Factors Contributing to Success

The city of Scottsdale's contribution to the success of SkySong cannot be overstated. By providing patient capital and eliminating the cost of interest carry on both the land and infrastructure improvements, the municipality made it possible for the development team to transform what was previously perceived as a "C+" office location into one of the most desirable destinations for innovative firms in the greater metropolitan area. The city also demonstrated its commitment to the project by modifying the terms of the ground lease during the recession. All of these decisions have helped SkySong achieve several long-range financial goals and economic development objectives, despite the fact that the innovation district is less than halfway complete.

In terms of creating an environment conducive to innovation and the exchange of ideas, much of the credit appears to belong to ASU and the ASU Foundation. The university promotes entrepreneurship and collaboration in a number of ways:

- High-potential companies can lease co-working or dedicated space in an incubator on a month-to-month basis, while simultaneously learning the basics of business plan writing and capital sourcing at ASU Startup School, which offers supportive services to companies in the early stages of development.
- The Edson Student Entrepreneur Initiative provides funding for student-run enterprises on a competitive basis.
- The Arizona Furnace Technology Transfer Accelerator supports private sector firms interested in commercializing university-owned intellectual property.
- Executive education and certificate programs are available across a range of academic disciplines, including business, engineering and technology.
- Research centers affiliated with ASU can be found throughout SkySong, and career services are available on-site to help connect companies with students in search of internships and full-time employment.
- The conference space managed by the university brings over 6,000 members of the general public to the project every month to participate in professional activities.
- The amalgamation of these programs and services creates durable and continuous linkages among ASU and a significant number of constituency groups.

A commitment to innovation can also be seen in the physical character of SkySong. In an effort to lead by example, ASU built out its space with exposed ceilings, open floor plans and a number of areas for informal collaboration, all of which were anticipated to appeal to a millennial workforce. Many companies subsequently moving to SkySong followed suit when completing their interior buildouts.

Members of the development team additionally gave a great deal of thought to the design of common areas throughout the project in order to create “points of collision” among the highly skilled individuals working on-site. The aforementioned tensile structure is the most notable example of such a feature. The plush seating and outdoor conference tables under it take advantage of Arizona’s favorable climate. Thoughtful design, coupled with programming supportive of entrepreneurial activities, creates an innovation ecosystem at SkySong that has proven attractive to prospective tenants in the technology sector.

As an independent nonprofit entity charged with the task of promoting the interests of ASU through its equity investments, the ASU Foundation remains actively involved in the development process to ensure SkySong remains mission driven. The organization’s board includes individuals with extensive real estate development experience. Its staff also has a high level of real estate acumen, which facilitates meaningful engagement in leasing, management and marketing decisions. The ASU Foundation was instrumental in the decision to incorporate multifamily housing into the project to create a mixed-use environment. It was also responsible for the strategic decision to sublease land on favorable terms to accommodate design-heavy retail development anticipated to appeal to both local restaurateurs and the targeted consumer groups patronizing their businesses. These amenities help differentiate SkySong from competitors and act as a starting point in the creation of a live, work, play setting.

### **Major Tenants**

Few tenants are precluded from SkySong as a result of the type of business they operate. However, the ownership group and its leasing team actively target companies with skills and competencies complementing those already present in the development. The majority of the newest tenants are technology-based companies. Notable examples include data services company IO, digital library Safari Books Online, IT services and staffing company Solugenix, consumer health care company Theranos and internet marketing and advertising firm Yodle.<sup>66</sup>

All tenants are vetted to ensure consistency with the university’s mission and objectives. The result is a strategic yet realistic approach to tenant prospecting that is pliable and market driven. Local entrepreneurs working in a variety of fields, international firms interested in establishing a presence in the U.S. and companies in need of back office space for activities extending beyond customer service comprise a substantial portion of the existing tenant mix. Attracting companies from all three of these groups has become easier with time, and SkySong has finally reached a critical mass: Firms are attracted to the project irrespective of whether they have immediate plans to do business with ASU or its affiliates. SkySong therefore has a market identity intertwined with that of the university’s on a number of levels yet distinguishable in many positive ways.

## Challenges Moving Forward

SkySong is a transformative real estate development project that continues to attract technology companies to an area once in a state of decline. However, several unanswered questions remain regarding its ability to serve as an economic development catalyst for the surrounding area, one of the goals originally set forth by members of the development team. Its long-term success as an innovation district may ultimately be judged by its ability to stimulate tacit knowledge exchange and economic development spillovers in areas extending beyond its relatively narrow geographic confines. Responding to market conditions and economic realities may also prove to be ongoing concerns.

In many ways, SkySong is a different project today than it was at the time of its inception. Plans to vertically integrate apartments, office space and an abundance of street-level retail offerings eventually gave way to a more traditional suburban office concept, despite efforts to thoughtfully incorporate restaurants and adjacent housing into the design. The project tends to be perceived in the marketplace as an office park, first and foremost, with attractive amenities and a good location. These features appear to cater to the demands of innovative companies far more so than those of the innovative individuals they hope to employ. Limited public transportation options, virtually no pedestrian access to the site and parking ratios exceeding 5:1,000 square feet reinforce the project's image as an auto-centric employment center primarily serving a daytime population. Members of the development team are keenly aware of these issues and are considering various options to improve connectivity to ASU's main campus and the surrounding community at large.



Retail space under development at SkySong will offer an eclectic mix of restaurants in a setting uncommon to the Scottsdale market.

*Image courtesy of Wetta Ventures*

Increasing the project's density over time to create a more vibrant mixed-use environment poses its own unique set of challenges. As SkySong moves toward full buildout in compliance with its contractual obligations to the city

of Scottsdale, it will require approximately 5,100 decked parking spaces to accommodate the demands of office tenants in the market. Providing parking in this manner is only financially feasible if the project can achieve considerably higher rental rates than competitors offering surface parking at a much lower cost of construction. To date, this has not been a problem at SkySong because much of the site consists of surface parking. This will not be possible as additional office buildings are delivered. The value proposition of locating in a development with strong university ties must remain clear to achieve the needed rent premiums.

A final challenge facing SkySong stems from its role in a broader economic development strategy. The city of Scottsdale invested heavily in this innovation district in anticipation of it serving as a catalyst for future growth along McDowell Road. This particular corridor was targeted for public investment in part because of its fragile economic condition and the presence of several large automobile dealerships ripe for adaptive reuse.

Some new construction has taken place nearby since the planning and development of SkySong began, but things are progressing more slowly than expected. This has exposed members of the development team working in both the public and private sectors to various degrees of political scrutiny. Questions have also been raised about the structure of this public-private partnership, which provides the city of Scottsdale with little more than the ability to recoup its initial capital investment should the speculative endeavor prove extremely profitable in the long run. These factors continue to shape the public perception of SkySong, despite its recognition as an important economic development asset.

# Case Study: Tech Center at Oyster Point

Tech Center at Oyster Point is a \$450 million real estate development project currently underway in Newport News, Virginia.<sup>67</sup> It is located immediately to the north of the Thomas Jefferson National Accelerator Facility (Jefferson Lab), a world-renowned research center dedicated to the study of subatomic particles. The first phase of the project includes 250,000 square feet of retail space anchored by Whole Foods and a nearby 288-unit apartment complex. Construction of an adjacent technology park is anticipated to commence in 2017. The technology park will eventually include 11 buildings and 940,000 square feet of Class A office and lab space.

W.M. Jordan Company serves as the master developer, with S.J. Collins Enterprises and Ellis-Gibson Development Group participating in the retail and multifamily components, respectively. Unifying architectural features, shared amenities and integrative common areas are planned to link all elements of the project together, with the goal of creating an environment supportive of entrepreneurial activity. Over 5,500 highly skilled individuals are expected to work in the technology park once it is completed.

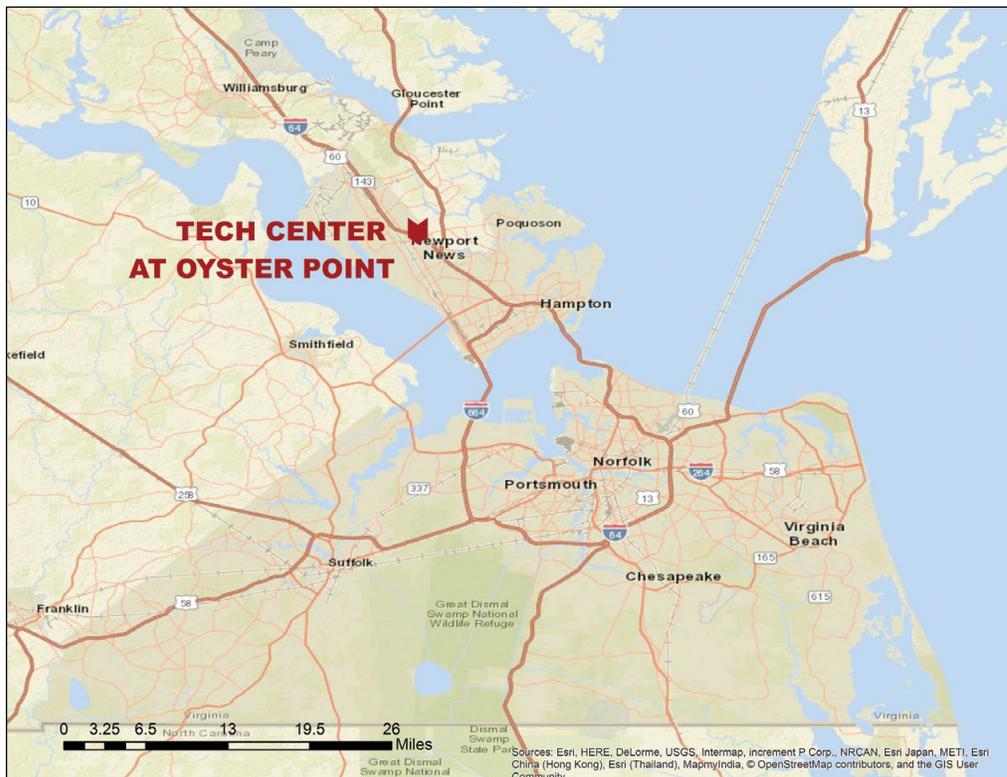


The office, residential and retail spaces included in Tech Center at Oyster Point are connected by a “pedestrian spine” thoughtfully designed to integrate these different land uses in a cohesive manner.

*Image courtesy of W.M. Jordan*

## Background

The city of Newport News long contemplated the development of a technology park on the southeast corner of the Oyster Point/Jefferson Avenue intersection because of its proximity to Jefferson Lab. It even constructed a 122,000-square-foot applied research center nearby in 1996, comprised largely of office and co-working space, to provide a venue where local universities could work with the lab to help it commercialize its intellectual property. The investment was anticipated to spark private sector interest in developing a larger technology park on the remainder of the city's land in the area and on an adjacent 44-acre parcel controlled by the William and Mary Real Estate Foundation. Unfortunately, such interest did not materialize and both sites sat fallow for years. The foundation attempted to sell its land in 2005, but was unsuccessful, largely because zoning prohibited retail development on the site. Several offers to purchase were made subject to a rezoning, but an agreeable sale price could not be reached on such terms. The property was taken off the market and not listed again until 2010. W.M. Jordan acquired the site at that time, after making an \$8 million offer free of any rezoning contingencies.<sup>68</sup>



The intersection of Oyster Point Road and Jefferson Avenue, where Tech Center at Oyster Point is located, offers convenient access to many of the amenities, employment centers and transportation networks found throughout the Tidewater region of Virginia.

Source: ESRI; image courtesy of Spencer Shanholtz

## Planning, Stakeholders and Approvals

W.M. Jordan purchased the site with a buy-and-hold strategy in mind because it was well suited for retail development. However, the company quickly realized a more creative approach was necessary to get the property rezoned. This encouraged the company to explore the possibility of developing a mixed-use project on the site comprised of a technology park, shopping center and multifamily housing.<sup>69</sup>

Part of the plan involved modeling the technology park after the Virginia Tech Corporate Research Center (VTCRC), an award-winning university research park in Blacksburg, Virginia. Individuals involved in the planning and development of VTCRC would be hired on a fee basis to create a comparable business environment in Newport News.<sup>70</sup> The decision to involve VTCRC in this capacity legitimized the project and gave municipal policymakers confidence that technology companies could in fact be recruited by offering an appropriate mix of programming and services. The development concept also garnered approval from those who believed it would improve Jefferson Lab's chances of winning funding from the U.S. Department of Energy to construct a high-energy electron ion collider at a cost of over \$1 billion. The funding decision was expected to be influenced by a laboratory's ability to commercialize new technologies, and many felt the presence of a research park nearby would help demonstrate Jefferson Lab's capacity to do so in the future.

In 2013, the Newport News City Council agreed to rezone the 44 acres owned by W.M. Jordan for retail and multifamily uses, despite the fact that an agreement was not yet in place to guide the development of an adjacent technology park.<sup>71</sup> This decision produced some political backlash, but was necessitated by economic forces. Whole Foods was already looking for space in the submarket and was not willing to wait for a mixed-use project to be planned before committing to a location. Allowing retail development to move forward more quickly was the only way to capture this anchor tenant.

W.M. Jordan also needed additional time to acquire approximately 60 to 90 acres of land for the remainder of the project from owners that included the state of Virginia, the Southeastern Universities Research Association and the Newport News School Board. The school board had to be convinced to relocate a school bus maintenance facility in order to make the deal possible.<sup>72</sup> The Newport News City Council was confident W.M. Jordan could accomplish these tasks as the master developer because of the company's solid reputation and strong regional ties. These factors encouraged policymakers to move forward with the initial rezoning and knowingly accept the risk that a technology park might not come to fruition.

## Construction and Financing

Horizontal development commenced soon after the property was rezoned and W.M. Jordan was able to obtain nonrecourse financing from SunTrust Bank because of its low basis in the land. The company partnered with

S.J. Collins Enterprises in the development of a grocery-anchored shopping center known as The Marketplace at Tech Center, which opened in 2015 with limited vacancy as a result of exceptionally strong preleasing activity. In addition to Whole Foods, notable tenants included DSW (Designer Shoe Warehouse), P.F. Chang's, Stein Mart and ULTA Beauty.<sup>73</sup> Ellis-Gibson Development Group was selected to partner in the residential component of the project. As of early June 2016, it is in the process of completing the 288-unit apartment complex known as Venture Apartments at Tech Center at a cost of approximately \$55 million.

The technology park remains a work in process. W.M. Jordan continues to collaborate with its partners in the public sector to move the project forward. Newport News has pledged over \$36 million to pay for infrastructure improvements and to cover the cost of relocating the school bus maintenance facility. Another \$12 million in support has been procured through state and federal economic development grants.

### **Private Sector Vision and Leadership**

It is too early in the development process to evaluate Tech Center at Oyster Point's merits as an innovation district. However, much can be learned by examining the steps taken to move the project from concept to reality. The project is unique in that the leadership and vision came primarily from the private sector. W.M. Jordan recognized a market opportunity, sought out the appropriate partners and worked with the public sector to expand the range of possibilities for an attractive piece of real estate critically important to the city of Newport News' future growth. To some degree, the fact that a technology park is being constructed at all is a testament to private sector innovation, as over 20 years of municipal planning did not yield the same result.

The development team garnered political support for the project among elected officials and other community leaders by demonstrating its potential to advance several public policy goals. It emphasized the project's ability to help the city of Newport News diversify its economy, consolidate entrepreneurial activity in a manner facilitating knowledge spillovers and enhance Jefferson Lab's prospects of winning federal funding for the next-generation electron ion collider. These anticipated outcomes, along with the prospect of \$8 million in additional annual tax revenues upon project completion, served as justification for substantial public sector support.

Other concerns of policymakers, stemming from the unrefined character of the proposed innovation district, were assuaged by the decision to involve VTCRC in the project. Executives representing the organization put forth a creative business strategy for Tech Center at Oyster Point.<sup>74</sup> Rather than providing subsidized rents, as might be the case in an incubator, VTCRC planned to attract both startups and established firms to the Newport News site by offering flexibility to companies with fluctuating space needs.

Uniform rental rates throughout the park, month-to-month lease terms and the provision of expansion/contraction options would be used to

differentiate the project from more traditional office buildings in the area. Tenants occupying space within the park would also be provided with access to individuals specializing in intellectual property, financial planning and human resource management to help them grow their businesses. Furthermore, VTCRC's management team intended to foster synergistic interactions among the tenants by hosting networking receptions, product/service testimonials and technology showcases. These events were expected to produce co-branding and co-marketing opportunities.

### **Mixed-use Development with Amenities**

In order to support VTCRC's strategy, W.M. Jordan and its development partners made a number of design decisions that demonstrated a commitment to fostering collaboration among those living and working at Tech Center at Oyster Point. A pedestrian spine with multiple activity nodes was incorporated into the project to connect the shopping center with the technology park. Amenities such as high-speed internet access, outdoor "conference rooms" and public event space were included to encourage informal interactions among patrons and to allow common areas to function as an extension of the office environment.

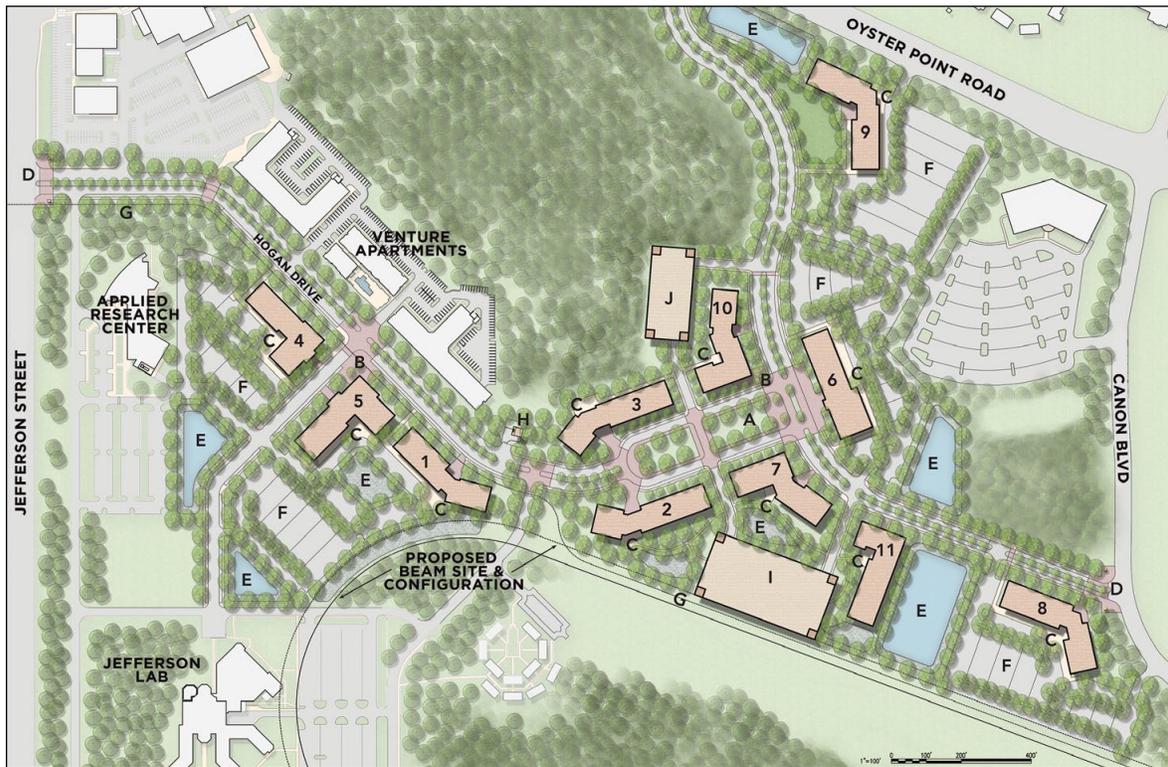
Venture Apartments were designed with outdoor balconies and parking oriented to the rear of structures to activate the streetscape and enhance walkability. Efficiency units available on a short-term basis, videoconference rooms available 24 hours a day and a bike loan/storage program were also put in place within the apartment complex to satisfy the needs of international scientists visiting Jefferson Lab.<sup>75</sup> Plans for the technology park included architectural references to Virginia Tech, athletic fields, dense landscaping, clustered buildings and ample common areas to evoke the feel of a college campus.



Outdoor seating and space for impromptu meetings can be found throughout Tech Center at Oyster Point's common areas.

*Image courtesy of VTCRC*

### Tech Center Conceptual Site Plan



**LEGEND:**

- |                         |                         |                                    |
|-------------------------|-------------------------|------------------------------------|
| 1-11 Office Space       | D Entry Features        | G Potential Future Light Rail Spur |
| A Central Plaza         | E Stormwater Management | H Pump Station                     |
| B Small Plazas          | F Surface Parking       | I, J Parking Structure             |
| C Landscaped Courtyards |                         |                                    |

At buildout, Tech Center at Oyster Point will include nearly 1 million square feet of office and lab space.

*Image courtesy of W.M Jordan*

### Developing an Entrepreneurial Culture, Attracting Tenants and Building Public Support

Tech Center at Oyster Point has significant potential, but still must overcome several challenges. Perhaps the most pressing concern stems from the absence of a strong entrepreneurial culture in Newport News, the result of three interrelated factors. First, many of the region’s large research centers, including Jefferson Lab, have been slow to commercialize their scientific discoveries because they lack the requisite business acumen. Second, small companies offering technologically advanced products and services have not proliferated in great number in the local economy, due in part to historic dependencies on heavy manufacturing and federal contracting. Third, few

firms operating in knowledge-based industries have relocated to Newport News and its neighboring municipalities over time because the area has not established itself as a value-add location for such operations. Those involved in the development of Tech Center at Oyster Point realize they must work with stakeholders to address each of these issues.

Aggressive tenant recruitment efforts are underway to increase market awareness of the technology park among foreign and domestic firms. However, progress remains somewhat slow because the individuals responsible for promoting the asset are currently selling a product consumers cannot see in a region unknown for its entrepreneurialism. The process is anticipated to get much easier after the first office building is completed and key tenants are in place, but this remains to be seen.

Members of the development team also continue to weigh the benefits of hyper-specialization in the tenant mix against the corresponding risks. The challenge ahead involves recruiting a synergistic assortment of companies to the project that are capable of leveraging its unique locational attributes, without creating a tenant mix so homogenous that the project becomes financially unstable across economic cycles. This may be a daunting task.

Finally, maintaining public support for the project may prove more difficult than expected due to political scrutiny. Some community members have expressed concerns that long-term municipal planning goals were compromised by allowing W.M. Jordan and its partners to develop another retail center and apartment complex in a submarket already plagued by traffic congestion and a dearth of green space. Others have expressed fears that the technology park may not live up to expectations, since the retail and residential components were allowed to move forward before the execution of a comprehensive development agreement.

These two criticisms, among others, have been amplified on occasion by miscommunication among members of the development team and various stakeholders. For example, W.M. Jordan was condemned by policymakers and in the popular press for asking Newport News to subsidize the development of the technology park after publicly stating that no municipal resources would be required. The statement was made in reference to the first phase of the development only, which did not require subsidies, but the message was misconstrued as a result of the fluidity of the transaction.<sup>76</sup> Local residents were also displeased when public officials inadvertently misrepresented the cost of relocating the school bus maintenance facility. These incidents highlight the need for effective public relations in all public-private partnerships.



# Case Study: Technology Square

Technology Square is a more than 1.3 million-square-foot mixed-use development project in Midtown Atlanta. The first phase of the project was completed in 2003 at a cost of approximately \$380 million.<sup>77</sup> It is anticipated to grow in size dramatically by 2018, with the completion of a new mixed-use tower featuring lab, office and retail space.



Completion of the Fifth Street Bridge in 2007 served to reconnect Georgia Tech's main campus to Midtown Atlanta, which had long been separated by I-75/85.

The Georgia Institute of Technology (Georgia Tech) led the initiative to accommodate its expansion and to revitalize an eight-block area near its main campus that was in dire need of capital investment.<sup>78</sup> Eight buildings and over 3,000 decked parking spaces were constructed on land assembled by members of the development team. The Georgia Tech Foundation partnered with private sector real estate developers and a nonprofit entity to raise equity for the project, with additional capital obtained from state appropriations, fundraising and project revenue bonds.

Planning for the project that would become Technology Square, commonly called Tech Square, began shortly after the 1996 Summer Olympics. The event sparked interest in development opportunities near Atlanta's urban core and highlighted the need for reinvestment in areas experiencing prolonged periods of economic stagnation. One such area surrounded the intersection of Fifth and Spring streets in Midtown, covering approximately eight city blocks.

Georgia Tech had an interest in redeveloping this particular area because the abandoned buildings, surface parking lots and otherwise underutilized real estate assets within it were directly across Interstate 75/85 from its main campus. Participating in a comprehensive urban revitalization initiative



address the organization's concerns, along with others raised by municipal planners. Compromises were required to align public sector objectives with university facility needs and the return expectations of prospective investors. Several different master plans were evaluated simultaneously as the transaction moved forward.

### **Initial Funding and Occupancy**

Relatively modest plans on the part of the Georgia Tech Foundation to construct an executive education building, along with a hotel and conference center, quickly expanded in scope. They grew to include a new building for the institute's Scheller College of Business and research space for a number of other colleges and university-affiliated entities. The governor of Georgia agreed to fund another 200,000-square-foot building for broadband technology research. The Georgia Tech Foundation decided to densify development by selling deed-restricted land to local real estate developers Kim King Associates and Gateway Development Services to facilitate the construction of office and retail space for the private sector. These developers were brought into the transaction to spread land costs over a greater amount of usable space and to avoid state regulations preventing profit-driven tenants from occupying buildings financed with tax-exempt debt. Thus, private capital was used to finance a portion of the 483,993-square-foot Centergy One building and 50,000 square feet of street-level retail space.

Georgia Tech's decision to move its Advanced Technology Development Center (ATDC) and Venture Lab business incubator to the project from another location on campus dramatically enhanced the climate for innovation. The former was created to foster the growth of technology-driven companies throughout Georgia by providing executive training, networking opportunities and incubator space, while the latter was created specifically to aid Georgia Tech faculty, staff and students in entrepreneurial endeavors. These programs and services attracted a diverse group of companies to Tech Square shortly after its delivery, many of whom were interested in collaborating with the institute.



The Georgia Tech Hotel and Conference Center serves as an amenity for Technology Square and a means of bringing outside parties on-site for various types of activities and events.

Market-rate office space available within the Centergy One building also leased up rapidly as a result of the project's unique character and attractive package of amenities. Stabilized occupancy was reached in late 2005, with annual gross rents exceeding \$28.00 per square foot on average. The development team recruited a number of state-level economic development agencies to the building to create a synergistic tenant mix conducive to the commercialization of new ideas.

### **Continuing Evolution**

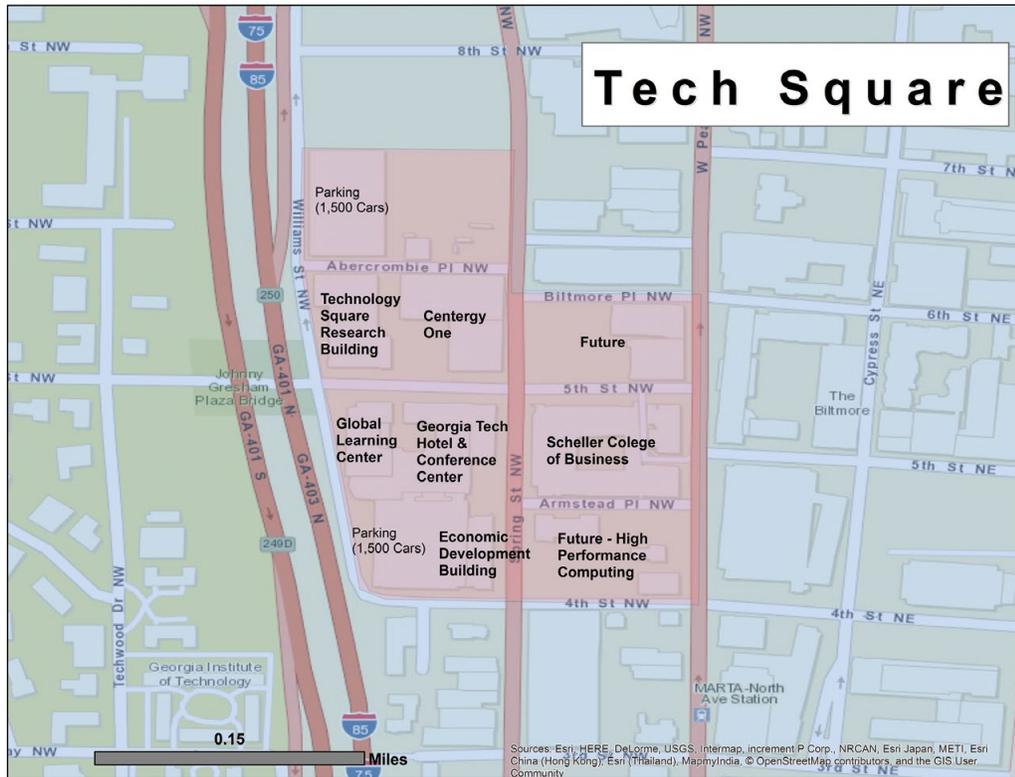
Tech Square has continued to evolve and change since the completion of its first phase. One of the most notable improvements came in 2007, when I-75/85 was capped to remove a physical barrier separating Georgia Tech's main campus from Midtown for over 50 years. The green space, bike lanes and sidewalks incorporated into the design of the Fifth Street Bridge greatly improved access to Tech Square. A trolley service was also put in place to complement two Metropolitan Atlanta Rapid Transit Authority (MARTA) stations already serving the area.

These features helped the project weather the Great Recession extraordinarily well. Rents in the Centergy One building actually increased between 2008 and 2009, with no tenants defaulting on their leases during this difficult time period. Annual gross rents now exceed \$35 per square foot. Approximately 200 firms call Tech Square home today, including over a dozen accelerators and venture capital funds. Two new towers are scheduled for delivery by Atlanta-based developers in 2018. Portman Holdings plans to construct a \$350 million, 750,000-square-foot building, of which Georgia Tech will lease half for a high-performance computing center.<sup>79</sup> Cousins Properties plans to construct another \$200 million, 485,000-square-foot office building for NCR Corporation's world headquarters on a 15-year lease.<sup>80</sup>

### **A Reputation for Collaboration**

Georgia Tech supported the development of Tech Square in several ways. A master plan created by the institute in the late 1990s explicitly recognized a need to expand the campus beyond its existing boundaries through the formation of public-private partnerships and the construction of mixed-use facilities. Both of these recommendations ultimately influenced the capital structure and character of Tech Square.

The project also benefited from Georgia Tech's reputation for working effectively with industry, which it earned through its successful co-op programs and collaborative research initiatives. These activities gave many private sector firms confidence that they would benefit from locating in close proximity to the institute and its affiliated entities. Georgia Tech's willingness to move mission-critical academic units and research centers to Tech Square was also important. It demonstrated a long-term commitment to the project and a willingness to help faculty members overcome fears of moving to a once undesirable urban area.



Georgia Tech demonstrated a long-term commitment to the eight-block area comprising Technology Square by moving mission-critical academic units to the site. These were intended to complement a diverse array of facilities serving both startup enterprises and more established corporate tenants.

*Image courtesy of Spencer Shanholtz; reproduction of a site plan provided by the Georgia Institute of Technology*

## Creative Financing

To move the vision forward, Georgia Tech’s partners put in place a creative financing strategy. The University Financing Foundation (TUFF), an Atlanta-based nonprofit organization originally created to help Georgia Tech finance new facilities, was instrumental in structuring the capital stack. Since all of the buildings in the first phase of the project except for Centergy One were intended for academic purposes, they could be financed primarily with tax-exempt bonds backed by the Georgia Tech Foundation. A more complex financing arrangement was required for Centergy One because it was intended for a combination of academic and commercial uses.

TUFF addressed this problem by taking ownership of the five-story section of Centergy One occupied by academic tenants, subject to the condition that title would convey to one of Georgia Tech’s subsidiaries at the end of a 30-year capital lease. Approximately 90 percent of the space could then be financed with tax-exempt revenue bonds, allowing the institute to consolidate its incubators and commercialization services within Tech Square. More traditional construction financing and permanent debt were obtained for the remaining eight stories of the building by the private sector development partners participating in the transaction.

## Public Spaces

Considerable attention was devoted to the design of Tech Square’s public spaces. Although the primary objective of such efforts was not always to promote tacit knowledge exchange in and around Tech Square, good urban design principles proved to have just that effect. Ground-floor retail and broad sidewalks served to activate the streetscape and contribute to public safety. Moving parking decks to the rear of structures and providing open space where people could sit and talk promoted spontaneous interactions among those studying and working in the area. Georgia Tech committed to constructing its buildings in a welcoming manner by including street-level windows and common areas that invite the general public to enter. Green space and art installations were also included to create a lively environment. Tech Square received a ULI Award for Excellence in 2004, in part because of these features.<sup>81</sup>



Attractive common areas and ground-floor retail can be found throughout Technology Square, offering opportunities for informal interactions among those living and working nearby.

## Academic and Business Synergy

The positive attributes of the project gave the development team confidence that it could encourage large corporations to lease space for small labs or “innovation centers” at Tech Square focusing on advancements in marketing, product design and technology infrastructure.<sup>82</sup> This took longer than expected because of the Great Recession, but eventually proved to be a fruitful strategy. AT&T Mobility opened a facility at Tech Square in 2013 and many others followed, including the likes of Coca-Cola Enterprises, GE Energy, Home Depot, Panasonic Automotive Systems, Southern Company, ThyssenKrupp Elevator and others.<sup>83</sup> These facilities offer companies access to Georgia Tech’s faculty and students in a setting less encumbered by bureaucratic red tape and other impediments to collaborative activities that exist on traditional corporate campuses. They contribute to the innovation ecosystem by hosting networking events, open houses and product showcases, facilitating the exchange of ideas across individuals and firms.

## Residential Elements

The availability of additional land for development and strong demand for housing near Georgia Tech and Midtown employers have resulted in the emergence of a mixed-use environment around Tech Square. Over 15,000 residential units have been delivered in the submarket since the project's completion and another 8,000 are currently in the development pipeline. Two of the largest student housing complexes include the 25-story Square on Fifth (SQ5) and the 19-story University House. More than 1,300 undergraduate and graduate students now live near Tech Square as a result of these developments. Other apartment buildings nearby target the young professionals and highly skilled individuals who comprise an important component of Atlanta's technology workforce. These developments serve to energize the surrounding neighborhood by stimulating social interaction after work hours. The resultant population density helped transform the submarket from a 9-to-5 employment center to a more fully integrated innovation district with live, learn, play and work options.

## Learning from Tech Square

Tech Square's success must also be evaluated within the context of the broader economic transformation that took place in Midtown over the course of several decades. Speculative real estate developers were attracted to the area as early as the mid-1980s due to the submarket's proximity to the interstate system and convenient access to urban amenities such as Piedmont Park and the city of Atlanta's arts district. The construction of a number of office towers during this time period made Midtown a viable alternative for companies in search of space long before the idea of Tech Square was conceived. Even the Georgia Tech Foundation recognized these attractive spatial attributes by buying land in the submarket before it had a clear vision for its future use.

Projects such as these set the stage for over \$4 billion in capital investment in the 1.2-square-mile Midtown Improvement District over the last two decades alone, including \$400 million spent on infrastructure improvements intended to make the area safe, walkable and environmentally friendly. Midtown Alliance and its board of directors helped guide the growth, using revenue generated by a supplemental property tax to fund various marketing and planning initiatives. All of these activities played a role in attracting technology companies and highly skilled workers to the area, thereby making it difficult to isolate and quantify Tech Square's economic impact. The uniqueness of these circumstances draw into question whether innovation districts are likely to emerge as a result of similar campus expansions in the absence of favorable market conditions, strong leadership, supportive academic programming and ongoing investments in infrastructure.

## Leveraging the Institute's Presence

The speed at which the first phase of Tech Square was completed is another point of differentiation between this project and many other efforts to promote the development of innovation districts. By leveraging the economic and political resources of a major research institute, the Georgia Tech Foundation and its partners were able to effectuate change in a relatively large urban area in a very short period of time.

Opposition was limited because few residents were displaced by the project and private funds were used to pay for most of the buildings. These factors limited the need for extensive consensus-building activities among interest groups with wildly different visions. Competing viewpoints did need to be managed at times, but members of the development team proved capable of working effectively with policymakers and within the confines of established policy objectives. Tech Square was therefore able to redefine a significant portion of the Midtown submarket in only a few years, without waiting for smaller projects to occur in a more piecemeal fashion. Encouraging urban redevelopment of similar scope and scale on such a compressed timeline may be more difficult in other situations.

## Continual Adaptation and Reinvestment

Even in the presence of supportive circumstances and favorable market trends, continual adaptation and reinvestment in Tech Square on the part of Georgia Tech, the Georgia Tech Foundation, Gateway Development Partners and TUFF have proven necessary to maintain an atmosphere ripe for innovation and discovery.

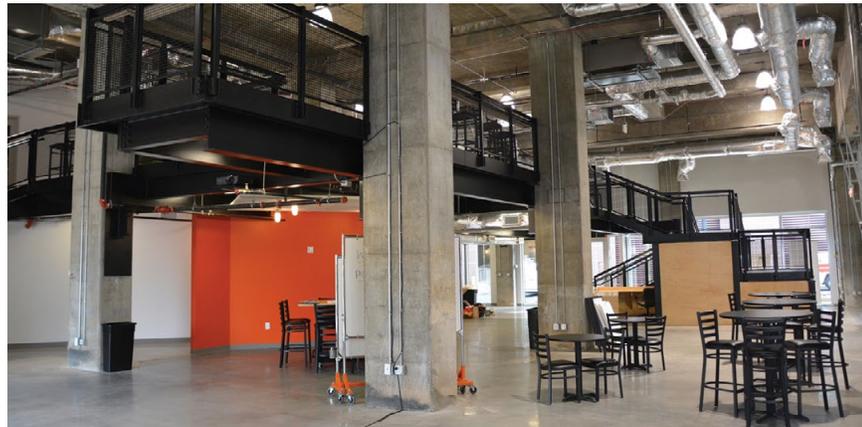
ATDC and Venture Lab continue to revise their governance structures and programming to better meet the needs of the entrepreneurs they serve. Startups in the same industry can now occupy space in ATDC's incubator simultaneously without refraining from recruiting talent from one another. Courses offered by Venture Lab are free of cost and available on a first-come, first-served basis to all interested parties. These types of operating procedures prevent both organizations from having to provide services on a competitive basis to enterprises they perceive to have the most potential for growth. They also reflect the competitive dynamics of entrepreneurial enterprises in the technology sector, which frequently engage in collaborative competition to grow and develop.

ATDC and Venture Lab staff have also helped companies find affordable space for biomedical research and manufacturing activities outside of Tech Square when they are ready to exit an incubator or co-working setting. Assistance of this type is necessary because gross office rents in the Midtown submarket often exceed \$40 per square foot per year. Young firms with limited resources therefore need alternative accommodations in some instances.

## Building Community and Programming

In order to attract and retain growing companies, the owners of the Centergy One building are investing in programming to enhance the value proposition of tenancy in their property. They recently hired Sandbox Communities as a private consultant to help energize common areas and develop a greater sense of community among those living and working nearby. The consultants began their work by conducting research to identify those most interested in building professional and social networks. Programming was then designed around the demands of this group.

Elevator signs are now used to increase awareness of what is going on around Tech Square, while events are held on a regular basis to encourage individuals with common interests to collide. Soapbox sessions sponsored by firms introducing new products, lunch-and-learn meetings hosted by corporate innovation centers, and informal happy hours and festivals are all part of the mix. Sandbox Communities also recently opened a 9,000-square-foot collaboration space on the ground floor of the SQ5 building with agreements in place to allow tenants of several nearby building to use it on a membership basis. These investments are continuing to create greater awareness of Tech Square's brand and market position 12 years after the first phase of the project was completed.



Sandbox Communities recently opened a 9,000-square-foot collaboration space on the ground floor of the SQ5 building, with agreements in place to allow tenants of several nearby buildings to use it on a membership basis.

*Image courtesy of Sandbox Communities*

## Challenges Moving Forward

The next stage in Tech Square's evolution is likely to be influenced by its ability to effectively compete with other submarkets vying for tenants in the technology sector.<sup>84</sup> Parking is becoming more of a concern as Midtown densifies, and increasing rental rents are preventing some startups from operating in the area. The benefits associated with proximity to Georgia Tech have historically outweighed these concerns and must continue to do so in

the future if the project is to thrive. NCR's decision to locate its headquarters adjacent to Tech Square bodes well for its viability as an innovation district, as does the recent emergence of several nearby accelerators funded by venture capital. It is imperative for those interested in Tech Square to build upon these points of connectivity between the business community and the technology sector moving forward.

# Conclusions and Suggested Best Practices

The four case studies presented in this report demonstrate that innovation districts can take on a variety of different forms and emerge in a host of different settings. They may be developed on infill or greenfield sites, involve relatively straightforward or extremely complex financial structures and leverage a diverse array of public-private partnership arrangements. Design features, tenant mix and programming can also vary dramatically from project to project, depending upon the district's economic objectives and policy goals.

Irrespective of these differences, a number of best practices in the planning and development of innovation districts appear to contribute to their success. Real estate practitioners and policymakers alike should take these best practices into account. The following recommendations, derived from the interviews conducted in this study, are intended to inform future development efforts.

**Recognize that it's all about the real estate ... and that it's not really about the real estate at all.** Creating a physical environment conducive to entrepreneurship and knowledge sharing undoubtedly requires a thorough understanding of market dynamics and the real estate development process. Nonetheless, those participating in the development of innovation districts must remain mindful of the fact that programming and services are just as important to success as bricks and sticks. Training courses, peer groups, networking events and other programmatic offerings frequently serve as the connective tissue holding an innovation ecosystem together. They also help differentiate it from more traditional office and research parks.

Programs such as these also build trust and understanding among individuals working within innovation districts, which may prove essential to future collaboration. Several of the interviewees participating in this research acknowledged that real estate professionals too frequently lose sight of this in their efforts to arrange financing, sign leases and advance short-run investment goals. The long-run success of an innovation district may ultimately hinge on the participants' ability to remain focused on the non-real estate needs of tenants in order to differentiate their projects from competitors.

**Ensure that development decisions are driven by a vision that promotes connectivity.** Establishing a clear vision for an innovation district and evaluating all development decisions based on their ability to advance that vision may be the most effective way to ensure the parties involved don't become overwhelmed by day-to-day tasks at the expense of broader objectives. Design, leasing and marketing resolutions should all promote connectivity among the individuals and companies working on-site in demonstrable ways.

The development team should be prepared to explain how an innovation district's architectural features, tenant mix and support services are anticipated

to promote the formation of linkages among startups, established firms, government entities and university partners. Conversely, the inability to describe the causal mechanisms through which innovation and entrepreneurship are expected to occur should be perceived as project weaknesses. It may also prove beneficial to create benchmarks measuring collaboration and cooperation within an innovation district to determine if synergistic relationships are emerging as planned. Considering these factors offers a means of distinguishing between thoughtfully designed innovation districts and those lacking enough substance to survive over the long term.

**Leverage the assets that are available while being mindful of those that aren't.** Both the public and private sector entities involved in the development of innovation districts should realize that there is no single formula for success. They must use the unique resources at their disposal in creative ways to deliver a product to the market that offers tenants advantages that are extremely difficult to replicate elsewhere. This involves leveraging the long-standing competitive strengths of a city or region, taking advantage of extant institutions and seeking out mutually beneficial partnership arrangements that may not always be readily apparent.

The case studies presented in this report suggest that working with research universities offers one of the most effective means of achieving these goals because of the legitimacy and market recognition they bring to a project. Innovation districts appear to move forward most quickly when universities are willing to dedicate significant financial resources and move mission-critical academic programs on-site to demonstrate their commitment to the area's future success.

At the same time, innovation district developers must realize that the presence or participation of a major research university in and of itself cannot make up for the absence of an entrepreneurial culture in the community at large. Markets lacking in technology startups and other knowledge-driven industries before the development of an innovation district may find themselves in the same position afterwards, unless they take significant steps to expand or redefine the benefits they offer to emerging firms. The case studies presented here indicate these tasks are easier to describe than to accomplish in practice.

**Recognize the importance of scale and the role it plays in creating an innovative environment.** Since innovation districts rely on a combination of formal and informal interactions between highly skilled people to promote the diffusion of knowledge, these projects often need to reach a critical mass or density level before desirable “collisions” occur on a regular basis. It is therefore beneficial for the early phases of a project to be significant in scale. Developing in this manner is challenging when the proposed innovation district concept is untested in the market or located in an area with relatively weak real estate fundamentals. In scenarios such as these, capital providers may prefer a more conservative approach to mitigate risk.

Creative financing involving a combination of tax-exempt debt, master leases and mortgage guarantees issued by institutional partners is frequently the solution to this problem. Public sector support in the form of land dedications,

tax increment financing and/or direct subsidies reducing the cost of infrastructure may also be imperative. The effective use of these tools allows innovation district developers to deliver essential components of their projects to the market more quickly than might otherwise be possible, thereby signaling to tenants that the underlying concept is viable.

**Use amenities, design features and programming to serve “insiders” and bring in “outsiders.”** Promoting tacit knowledge exchange among those working in an innovation district is clearly important, but it may prove insufficient on its own to maximize a project’s potential. Steps must also be taken to connect the firms operating within the innovation district with the outside world. Hosting public forums, providing attractive meeting space and integrating a mix of land uses into innovation districts are just a few ways to bring in outsiders offering unique perspectives and resources.

These points of contact help startup companies — not to mention an innovation district as a whole — plug into local, regional and global circuits of economic activity that can promote their ongoing growth. Comprehensive co-branding and co-marketing initiatives on the part of innovation district tenants may simultaneously help these companies convey a coherent value proposition to external groups. These activities transform localized factors into far-reaching sources of competitive advantage.

**Don’t underestimate the importance of effective leadership and governance structures.** The connectivity offered by innovation districts rarely happens by accident. It is the product of effective leadership and governance structures that keep stakeholders with disparate interests rowing in the same direction. Executive directors and advisory boards participating in these projects require not only real estate acumen, but also the ability to promote innovation districts to various constituencies and clearly articulate their potential benefits. Public officials should commit to the development concept and provide their private sector partners with enough autonomy to design and implement a strategy consistent with the established vision. At the same time, real estate practitioners participating in these transactions must recognize the importance of accountability and transparency due to the highly visible nature of innovation district development. Projects taking these factors into account tend to yield the best results for all parties involved.

**Proactively influence the public discourse and recognize the risk of miscommunication.** Innovation districts are often subject to political scrutiny because the public investments are large and the economic benefits difficult to quantify in the short term. Members of the development team must therefore lead the public discourse surrounding a project, as opposed to being responsive to the comments or critiques of others. They should take care to avoid overselling the anticipated benefits, despite the fact that innovation districts have been hypothesized to promote environmental sustainability, social equity and dramatic neighborhood transformation. Addressing the risk of miscommunication is also important because of the fluidity of these transactions. Participants must remain focused on core objectives and demonstrate progress towards those goals.



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