630 E. Hopkins - Work Session

I. Call To Order

II. Roll Call

PRESENTATIONS

1. Receive a staff presentation and hold discussion regarding the establishment of an Innovation District in San Marcos, and provide direction to the City Manager.

EXECUTIVE SESSION

2. Executive Session item in accordance with Section §551.071 of the Texas Local Government Code, Consultation With Attorney, to seek advice of legal counsel regarding:
   A) Resolution 2018-95R, a subordination agreement with Goldman Sachs Mortgage Company and JPMorgan Chase Bank that subordinates the City’s Deed of Trust lien against the Embassy Suites Hotel Property securing a note in the principal amount of $1,500,000 to the lien of such entities securing their loan to JDHQ Hotels, LLC. (a subsidiary of Atrium Hospitality) for the purchase of the hotel from JQH-San Marcos Development (a subsidiary of John Q. Hammons Hotels and Resorts) and
   B) Resolution 2018-96R, a loan assignment and assumption agreement between the City, JQH-San Marcos Development, LLC. (a subsidiary of John Q. Hammons Hotels and Resorts) and JDHQ Hotels LLC. (a subsidiary of Atrium Hospitality) that assigns the duties and obligations of JDHQ Development LLC under various loan documents with the City related to the development of the Embassy Suites Hotel and Conference Center to JDQH Hotels, LLC. in connection with the sale of the hotel from JQH-San Marcos Development, LLC to JDQH Hotels LLC.

IV. Adjournment.

POSTED ON MONDAY, JUNE 11, 2018 @ 4:00PM

Tammy K. Cook, TRMC, Deputy City Clerk
Notice of Assistance at the Public Meetings

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AGENDA CAPTION:
Receive a staff presentation and hold discussion regarding the establishment of an Innovation District in San Marcos, and provide direction to the City Manager.
Meeting date: June 19, 2018

Department: CMO - Kevin Burke, Economic Development & Downtown Administrator

Amount & Source of Funding
Funds Required: N/A
Account Number: N/A
Funds Available: N/A
Account Name: N/A

Fiscal Note:
Prior Council Action: Council discussed the Innovation District concept on October 2, 2017. No action was taken.

City Council Strategic Initiative:
Community Partners
Choose an item.
Choose an item.

Comprehensive Plan Element (s):
☒ Economic Development - Opportunity created by Capital of University, Business, Civic, & Cultural Leaders
☐ Environment & Resource Protection - Choose an item.
☐ Land Use - Choose an item.
☐ Neighborhoods & Housing - Choose an item.
☐ Parks, Public Spaces & Facilities - Choose an item.
☐ Transportation - Choose an item.
☐ Not Applicable

Master Plan:
Vision San Marcos - A River Runs Through Us
Background Information:
In regions around the country and world, clusters of universities and high-tech companies partner and collaborate with local governments and regional economic development agencies in order to boost tech-based economic growth and create quality jobs. These collaborative economic development and place-making efforts have been dubbed "Innovation Districts."

The Brookings Institution documented their emergence in the 2014 research paper, The Rise of Innovation Districts, and a series of related publications that are attached to this packet for reference. Brookings defines innovation districts as geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators. Districts are also physically compact, transit-accessible, and offer mixed-use housing, office, and retail.

In this Work Session, we will explore the Innovation District concept and discuss its relevance to the City of San Marcos, Texas State University and our regional partners along the “Innovation Corridor.”

Council Committee, Board/Commission Action:
N/A

Alternatives:
N/A

Recommendation:
Staff recommends adopting a Resolution to establish an “Innovation District Steering Committee” charged with conducting an audit of innovation ecosystem assets, identifying a district boundary, establishing a district governance structure, and developing an action plan.
Staff presentation and discussion regarding the creation of an Innovation District.
Brookings Institution framework.

Local and national Innovation District examples.

Understand the Innovation District concept and discuss the creation of an Innovation District to serve our community.
"We envision San Marcos with economic, educational and cultural opportunities that develop a stronger middle class and grow our local economy.

We foresee a vibrant community that strategically leverages the University and all available community assets to support environmentally sustainable industry, technological excellence, local business development and the arts."
"A geographic area where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators and accelerators. They are physically compact, transit-accessible, technically-wired, and offer mixed-use housing, office and retail."
ECONOMIC ASSETS

PHYSICAL ASSETS

NETWORKING ASSETS

INNOVATION ECOSYSTEM
GUIDING PRINCIPLES

The Brookings Institution describes 12 principles guiding innovation districts...
NOTABLE EXAMPLES

- Philadelphia University City
- Seattle South Lake Union
- Oklahoma City
- Cambridge, MA Kendall Square
- St. Louis Cortex Innovation Community
- San Antonio SmartSA
Central Austin innovation district focused on healthy communities.

Anchored and supported by:

- Dell Medical School
- Dell Seton Medical Center
- Central Health Brackenridge
- Austin Chamber
- Downtown Austin Alliance
Adopt a Resolution to:

1) Identify a district boundary around Downtown and STAR Park, and

2) Establish an "Innovation District Stakeholder Group" charged with:

- Conducting an audit of assets
- Establishing a governance structure
- Developing an action plan
The Rise of Innovation Districts: A New Geography of Innovation in America

Bruce Katz and Julie Wagner

Introducing Innovation Districts

As the United States slowly emerges from the Great Recession, a remarkable shift is occurring in the spatial geography of innovation. For the past 50 years, the landscape of innovation has been dominated by places like Silicon Valley—suburban corridors of spatially isolated corporate campuses, accessible only by car, with little emphasis on the quality of life or on integrating work, housing, and recreation.

A new complementary urban model is now emerging, giving rise to what we and others are calling “innovation districts.” These districts, by our definition, are geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators. They are also physically compact, transit-accessible, and technically-wired and offer mixed-use housing, office, and retail.

Innovation districts are the manifestation of mega-trends altering the location preferences of people and firms and, in the process, re-conceiving the very link between economy shaping, place making and social networking.

In recent years, a rising number of innovative firms and talented workers are choosing to congregate and co-locate in compact, amenity-rich enclaves in the cores of central cities. Rather than building on green-field sites, marquee companies in knowledge-intensive sectors are locating key facilities close to other firms, research labs, and universities so that they can share ideas and practice “open innovation.”

Instead of inventing on their own in real or metaphorical garages, an array of entrepreneurs are starting their companies in collaborative spaces, where they can mingle with other entrepreneurs and have efficient access to everything from legal advice to sophisticated lab equipment. Rather than submitting to long commutes and daily congestion, a growing share of metropolitan residents are choosing to work and live in places that are walkable, bike-able, and connected by transit and technology.

Led by an eclectic group of institutions and leaders, innovation districts are emerging in dozens of cities and metropolitan areas in the United States and abroad and already reflect distinctive typologies and levels of formal planning. Globally, Barcelona, Berlin, London, Medellin, Montreal, Seoul, Stockholm and Toronto contain examples of evolving districts. In the United States, districts are emerging near anchor institutions in the downtowms and midtowns of cities like Atlanta, Baltimore, Buffalo, Cambridge, Cleveland, Detroit, Houston, Philadelphia, Pittsburgh, St. Louis, and San Diego. They are developing in Boston, Brooklyn, Chicago, Portland, Providence, San Francisco and Seattle where underutilized areas (particularly older industrial areas) are being re-imagined and remade. Still others are taking shape in the transformation of traditional exurban science parks like Research Triangle Park in Raleigh-Durham, which are scrambling to meet demand for more urbanized, vibrant work and living environments.

Innovation districts represent a radical departure from traditional economic development. Unlike customary urban revitalization efforts that have emphasized the commercial aspects of development (e.g., housing, retail, sports stadiums), innovation districts help their city and metropolis move up the value chain of global competitiveness by growing the firms, networks, and traded sectors that drive...
broad-based prosperity. Instead of building isolated science parks, innovation districts focus extensively on creating a dynamic physical realm that strengthens proximity and knowledge spillovers. Rather than focus on discrete industries, innovation districts represent an intentional effort to create new products, technologies and market solutions through the convergence of disparate sectors and specializations (e.g., information technology and bioscience, energy, or education).

Innovation districts are still an early trend that, because of their multi-dimensional nature, has yet to receive a systematic analysis across the United States and other countries. Yet we believe that they have the unique potential during this pivotal post-recession period to spur productive, inclusive, and sustainable economic development.

Innovation districts help address three of the main challenges of our time: sluggish growth, national austerity and local fiscal challenges, rising social inequality, and extensive sprawl and continued environmental degradation.

They do so by providing a strong foundation for the commercialization of ideas and the creation and expansion of firms and jobs via proximity and collaboration. They are a vehicle for both revenue growth as well as the more efficient use of existing infrastructure. They offer the prospect of expanding employment and educational opportunities for disadvantaged populations given that many districts are close to low- and moderate-income neighborhoods. And, at a time of inefficient land use, they present the potential for denser residential and employment patterns, the leveraging of mass transit, and the repopulation of urban cores.

The purpose of this paper is to capture this emerging trend, explore the large forces and local practices and practitioners that are driving it and provide initial guidance to U.S. city and metropolitan leaders on how best to recognize and extend the growth of their own innovation districts, building on the distinctive assets and potential of their economies.

The next section of this paper defines innovation districts and offers a typology of places where they are developing. Section III then explains why they matter (namely their role in addressing a range of economic, social and environmental challenges our country now faces) while Section IV describes the profound market, demographic, technological, and cultural forces that are propelling this new spatial geography of innovation. Sections V and VI analyze the multiple assets of innovation districts, and provide real-world guidance and insights for cities trying to start or extend this model in their own communities. The paper concludes by exploring the implications of the innovation district trend for large private companies and institutional investors, federal and state government, and the broader field of urban practitioners.

**Defining Districts**

Innovation districts constitute the ultimate mash up of entrepreneurs and educational institutions, start-ups and schools, mixed-use development and medical innovations, bike-sharing and bankable investments—all connected by transit, powered by clean energy, wired for digital technology, and fueled by caffeine.

They embrace those very attributes of urbanism—what Saskia Sassen calls “cityness”—that were denigrated and often destroyed in the 20th century: complexity, density, diversity of people and cultures, and a layering of the old and the new. As Business Week observed in June 2009, “The trend is to nurture living, breathing communities rather than sterile remote, compounds of research silos.”

Given the vast distinctions in regional economies, the form and function of innovation districts differ markedly across the United States. Yet all innovation districts contain economic, physical, and networking assets. When these three assets combine with a supportive, risk-taking culture they create an innovation ecosystem—a synergistic relationship between people, firms, and place (the physical geography of the district) that facilitates idea generation and accelerates commercialization.

Most innovation districts adhere to one of three general models.

The “anchor plus” model, primarily found in the downtowns and mid-towns of central cities, is where large scale mixed-use development is centered around major anchor institutions and a rich base of related firms, entrepreneurs and spin-off companies involved in the commercialization of innovation. “Anchor plus” is best exemplified by Kendall Square in Cambridge (and the explosion of growth around

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**Innovation** is when new or improved ideas, products, services, technologies, or processes create new market demand or cutting-edge solutions to economic, social and environmental challenges.
MIT and other nearby institutions like Mass General Hospital, Philadelphia’s University City (anchored by The University of Pennsylvania, Drexel University and the University City Science Center), and St. Louis (flanked by Washington University, Saint Louis University, and Barnes Jewish Hospital). Other emerging districts can be found in the Greater Oakland neighborhood of Pittsburgh (around Carnegie Mellon University and the University of Pittsburgh Medical Center), Midtown Atlanta (around Georgia Tech University), downtown and midtown Detroit (around Quicken Loans, the Henry Ford Health System and Wayne State University) and the Texas Medical Center in Houston, Texas.

The “re-imagined urban areas” model, often found near or along historic waterfronts, is where industrial or warehouse districts are undergoing a physical and economic transformation to chart a new path of innovative growth. This change is powered, in part, by transit access, a historic building stock, and their proximity to downtowns in high rent cities, which is then supplemented with advanced research institutions and anchor companies. The model is exemplified by the remarkable regeneration underway in Boston’s South Waterfront, San Francisco’s Mission Bay, Seattle’s South Lake Union area, and the Brooklyn Navy Yard. The ambitious plans for the Cornell-Technion Campus on Roosevelt Island in New York City and Hunters Point in San Francisco also hold great promise. Many of these areas draw from the experiences of 22@Barcelona, a self-proclaimed innovation district that involved the complete re-make of an older industrial area in the city core.6

The third model, “urbanized science park,” commonly found in suburban and exurban areas, is where traditionally isolated, sprawling areas of innovation are urbanizing through increased density and an infusion of new activities (including retail and restaurants) that are mixed as opposed to separated. North Carolina’s Research Triangle Park, perhaps the 20th century’s most iconic research and development campus, is the strongest validation of this model. In November, 2012, after several years of review and outreach, RTP announced a new 50-year master plan to urbanize the quintessential exurban science park, recognizing that its isolated car-dependent environment is no longer optimal for spurring innovation and attracting younger talent. The master plan calls for a greater concentration of buildings and amenities, including the creation of a vibrant central district, the addition of up to 1,400 multi-family housing units, retail, and the possible construction of a light rail transit line to connect the park with the larger Raleigh-Durham region, including the universities.7 Other science parks actively engaged in urbanization efforts include the University Research Park at the University of Wisconsin-Madison, the University of Virginia Research Park in Charlottesville and the University of Arizona Tech Park in Tucson.8

Unlike convention centers or suburban malls, innovation districts are not cookie cutter developments; rather, they leverage distinct economic strengths in each metropolitan area. Districts vary not only by type but also in size, from 200 acres in St. Louis to 1000 acres in Boston. They have different avenues for growth, with some leading with new fields like “tech/information” (including the burgeoning “app economy”), others leading with life sciences (with clear niches in such fields as nano-technology, bio-tech, etc.).

WHO DELIVERS INNOVATION DISTRICTS

The list of institutions and individuals that are driving the growth of innovation districts is as varied as the economic composition of districts themselves. The following list provides a sample of the leaders at the vanguard of this trend in the United States and abroad:

➤ **Mayors and local governments**, such as former Mayor Tom Menino of Boston, former Mayor Joan Clos of Barcelona, and the Stockholm city government.

➤ **Major real estate developers and major land owners**, such as Vulcan Real Estate in Seattle’s South Lake Union and the Brooklyn Navy Yard.

➤ **Managers of research campuses**, such as the Research Triangle Park Foundation in Research Triangle Park and the Texas Medical Center in Houston.

➤ **Anchor companies**, such as Quicken Loans in Detroit, Comcast in Philadelphia, and Amazon in Seattle’s South Lake Union.

➤ **Advanced research institutions**, such as Washington University in St. Louis, Carnegie Mellon in Pittsburgh, Drexel University in Philadelphia, and MIT in Cambridge.

➤ **Advanced medical campuses**, such as the Henry Ford Health System in Detroit and the University of Pittsburgh Medical Center in Pittsburgh.

➤ **Philanthropic investors**, such as the New Economy Initiative and the Kresge Foundation in Detroit and the former Danforth Foundation in St. Louis.

➤ **Incubators, accelerators, and other economic cultivators**, such as Barcelona Activa in Barcelona, the Cambridge Innovation Center in Cambridge, and the BioGenerator in St. Louis.

➤ **Social networking programmers**, such as Venture Café Foundation in Boston and Cambridge and High Tech Campus Eindhoven.
imaging, and robotics), and others still leading with highly creative industries, such as industrial design, media, and architecture. Further, they vary in their urban form and density, the historic presence of transit (one hundred years in the case of Kendall Square, one year in the case of the Texas Medical Center), the presence of housing and retail, and the extent of collaboration with local schools and community organizations. Finally, they are distinctive in their level of geographic and institutional formality, where some, like Boston, are officially designated and branded, while others, like Kendall Square, are growing more organically in response to market forces. This intense variation in innovation districts requires practitioners to assess assets and liabilities with clear-eyed objectivity, so that growth strategies can be realistic and customized.

Why Innovation Districts Matter

Metropolitan areas in the United States and other mature economies face outsized challenges in the aftermath of the Great Recession. At the most basic level, U.S. cities and metropolitan areas need more and better jobs. According to the March 2014 Brookings Metro Monitor, the number of jobs in 61 of the 100 largest U.S. metro areas are still lower than their pre-recession peak; incredibly, job levels in 23 metros are more than 5 percent below their pre-recession peak figures. At the same time, the number of people living in poverty and near poverty has grown precipitously in the largest 100 U.S. metros—from 48 million in 2000 to 66 million in 2012—due not only to the recession but broader trends around wage stagnation and economic restructuring.

Beyond these economic and social demands, cities are on the front lines of addressing enormous fiscal and environmental challenges given federal gridlock and the absence of leadership in many states. In the face of these challenges, cities and metropolitan areas are experimenting with new approaches to economic development and sustainable development that focus on growing jobs in productive, innovative, and traded sectors of the economy while concurrently equipping residents with the skills—particularly STEM (science, technology, engineering and math) skills—they need to compete for and succeed in these jobs. These new approaches try to build on the distinctive assets and advantages of disparate places rather than merely pursuing heavily subsidized consumption-oriented strategies (e.g., building the next sports stadium, convention center, or performing arts facility) that yield low quality jobs or aspiring to unrealistic economic goals (“becoming the next Silicon Valley”).

Innovation districts are a key part of the new wave of local economic development and advance several critical objectives.

First, innovation districts further the ability of cities and metropolitan areas to grow jobs in ways that both align with disruptive forces in the economy and leverage their distinct economic position. Innovation districts enable companies, entrepreneurs, workers, researchers and investors to work across disparate sectors and institutions to commercialize ideas and co-invent and co-produce new discoveries for the market. They foster innovation across industries by concentrating people with different knowledge and expertise in dense urbanized areas; experts in technology, for example, work closely with experts in bioscience, finance, education, and energy. Innovation districts are, in essence, the vanguard of a new “convergence economy” which is galvanizing the growth of more competitive firms and higher quality jobs and spurring expansion in supportive professional and commercial service sectors.

Second, innovation districts can specifically empower entrepreneurs as a key vehicle for economic growth and job creation. Studies show the important role that entrepreneurs and start-up companies play in urban and metropolitan job growth and innovation districts can support this trend in several ways. The rise of collaborative facilities and spaces can, for instance, reduce overhead costs by offering below rate, low risk work spaces and providing technical spaces where exorbitantly expensive technologies are shared. At the same time, imaginative programming and networking can support idea generation and efficiently link young firms to mentors, advisors with specialized expertise, and potential investors.

Third, innovation districts can grow better and more accessible jobs at a time of rising poverty and social inequality. A substantial number of emerging innovation districts across the United States are close to low- and moderate-income neighborhoods, offering the prospect of expanding
employment and educational opportunities for disadvantaged populations. Leaders in cutting edge innovation districts are already dedicating resources to revitalize neighborhoods directly through investments in affordable housing, education, infrastructure and improved internet connectivity, and indirectly via enhanced tax revenues. Leaders in these districts are particularly focused on increasing labor market participation of local residents through training for jobs in both the STEM sector as well as retail and service firms.

Fourth, innovation districts can reduce carbon emissions and drive denser residential and employment patterns at a time of growing concern with environmentally unsustainable development. Innovation districts are potential engines for sustainable development since they embrace residential and employment density via the strategic use of transit, historic buildings, traditional street grids, and existing infrastructure. Some districts are going further by using renewable energy as their primary power source and by transforming their buildings, streets, and parks into living labs to test cutting edge sustainable projects in concert with technology firms and entrepreneurs.

Finally, innovation districts can help cities and metropolitan areas raise revenues and repair their balance sheets at a time when federal resources are diminishing and many state governments are adrift. Municipal governments generally rely on property, business, and sales taxes for revenue. Innovation districts can generate revenues through increased economic activity, rising housing values and increased demand for goods and services. Increased revenues can then be used to make necessary investments in infrastructure, public safety, affordable housing, local schools, and other necessary services. At time when federal resources are shifting to entitlement programs (e.g., Social Security) and many states are otherwise focused, these types of investments disproportionately fall on local governments.

Why Now—The Evolution of Innovation

The early rise of innovation districts could constitute the next phase of what one observer has called the “architecture of technology.” This architecture was once represented by industrial districts, and later by suburban science parks, both of which were products of the distinctive mix of demographic preferences, cultural norms, and economic imperatives of their times. Similarly, the growth of innovation districts is reflective of forces that are radically altering the requirements and preferences of people and firms that are today engaged in technology driven activities. These shifts are forging new links between economy-shaping, place-making, and network building that were not evident in early models.

A. Industrial Districts to Science Parks

In the 19th century and early 20th century, industrial districts—areas with high concentrations of manufacturing enterprises commonly engaging in similar or complimentary work—emerged in cities like Manchester, Milan, and Stuttgart in Europe and Baltimore, Cleveland, Detroit, New York, and Philadelphia in the United States. In the United States, these districts straddled the temporal boundary between the early mercantile city and turn-of-the-century industrial metropolis, a period marked by new types and organizational forms of manufacturing activity, innovations in energy and transportation, and rapid urbanization. Many cities in fact had multiple districts, which varied by product type, methods of production, power source, and labor force composition. Such a clustering of like activities facilitated the supply of materials and parts from one firm to another, and also attracted a large and fluid supply of workers, many of whom lived in the surrounding communities and walked to work. Enmeshed in the urban fabric, these “sub-city” areas thus provided not only a high density of employment opportunities, but essential neighborhood services and social amenities.

As the 20th century moved forward, the nature of manufacturing activity changed and eventually dispersed—first within regions, and eventually across the globe—and by the mid-1900s production in U.S. and European cities had sharply declined. The foundations of modern technology laid during the preceding decades had, however, enabled the advent of a new era of invention and innovation in science, communications, and information—as well as the rapid suburbanization of housing and commercial activity.
In the United States, technological advancement and geographic dispersion together helped drive the creation of innovative enclaves variably referred to as science parks or research parks. Beginning in the 1950s, collaborations of universities, private developers, and government designed and built these clusters of labs and firms with the aim of increasing the commercialization of research and attracting entrepreneurially-oriented scientists from industry and academia. The model originated with the Stanford Research Park—in what is now Silicon Valley—and was then expanded to include the development of Research Triangle Park in Raleigh Durham, and later the innovation corridors outside Boston, Philadelphia, and Washington D.C. Unlike urban industrial districts, these suburban parks were built as spatially isolated corporate campuses accessible only by car, mirroring the patterns of residential and commercial growth that dominated the post war landscape. They also reflected a research culture and patenting policies that encouraged secrecy. As such, they were generally closed innovation systems in which firms and scientists carefully guarded their ideas, and where interactions between them were limited.

B. A New Geography of Innovation

Innovation districts maintain elements of these earlier models but embody a new interplay of form and function that the modern innovation economy demands, and in turn supports. Like their predecessors, these districts grow out of a powerful set of economic, cultural, and demographic forces that are reshaping both how and where people live and work.

The emergence of innovation districts has been observed by a number of scholars and practitioners, many of whom have offered initial theories for their development. Research led by Thomas Hutton in over seven global cities found a rise of new industrial clusters within the inner city to “constitute important aspects of the spatiality of the New Economy,” making four classifications of specialized production. A research team at MIT’s Department of Urban Studies and Planning likewise identified discrete geographic clusters of creative industries, life sciences, and applied sciences within large-scale real estate development projects. Defined as “New Century City Developments,” these innovative clusters are “driven by inter-organization and cross-industry collaboration, open systems for R&D, and workers who have the aptitudes and skills required by the networked, knowledge economy.”

George Bugliarello of Polytechnic University in New York observed the emergence of “urban knowledge parks,” concluding that these urban parks develop around a knowledge institution in a city, provide public space or spaces for community activities, and possess high levels of density.

Richard Florida has provided important validation for the new geography of innovation. His recent mapping of venture capital activity by ZIP codes and area codes, rather than more expansive metro areas, shows that “high tech development, startup activity, and venture investment have recently begun to shift to urban centers and also to close-in, mixed-use, transit-oriented, walkable suburbs.”

These observations—and ours—recognize a trend that is both multi-dimensional and hyper-local, one reason why market dynamics on the ground have outpaced uniform labeling or analysis. Quantitative assessments, therefore, are still a work in progress. Innovation districts in Boston and St. Louis, for example, are assiduously documenting district-level growth, although not against broader city and metropolitan trends or other cities with similar economic starting points. Similarly, studies in New York, Pittsburgh, and San Francisco have documented the growth of leading tech sectors at the city rather than innovation district scale. While the analytics supporting this trend mature, Brookings and a growing number of practitioners are turning to broader economic and demographic research to understand the forces driving this new spatial geography of innovation.

1. The evolution of a knowledge and technology driven economy is altering the value and function of density and proximity.

In the past several decades, the U.S. economy has become increasingly reliant on knowledge and innovation. Today, approximately 20 percent of all U.S. jobs are in science, technology, engineering, or math (STEM) related occupations—a share that has doubled since the Industrial Revolution. These occupations can be found in a wide range of fields including the production of advanced goods like pharmaceuticals, medical devices, motor vehicles and aerospace as well as the provision of advanced
services like software, data processing, among many others. As the role of these innovative industries and occupations has grown in size and importance, so too, then, has the value of density and agglomeration. The benefits of clustering that produced industrial districts, and then science parks, are intensifying in ways that we are just beginning to understand. A growing body of research shows that employment density not only eases resource, goods, and labor sharing, but also enhances innovation. This happens by enabling a more seamless transfer of knowledge within and across firms, workers, and supporting institutions—in turn facilitating the creation and exchange of new ideas that fuel even greater economic activity and growth. A recent study by the British government captures this latter point well:

“If the marginal cost of transmitting information across geographical space has fallen significantly, the marginal cost of transmitting knowledge still rises with distance. Therefore, the knowledge spillover benefits of clustering in cities can be large for high-value, knowledge intensive sectors.”

The proximity effect is significant. Recent research conducted by Gerald Carlino and Robert Hunt found the clustering of R&D labs to be by far the “most significant” at very small spatial scales, such as distances of about one-quarter of a mile. They also discovered the clustering effect to quickly dissipate with distance, concluding knowledge spillovers to be “highly localized.” Isaac Kohane and several colleagues at Harvard Medical School found that even working in the same building on an academic medical campus makes a difference for scientific breakthroughs; “Otherwise, it’s really out of sight, out of mind.”

Density also matters when it comes to workers. The large number of employers within an urban area allows workers to change jobs more easily, giving them both greater flexibility and stability than employees in non-urban locales. This concentration of employment, which economists refer to as “labor market pooling,” also contributes to labor productivity. One seminal study found that doubling employment density increases average productivity by around 6 percent.

This general research on proximity and density takes on new meaning in what one observer has called the “age of convergence.” In biosciences, digital and biological technologies are co-mingling, opening entirely new possibilities for innovation breakthroughs to be commercialized. A recent San Francisco analysis coined the term “tech/information” industries to reflect “the convergence between technology and content.” The spatial implications of this hybridization of industry are profound.

“(Tech/information) companies thrive in urban environments, where they can connect with other industries, drawing on the culture and diversity of the city. By contrast, the previous generation of tech companies thrived with their headquarters located in suburban areas, located mainly near other tech companies. There was no possibility of cross-industry diversity.” [Emphasis added]

Recent analysis in New York similarly found tech industries to be less focused on building new technologies but rather “applying technology to traditional industries like advertising, media, fashion, finance, and health care.” These shifts reinforce and reinterpret notions of proximity and density.

The early days of technology growth was driven by semiconductors and computer hardware, products that depended on a deep roster of engineering talent and required large amounts of physical space to develop. In contrast, today’s growth is being fueled by the Internet and smartphones, and the creation of new ways of taking advantage of these now widely used platforms to deliver content, sell products, deliver services, play games and simplify life for individuals and businesses. [In other words], today’s technology revolution is much less about creating the infrastructure and plumbing for the Internet, but about applying technology to traditional industries.

To be sure, physical proximity alone doesn’t guarantee greater collaboration and idea exchange, nor is it necessarily even required. Silicon Valley, while a huge regional agglomeration of innovative activity, is the quintessential low-density, suburban model of physical development—yet its strength and success is defined by a pervading culture of openness and network building. But urbanization—and
the physical proximity that comes with it—does appear to both grow from, and in turn help smooth, the
development of “horizontal” relationships both within and between large firms, smaller subcontrac-
tors, vendors, and, importantly, talent. The move to create denser enclaves of innovation thus appears
to be a critical shift for communities that are not as “wired” for collaboration as Silicon Valley.

2. An economy increasingly oriented toward open innovation is changing both where firms locate
and how buildings and larger districts—from research labs to collaborative spaces to mixed-use
developments—are designed.

As the knowledge and technology driven economy grows, it is also becoming increasingly character-
ized by what Henry Chesbrough and others call “open innovation.” Chesbrough describes this as a
process whereby companies and firms more openly generate new ideas and bring them to market
by nimbly drawing on both internal and external sources. Under this new modus operandi, external
sources can generate the ideas that are then commercialized internally by a firm, while internal ideas
can be commercialized by external start-up companies and entrepreneurs. In other words, as Ches-
brough observes, “The boundary between a firm and its surrounding environment is more porous,
enabling innovation to move easily between the two.”36

What was once a phenomenon for highly specialized fields, the imperative to collaborate has
expanded to a broader group of knowledge-intensive sectors, including such science- and technology-
heavy fields as chemicals, biotechnology, telecommunications, and semiconductors. McKinsey &
Company, for example, has noticed a move from internal R&D labs to new “multichannel R&D models,”
which involve partnerships with “academic centers, partners, competitors, customers, venture capital
funds, and startups.”37

The rise of smaller companies engaged in research and development has also contributed to the
growing movement toward open innovation. A field once dominated exclusively by large corporations,
research labs and universities has become increasingly stratified, prompting greater collaborations
between firms of disparate sizes to develop and advance innovations. A number of factors contributed
to the proliferation of smaller R&D companies, namely the downsizing of larger companies, the pas-
sage of the Bayh-Dole Act (which enables university and individual researchers to own their federally-
funded research, sparking a new entrepreneurial mind set), and the growth of venture capital funding,
from very little funding in 1970 to nearly $100 billion in 2000.38

The result is that in today’s economic landscape, no one company can master all the knowledge it
needs, so companies rely on a network of industry collaborators.39 This, in turn, has led to a shift in
where companies and support organizations locate. A recent article, for example, on the growth of
Pfizer, Novartis, and other major pharmaceutical companies in Cambridge noted the following:

“Pharmaceutical companies traditionally preferred suburban enclaves where they could protect
their intellectual property in more secluded settings and meet their employees’ needs. But in
recent years, as the costs of drug development have soared and R&D pipelines slowed, pharmaceu-
tical companies have looked elsewhere for innovation. Much of that novelty is now coming
from biotechnology firms and major research universities like MIT and Harvard, just two subway
stops away.”40

The more open, collaborative nature of the knowledge economy has also altered the design inside
and outside the walls of the singular company. A recent New York Times piece on the “monuments of
tech” refers to this trend as the “aesthetic of disruption”—design which embodies change, flexibility, and
openness while at the same time displays the unique character and ethos of the individual company.41

The early, highly-recognizable model for open and highly networked workplaces is the newspaper
newsroom, but these principles have been implemented in places ranging from former New York City
Mayor Michael Bloomberg’s “bullpen” in New York City Hall to the campuses of Silicon Valley technology
firms. Facebook and Google, for example, have embraced “hackable buildings,” with open floor plans
that can be easily reconfigured to create dense, collaborative spaces for new teams and projects.42

Beyond office spaces and individual buildings, the planning and design shifts described above have
extended to the public and private realm. When Henderson, NV-based Zappos, the online retail shoe
giant, was looking for a new headquarters in 2010, CEO Tony Hsieh decided to create a more dynamic
workplace, with the goal of increasing interaction and collaboration among its workers. That inspired Hsieh a move toward open floor plans and the provision of greater amenities within the office. More than that, it also led him to embed the new headquarters building (and 2,000 Zappos workers) in Las Vegas’ old City Hall, and launch the $350 million Downtown Project to catalyze growth of a dense, multi-use, and walkable environment. “The idea,” Hsieh said, “went from ‘let’s build a campus’ to ‘let’s build a city.’”

In short, the phenomenon of open innovation is changing over time: expanding into new industries, altering the design of office spaces, reshaping the relationship between buildings, and now occurring at the district scale. Similar to open innovation between firms, innovation districts are experiencing the breakdown of traditional boundaries, making the process of innovation more porous between the public and private realms. Ideas, for instance, can be brainstormed in wired, public spaces, advanced in shared work spaces, prototyped in private technology labs, and tested on public streets.

3. Shifting demographic and household dynamics are fueling demand for more walkable neighborhoods where housing, work, and amenities intermix.

Recent data show that cities and metropolitan areas are increasing in population faster than the rest of the country, with the largest growth seen in large urban areas. From 2012 to 2013, large metropolitan areas with over 1 million people grew twice as fast as smaller metropolitan areas with populations under 250,000, while nonmetropolitan/micropolitan regions saw a collective decline. Brookings’ demographer William Frey believes that this trend is likely to continue, while the future of non-urban America is far less certain.

Within many large metropolitan areas, the trend becomes more acute as one examines areas in greater proximity to commercial downtowns. The country’s 10 largest “live-work” downtowns, as examined by the Philadelphia Center City District for the International Downtown Association, grew 77 percent faster than the country as a whole, and nine of the 10 downtowns increased in population faster from 2000 to 2010 than zones within a half-mile or mile of downtown.

What’s driving this revival in cities and their cores?

America’s family structure has been altered by the simultaneous aging of the population and the tendency of young adults to delay marriage and have fewer children. As a result, the prototypical family of the suburban era—a married couple with school age children—now represents just under 20 percent of American households, down from 24.1 percent in 2000 and 40.3 percent in 1970. This trend is only expected to accelerate in coming decades. As Arthur C. Nelson documents in his provocative book, Reshaping Metropolitan America, “between 2010 and 2030, households with children will account for about 13 percent of the total change in households; households without children will represent the rest.”

This demographic tumult is sparking a palpable shift in consumer—and worker—preferences toward more urban-oriented environments. Research has documented, for example, that 70 percent of Americans place a high priority on walkability, and similar majorities prioritize proximity to health care, entertainment, recreation, work and school, and social contacts. Older Americans are increasingly seeking smaller homes and apartments, as well as places with easy access to medical services, shopping, and other daily necessities. Meanwhile, middle-aged couples, whose children have “left the nest,” show greater receptivity to urban neighborhoods, cultural amenities, and shorter commutes.

These preferences are particularly prevalent among the millennial generation (Generation Y)—whose young and educated members form the core of our innovation workforce. For many of these young people, especially those that have delayed childrearing, “quality of life” is increasingly understood to mean proximity to urban amenities such as restaurants, retail, cultural, and social venues. This is evidenced in residential choices of this cohort. According to Joseph Cortright, between 2000 and 2009, the number of 25- to 34-year olds with college degrees living in neighborhoods near the central business districts in the nation’s 51 largest metropolitan areas increased by 26 percent, double the growth rate of college educated young adults in the rest of the metropolitan area.

Data from the Urban Land Institute reveals that 63 percent of millennials plan to move in the next five years, and 40 percent of them indicate a preference for living in medium or large cities (compared to only 28 percent of Americans as a whole). Within urban areas, living in close proximity to shopping, dining, and work is preferred by 62 percent of this demographic, along with 60 percent of both singles
and renters. A recent New York Times article underscored how these shifts in demographics are challenging the New York City housing supply, noting that “there are more single households, thanks to the young urban migration and the silver tsunami, that gathering wave of urban-minded retirees.”

Collectively, these three shifts—a converging knowledge economy, more open innovation ecosystems, and changing demographics—are stirring new demands for density, proximity, collaboration, and walkability, and in so doing are re-working the spatial geography of innovation. With concerted effort, the rise of innovation districts holds the potential to bring numerous benefits to the cities and regions in which they are located, and to the people who live and work there.

Deconstructing Districts

The potential for innovation districts to drive innovative, inclusive, and sustainable growth requires us to understand what drives them and makes them productive and prosperous. Unlike segregated business or residential districts that have for decades populated most cities and suburbs, or even the activity centers that more recently have sprung up around public transit stations, innovation districts uniquely contain three categories of assets: economic assets, physical assets, and networking assets.

➤ Economic assets are the firms, institutions and organizations that drive, cultivate or support an innovation-rich environment.

➤ Physical assets are the public and privately-owned spaces—buildings, open spaces, streets and other infrastructure—designed and organized to stimulate new and higher levels of connectivity, collaboration, and innovation.

➤ Networking assets are the relationships between actors—such as between individuals, firms, and institutions—that have the potential to generate, sharpen, and/or accelerate the advancement of ideas.

The relative strength of these assets in different communities varies considerably. In some places, districts are emerging from a cluster of strong economic assets but lack important physical assets and are initiating a planning process to comprehensively redesign the physical realm. In other cases, districts possess a strong set of physical assets with only a handful of economic assets and networks to build upon.

Innovation districts reach their potential when all three types of assets, combined with a supportive, risk-taking culture, are fully developed, creating an innovation ecosystem. As described earlier, an innovation ecosystem is a synergistic relationship between people, firms, and place (the physical geography of the district) that facilitates idea generation and accelerates commercialization.

Both research and interviews suggest that a supportive risk taking culture consistently undergirds highly productive innovation areas. This means, most unconventionally, embracing failure by making risky investments in people, firms, and development projects. It means breaking down the traditional, vertical hierarchies and valuing a diversity of talent, from 20- and 30-year olds to the more experienced leadership class. It means changing conventional rules still found in many inward-focused research institutions and organizations to encourage spin-offs, allow greater idea sharing across firms, and share spaces and technologies. It also means taking the long view and not expecting short-term returns or rewards as innovation processes commonly require consecutive failures before any breakthroughs can be achieved.

In describing these assets it is important to recognize that a number of them may appear to be conventional, if not strikingly rudimentary. While many assets described here have been integral to existing urban economic development efforts, they are being re-engineered to support the innovative, traded sectors that drive metropolitan economies. Research universities, for example, are by definition teaching institutions with research departments. A small, but growing, subset of these universities are now valuing commercialization as a primary objective and are successfully advancing innovations into the market. Moving well beyond their tech transfer offices, these universities are investing resources in accelerators, encouraging and supporting spin-offs, and developing adjacent land to concentrate future economic growth. Many more research universities have not yet expanded their mission to embrace commercialization fully, demonstrating a growth opportunity for these universities and the areas surrounding them.
A. Economic Assets
Economic assets can be separated into three categories: innovation drivers, innovation cultivators, and neighborhood-building amenities.

**Innovation drivers** are the research and medical institutions, the large firms, SMEs, start-ups, and entrepreneurs focused on developing cutting-edge technologies, products, and services for the market. Due to regional variations in industry strengths, each district is comprised of a unique mix of innovation drivers, contributing significantly to their distinctiveness. The research described below reveals important insights for districts building and assembling these assets.

First, a subset of industries—sensitive to the economic, demographic, and cultural trends described above—distinguishes innovation districts from other models and largely explains their preference for compact, urban-oriented enclaves. These industries are:

- High-value, research-oriented sectors such as applied sciences (from life and material sciences to energy technology to nanotechnology) and the burgeoning “app economy.”
- Highly creative fields such as industrial design, graphic arts, media, architecture, and a growing hybrid of industries that merge tech with creative and applied design fields.
- Highly specialized, small batch manufacturing such as advanced textile production and small artisan-oriented manufacturing.

Large advanced manufacturing facilities are not located within urban innovation districts. These facilities require substantial building or land footprints and require easy access to major highways.

Second, the role of universities deserves special consideration given their effects on the local and metropolitan economy, including their role in driving innovation activity at the district scale. Anselin, Varqa, and Acs, for example, sought to reconcile conflicting research findings on the role of universities and the local economy, drawing on larger and more geographically precise data sets. Their research found a “positive and significant relationship between university research and innovation activity,” both directly, as well as indirectly through its impact on private sector R&D. Further, Hausman, in analyzing Census data around universities after the passage of the Bayh-Dole Act in 1980 (an act allowing universities and other researchers the ability to commercialize research funded by federal dollars), found both long-term employment and worker income to rise “in industries more closely related to local university innovative strengths.”

Third, entrepreneurs are another asset worth highlighting. While Edward Glaeser’s research convincingly affirms the role of entrepreneurs in driving city employment growth, interviews with practitioners reveal that entrepreneurs are equally valued at the district-scale. All innovation districts aspire to support entrepreneurs. Boston’s innovation district, for example, includes an “innovation component” for new office and retail developments, where 15 percent of the space is earmarked for entrepreneurs and start-ups.

Fourth, while many districts are focused on the cultivation of entrepreneurs, they alone cannot be a growth strategy for districts. Research conducted by Agrawal, Cockburn, Galasso, and others found that a mixing of firms creates the optimal environment for innovation. Larger laboratories, for example, may stimulate spin-offs considered irrelevant to the lab’s overall business objectives, while smaller labs can create demand for specialized services that lower the entry costs for others in the market.

**Innovation cultivators** are the companies, organizations, or groups that support the growth of individuals, firms, and their ideas. They include incubators, accelerators, proof-of-concept centers, tech transfer offices, shared working spaces (with programs to support idea and firm development), and local high schools, job training firms, and community colleges advancing specific skill sets for the innovation-driven economy. In a small number of districts, legal counsel, patent attorneys, and venture capital firms are scrubbing project concepts to identify their value in moving forward. The rise of technology-driven industries in general is creating demand for supportive industries that employ highly-educated workers, such as advanced business services.

The aggregation of innovation cultivators in districts distinguishes them from standard business and research parks. While cities and suburban areas have cultivators sprinkled across their landscape, district leaders are assembling a critical mass of cultivators within a discrete geographic area. Equally
important, district leaders are “planning for the continuum” by building a range of cultivators to support entrepreneurs and start-ups at each stage of development, keeping them in the district as they mature. There appears to be a tipping point, however, when too many cultivators become counterproductive. “Too many incubators run the risk of spoon-feeding entrepreneurs too much. They need to work hard at achieving success,” shared Ylva Williams of the Stockholm Science City Foundation.

Neighborhood-building amenities provide important services to residents and workers in the district. This includes medical offices, grocery stores, restaurants, coffee bars, small hotels, and local retail (such as bookstores, clothing stores, and sports shops). In his analysis of the “new economy” clusters in the urban core, which include innovation-oriented clusters, Thomas Hutton found restaurants, coffee shops, and bars to “reflect not only contemporary urban consumption patterns but also a distinctive ‘geography of amenity,’ which complements the intensive social interactions of the new economy.”

Amenities activate district streets and public spaces, inviting a mix of people to shop, browse, and mingle. Many cities understand this well, and have heavily invested in corridor or neighborhood revitalization initiatives, often providing tax relief and other incentives for local businesses. District strategies build off these efforts, seeking to not only create a critical mass of amenities but to encourage a compelling design of storefronts and signage.

B. Physical Assets

There are three categories of physical assets, all of which are uniquely applied in each district: physical assets in the public realm, physical assets in the private realm, and physical assets that knit the district together and/or tie it to the broader metro area. Similar to economic assets, physical assets are in the process of being re-imagined to advance an innovation imperative—a process that is transforming the physical landscape into a laboratory of creativity, ingenuity, and invention. Experts in the fields of urban design, architecture, landscape architecture, and planning are experimenting with new concepts that facilitate collaboration and connectivity. This story of testing, trying and evolving was observed by MIT researchers, who in their global work on “New Century Cities” found districts to be “messy, with activities and uses all mixed up and things in a constant state of adjustment and change.”

Physical assets in the public realm are the spaces accessible to the public, such as parks, plazas, and streets that become locales of energy and activity.

In innovation districts, public places are created or re-configured to be digitally-accessible (with high speed internet, wireless networks, computers, and digital displays embedded into spaces) and to encourage networking (where spaces encourage “people to crash into one another”). Digital places,” as defined by MIT’s New Century Cities work, are the culmination of ambient technology, digital systems, and the physical form, creating venues for training and education, cultural events, and entertainment.

Streets can also be transformed into living labs to flexibly test new innovations. In Boston, Barcelona, Eindhoven, Helsinki, and Seoul, streetscapes and public spaces are testing new innovations in street lighting, waste collection, traffic management solutions, and new digital technologies. Living labs are what 22@Barcelona calls “open innovation at the city-scale.”

The re-make of physical assets extend far beyond technology-infused places however, as the design and programming of public spaces is equally valued. Small-scale parks and plazas programmed with concerts, innovation expositions, and eateries give reason for people to congregate and mix. District leaders are designing and programming such spaces strategically across their districts in an effort to facilitate the building of networks.

Physical assets in the private realm are privately-owned buildings and spaces that stimulate innovation in new and creative ways. Building from a solid base of traditional assets, such as mixed-income housing, neighborhood-serving retail, and research and office complexes, new assets are designed to support the innovation-driven demographic. Office developments, for example, are increasingly configured with flex work spaces, lab spaces, and smaller, more affordable areas for start-ups.

Micro-housing is another example of a new physical asset. These units offer smaller private spaces (typically 300 to 600 square feet) and access to larger public spaces such as co-working spaces, entertainment spaces, and common eating areas. Often marketed for migrating workers in innovation sectors, local residents, and younger single workers, micro-housing is now found in the districts
of Boston, Barcelona, and Philadelphia (under construction). St. Louis is also planning micro-housing units in their district.

**Physical assets that knit the district together and/or tie it to the broader metro area** are specific investments aimed to eliminate barriers that hinder relationship-building and connectivity.

Practitioner interviews suggest there is considerable work to be done within districts, particularly in linking anchor institutions (commonly oriented within their own campuses) with the rest of the district. For some districts, knitting together the physical fabric requires remaking the campuses of advanced research institutions to remove fences, walls and other barriers and replace them with connecting elements such as bike paths, sidewalks, pedestrian-oriented streets and activated public spaces. For other districts, strengthening connections requires changes at a much larger-scale, such as entirely re-structuring large areas with smaller, more walkable blocks and pedestrian-scale streets.

Strategies to strengthen connectivity between the district and the broader metro aim to ensure innovation districts do not become islands unto themselves. Investments in infrastructure, such as broadband, transit, bike, and pedestrian paths are natural connectors to be considered. Extending broadband into adjacent, often low-income neighborhoods, for instance, is a valuable strategy in reducing the digital divide. Investments in public transportation—including the Silver Line in Boston, the Red Line in Houston, the future M-1 in Detroit—have been essential, for instance, in increasing accessibility between districts and their surrounding metro areas.

**C. Networking Assets**

The inclusion of networking as its own asset category is supported by a growing body of research that reveals how networks are increasingly valuable and prolific within innovation-driven economic clusters. Scholars cite numerous advantages of networks: they are important sources of new or critical information for new discoveries; they encourage experimentation and are a testing ground for ideas; they help firms acquire resources; they strengthen trust and collaboration within and across sectors; and they help firms enter new markets including global markets.

The most famous success story of networking is Silicon Valley, where dense social networks were found to drive both experimentation and entrepreneurship. In her analysis of Silicon Valley, Saxenian observed, “Companies compete intensely while at the same time learning from one another about changing markets and technologies through informal communication and collaborative practices.” She argues that while proximity—in this case, a regional agglomeration—contributes to the development of dense networks, a collaborative culture appears to play a more significant role.

While countless numbers of science parks and tech parks were built on the hopes that Silicon Valley could be easily copied, Bert-Jan Woertman, an enthusiastic connector and creative communicator for High Tech Campus Eindhoven, reflects that “Networks cannot be copied nor can they be easily established.”

A recent *Harvard Business Review* article similarly presented the difficulties in establishing networks, finding that even start-ups and their parent companies “cannot leave knowledge spillovers to chance.”

Districts attempting to cultivate networks are driven by experimentation, creativity, and even a sociological understanding of how networks function. A leading scholar on networks, Granovetter, differentiates networks as either having “strong ties” or “weak ties,” which are determined by factors such as the frequency of contact, the emotional intensity of the relationship, and the reciprocity of commitments between the actors.

Strong ties occur between people or firms with a working or professional history, higher levels of trust, willing to share more detailed information, and more apt to participate in joint problem solving. Weak ties occur between people or firms working within a different economic cluster or context where there is infrequent contact. Weak ties provide access to new information, even novel industry information, new contacts, and new information on business leads that are outside of existing networks.

While it may seem obvious that a dense network of strong ties is the optimal condition for a highly innovation-driven environment, research indicates that both strong ties and weak ties are fundamental to firm success. Two primary categories of networking assets emerge from this research:

**Networking assets that build strong ties** focus on strengthening relationships within similar fields. These types of assets include: “tech regulars” (such as Eindhoven's Tech Regulars, where “techies” discuss problems or advances in their work as a collective), workshops and training sessions for
specific fields or technicians (daily activities along Boston’s waterfront), cluster-specific meetings (22@Barcelona), industry-specific conferences and monthly meetings (found in several districts), and industry-specific blogs for local firms and entrepreneurs.

Network assets that build weak ties focus on building new, often cross-sector, relationships. Examples include: networking breakfasts (such as 22@Barcelona’s breakfast where experts and star innovators offer new insights in their fields followed by open time to network), innovation centers (such as Boston’s newly constructed 12,000 square foot District Hall), hack-a-thons across industry clusters such as life sciences and tech (Stockholm), tech-jam start-up classes (found in Boston), and even the choreographed open spaces between highly programmed buildings (St. Louis). In this last example, St Louis will be clustering five innovation centers, with the purpose of generating “collision points” between smart people.80

Reflections from Practitioners

As innovation districts take hold, the real challenge is how each community marshals resources in a deliberate and customized way to capitalize on advantages and realize the promise of productive, inclusive, and sustainable growth. To that end, this section summarizes reflections from practitioners spearheading efforts to drive and develop districts. We found their experiences to vary considerably, in part due to the types of local actors, the level of resources at their disposal, and the distinct economic, physical, and networking challenges they set out to address. Even with these and other variations at play, practitioners for the most part offered similar reflections from their work so far.

This section is not meant to be a how-to guide for future districts but is instead intended to illustrate how these practitioners have come to understand and organize the complexities inherent in their work. It draws from interviews with practitioners and researchers working in leading edge innovation districts including University City in Philadelphia, Cortex in St. Louis, Kendall Square in Cambridge, the South Boston Waterfront, downtown and midtown in Detroit, South Lake Union in Seattle, the Texas Medical Center in Houston, 22@Barcelona, two innovation districts in Stockholm (Stockholm Life and Kista Science City), and Eindhoven in the Netherlands.81

We have consolidated their reflections into the following five strategies, each of which will be discussed in turn:

➤ Build a collaborative leadership network
➤ Set a vision for growth
➤ Pursue talent and technology
➤ Enhance access to capital
➤ Promote inclusive growth

1. Build a collaborative leadership network

A collaborative leadership network is a collection of leaders from key institutions, firms, and sectors who regularly and formally cooperate on the design, delivery, marketing, and governance of the district. Practitioners reflected that to bring innovation to scale—i.e. beyond the boundaries of individual organizations and firms—has required leaders from disparate institutions to encourage idea sharing across researchers, firms, universities, and supportive organizations. Likewise, physically remaking a place in the service of innovative growth and expanding employment and educational opportunities for low-income residents has required leaders to think and act in a multi-dimensional fashion, across multiple sectors and communities.

Practitioners in the field underscored the importance of a focused and organized leadership network to super-charge innovation, reshape places, build a culture of trust and collaboration, and steward networks. Interviews identified three key and, in some cases overlapping, models of leadership:

An important share of innovation district leaders found the Triple Helix model of governance to be foundational to their success.82 The Triple Helix consists of structured interactions between industry, research universities, and government. Collectively, they design long-range visions and create new
vehicles for innovation, such as research centers and incubators. In the case of 22@Barcelona, St. Louis, Kista Science City (Sweden), and Eindhoven (Netherlands), the Triple Helix model established a clear organizational model of collaboration from the start. Further, Eindhoven and St. Louis are finding real success in a leadership model that includes a powerful development agency to execute strategies.

Practitioners also cited the valuable role of one person, a team of people, or designated entity serving as a “catalyst,” an “integrator,” or a “facilitator” throughout the process. This was found to be true even in cases using the Triple Helix model. Integrators or facilitators were found to stitch together disparate efforts, help conflicted leaders reach consensus, and simply keep the process moving along. In St. Louis, Bill Danforth, chancellor emeritus of Washington University, founded the BioSTL Coalition, a regional organization championing the bioscience cluster, which brought together city and regional leaders to forge a vision for growth and innovation.83 In other places like Houston, Research Triangle, and Philadelphia, the powers and activities of an existing entity are rediscovered or reconfigured to fit the new purpose.84 In Seattle, Vulcan Real Estate has played a critical role in including local community groups in discussions around the design and location of housing, infrastructure and amenities.

Finally, and of particular importance in the United States, practitioners cited the instrumental role mayors can play in catalyzing the formation and evolution of innovation districts—a role that will likely grow over time. Former Seattle Mayor Greg Nickels played a critical role in the growth of South Lake Union, making key infrastructure decisions around transit, roads, and energy. Former Boston Mayor Tom Menino’s successful effort more recently to designate the South Boston Waterfront as an innovation district and steer its redevelopment in collaboration with a broad network of stakeholders is now being studied by mayors in cities as diverse as Albuquerque, Austin, Chattanooga, Detroit, and Pittsburgh as they seek to build on their strengths.

2. Set a vision for growth

A vision for growth provides actionable guidance for how an innovation district should grow and develop in the short-, medium- and long-term along economic, physical, and social dimensions. 22@Barcelona, for example, envisioned and articulated in forward-looking documents, a “new model of a compact city,” replete with innovation activities, green spaces, advanced industries, a strong industrial heritage, subsidized housing, a new mobility model, and revitalized public spaces.85 St. Louis and Stockholm Life also devoted the necessary time and resources to develop a highly visual, long-term vision for their districts. Beyond these examples, most practitioners cited the importance of developing a vision to leverage their distinctive strengths—economic clusters, leading local and regional institutions and companies, physical location and design advantages, and other cultural attributes. Innovation districts that may share the same physical geography (e.g., a downtown or waterfront setting) or similar institutional platforms (e.g., an advanced research institution or medical campus) can have radically different opportunities for growth.86

Clarify your competitive advantage

Given the distinctive starting points and strengths of disparate places, many district leaders grounded their visions in evidence, developed through the accumulation of relevant data and information, and accompanied by smart analysis, experience and intuition. Some places conducted analyses to guide areas of industry and entrepreneurial growth. Others instead used a bottom-up process driven by entrepreneurs to identify new and emerging areas of growth.

Many practitioners in the United States explained how detailed analysis helped define which clusters and/or research areas to advance. In the early stages of St. Louis’ conceptual planning, for instance, Battelle was hired to conduct a thorough analysis of the region’s industry clusters in life and plant science. The diagnostic included several areas of study: an assessment of the region’s economic strengths (evaluating their range of strengths within life sciences); a benchmarking exercise (against leading and comparable regions); and a SWOT analysis (a quantitative and qualitative analysis of strengths, weaknesses, opportunities, and threats). This work was an important precursor to the formulation of specific plant and life science strategies for St. Louis to consider.87

As the St. Louis example demonstrates, a city’s or metropolitan area’s distinctive economic strengths helped orient actors to the clusters that have the best chance of success rather than rely on a government’s attempt to pick industry winners. In fact, St. Louis’ strength in plant and life sciences,
Philadelphia’s strength in health, computing and informatics, and energy, and Eindhoven’s strength in precision machinery are the very clusters promoted in their innovation districts. As these places have evolved, new, emerging clusters grew out of R&D and smart commercialization or through surprising synergies between two or more clusters, creating an even more dynamic network of clusters.

Other practitioners have applied a more bottoms-up approach to identify new and emerging areas of growth. Through a methodology known as “smart specialization,” Stockholm and Eindhoven encourage entrepreneurs and other economic actors to enter into a process of “entrepreneurial discovery” to collectively determine new innovation projects or new areas of R&D. Rooted in open innovation, firms and entrepreneurs meet in structured settings to brainstorm, analyze, and ultimately test new ideas. Importantly, this approach aims to move the broader collective of firms into new and emerging areas.

Ylva Williams of the Stockholm Science City Foundation described their intricate process of supporting entrepreneurs, larger companies, universities, and health care providers to collectively identify new market opportunities. One successful example is the convergence between Stockholm’s strong sectors of life science, tech and ICT sectors (which also builds bridges between the city’s two main innovation districts: Stockholm Life and Kista Science City). In an effort to develop new digital health products and services, entrepreneurs, companies, and other public organizations developed the following process:

1. **Ideation workshop.** Patients, healthcare providers, companies and entrepreneurs define challenges or problems and subsequently develop potential solutions. If desired, participants can form teams around a possible solution.
2. **HealthHack.** A 48-hour workshop where teams of experts from tech/ICT and life sciences work together to find solutions to the ideas generated in the ideation workshop. Products in this phase range from sketches and prototypes to software ideas.
3. **Design workshop.** With the support of sector experts, the teams refine and design their prototypes developed during HealthHack.
4. **Pitch workshop.** The teams receive training in how to make successful pitches.
5. **Digital Health Days.** The best teams are selected to give a pitch presentation during the international meeting and the audience will vote for the best team.

Smart specialization, such as this above process, aims to “identify new product segments and further strengthen our competitive advantage,” said Williams. Perhaps somewhat similar in philosophy, some U.S. districts, including Boston’s innovation district, have opted to be silent on clusters, arguing that the selection process derive from entrepreneurs and the market itself.

**Imagine a new mix of institutional assets**
Practitioners have come to understand that a future vision of a particular district does not begin and end with an assessment of its existing institutional assets. They are keenly aware of the growing trend of leading edge technology and pharmaceutical companies, private and public universities, and even medical campuses to move advanced research and other critical assets to those locations that generate the largest return on investment for the firm or institution. From this understanding, district leaders have become more deliberate in their efforts to lure major innovation assets to their sites (i.e., to "un-anchor anchors") or to form new institutions whole cloth.

The innovation district in downtown Detroit was catalyzed by the decision of Quicken Loans to move its headquarters from suburban to downtown Detroit. Boston’s successful enticement to Babson College and the Fraunhofer Institute to open outposts on the South Boston waterfront is another example of this trend as is the University of Washington’s decision to locate an advanced medical research campus in Seattle’s South Lake Union. Stockholm’s largest technical university, KTH, opened a technical branch within Kista Science City. Lastly, 22@Barcelona successfully lured numerous universities to locate within their district, creating a new gravitational pull in the region and a new location for students, researchers and entrepreneurs to innovate jointly.

**Re-imagine your physical landscape**
Successful practitioners routinely spoke of the need to transform the physical landscape of their districts to create the favored attributes of complexity, density, and mixed uses and activities. This has been particularly challenging in places that bear the indelible markings of 20th century development.
Heavy infrastructure—highways and exposed railroad tracks—often divide natural districts. Euclidian zoning, originally intended to protect health and safety, segregated uses and isolated housing, office, commercial, and manufacturing activities from each other. A number of innovation districts have therefore required variances from antiquated land use and zoning ordinances and, in some cases, radical changes to existing infrastructure. In the “anchor plus” model, practitioners have re-drawn existing lines—tearing down walls, fences and other, even more substantial, barriers between anchor institutions and others, creating new mixed-use neighborhoods, making and creating new public spaces, and activating streets to draw people together, and re-designing corridors to make them more pedestrian-friendly. In both Kendall Square near MIT and St. Louis’ Cortex district, city governments (or their designated agents) revised land use conventions and zoning ordinances to affect this change. One Stockholm innovation district, Stockholm Life, is in the process of covering over (also known as “decking”) two highways that divide their anchor institutions and firms. In doing so, they will have space to build 5,000 units of housing, laboratories, several schools, and open space, effectively stitching the district together.

Practitioners involved in re-imagining urban areas have also undertaken (or benefitted from) pronounced changes to the physical infrastructure. 22@Barcelona, for example, was built on the remains of a 494-acre industrial area, scarred and separated from the rest of the city by railroad tracks. Through extensive public planning and investment, 22@Barcelona buried these tracks, increased access via a new public tram, designed walkable streets, and created new public spaces and housing. Boston’s innovation district was enhanced by the Big Dig, the removal (and submerging) of elevated highways that separated the south waterfront from the rest of the city. Equally important, construction of Boston’s third harbor tunnel markedly increased the level of access to the innovation district for both cars and transit.

In the few cases of the “urbanized science park,” re-imagining land use is the precursor to realizing any aims of urbanization—density, a mixing of uses, and a concentration of activities. This counters the original design of science and research parks, as exemplified by North Carolina’s Research Triangle Park, which were intended to ensure seclusion, isolation, and the protection of intellectual property, often on their own “research estates,” as the RTP Master Plan puts it. Today, an outsized portion of RTP’s master plan focuses on its physical redevelopment: specific urban nodes allowing greater density and amenities, the development of a vibrant central district with more retail, and building up to 1,400 multifamily housing units.

Innovation districts relied on a variety of planning tools as they engaged in this work. 22@Barcelona, Cortex in St. Louis, and Cambridge (MA), for example, developed master plans to address the complexity in physically redeveloping their districts. Under existing state statute, the city of St. Louis designated Cortex West Redevelopment Corporation the master developer of the innovation district. Cortex is also responsible for master planning, oversees development, issues tax abatements, and may use eminent domain. MIT experts in their global work on innovation districts found tremendous success using strategic visions, which are more nimble in scope than traditional master plans. Boston, instead, developed design guidelines and development standards to guide changes incrementally as new developments come on-line.

Lastly, a number of district leaders spoke of efforts to physically brand their area in effort to create a clear, undeniable experience when people enter a district. Dennis Frenchman from MIT describes branding as “narrative design” where the physical landscape is enhanced “so they more clearly communicate a particular set of images and stories.” District branding has included the strategic use of urban design elements (such as building massing, street design, public spaces, materials, and plantings); gateway development (where entrances into the district are pronounced or marked in some unique way); communicative digital displays, lighting, signage and banners (all carrying the district logo) along key corridors, at district gateways, and in public spaces.

3. Pursue talent and technology
Talent and technology appear to be the twin drivers of innovation in these districts. Talent commonly refers to those workers with the specialized education and skills necessary to generate new discoveries, commercialize ideas, design new products or production methods (or tinker with existing ones), and manage, brand, and package the ultimate result for the marketplace. Technology refers to the
tools, machines, infrastructure, and systems that help talented workers engineer industrial breakthroughs, disentangle big data and complex problems, and facilitate the production processes that follow. Both fields of work, practitioners shared, have required systematic planning and execution.

**Dedicate efforts to attract, retain and grow talent**

Practitioners argue that their ability to attract, retain, and grow talent plays a valuable role in differentiating seemingly identical clusters across U.S. and global cities and regions. Similar to businesses and leaders at the regional- and city-scale, district leaders have developed their own campaigns to lure individuals trained or educated in specific niches and specializations.

Practitioners explained that efforts to attract talent—which includes organized outreach programs, marketing campaigns, and highly tailored scouting techniques—largely target highly educated and skilled workers from other parts of the country, if not other global regions. Barcelona’s aim to become a global hub of innovation required both a local and global workforce, driving efforts to target international professionals as stimulants for local economic activity. Eindhoven, in their drive to be the “smartest region in the world,” found this necessitated a pooling of talent from across Europe and around the globe. South Lake Union’s most successful attraction strategy was to entice Amazon to move to the area. As one entrepreneur said: “We love being next to Amazon” They are to South Lake Union and Seattle what Microsoft was to Redmond and the Eastside in the 1990s. They attract a lot of talent. Talent begets talent.”

Efforts to retain talent were found to be similarly critical. Years of growing and assembling a strong pool of talent can quickly lead to paralyzing setbacks with the loss of key researchers and faculty. Eindhoven, for example, has dedicated staff focused on talent retention, offering a pipeline of support including cultivating dual career opportunities, and cultural training for international workers on “how to deal with the Dutch.” The retention of recent university graduates is equally important, a renewing source of human capital.

Growing talent, while the most time- and resource-intensive of these three categories, is described by practitioners as the very heart of a district’s core mission. On one hand, growing talent means growing entrepreneurial capacity and catalyzing start-ups and spin-offs dedicated to commercializing ideas. All practitioners interviewed underscored the extent to which they designed programs, and even often constructed new buildings, to support the growth process of entrepreneurs. “It’s all about programming: choreographing ‘spontaneous’ opportunities for smart people to interact with each other. This is what separates us from traditional science parks,” shared Dennis Lower of Cortex in St. Louis.

On another level, growing talent means developing a feeder system of STEM workers with the general and customized skills necessary for participation in innovative sectors. Recent work and experiences will be highlighted in the section on promoting inclusive growth.

**Seamlessly integrate technologies into the landscape**

Practitioners emphasized that technology plays two roles across the district landscape.

First, advanced technology provides the platform upon which innovation is conceptualized, advanced in R&D, and developed during prototyping and product formulation. Specializations such as artificial intelligence, next-generation genomics, and software development, rely heavily on advanced technologies, such as robotics, nanotechnology, and sophisticated computer systems.

The extent to which technologies now drive advancements in science and other fields is what propels districts to invest in technology enhanced facilities. A 2012 survey of university research parks in North America—one example of the “anchor plus” typology—reveals that 75 percent of these districts now contain specialized laboratory facilities. Innovation districts in Cambridge, St. Louis, and Eindhoven have found real success in sharing many of these cost-prohibitive technologies with firms and entrepreneurs through shared workspaces, shared laboratories, and technology centers. As Johannes Fruehauf, the head of Lab Central in Cambridge says, researchers should focus on “perfecting their science” rather than making substantial capital expenditures and assuming large early risks and liabilities.

Second, practitioners have observed the salutary effect of embedding technology in standard public infrastructure to create a platform for innovation. Installations of fiber optics to create a high-quality internet environment are now considered an investment in “the basics.” St. Louis, for instance,
is making substantial upgrades in internet connectivity by adding fiber to the existing sub-street infrastructure, further enhancing the computing power around big data and the potential for the commercialization of innovation.\textsuperscript{103} Barcelona constructed separate tunnels to lay fiber to ensure that upgrades to the system would be easier to meet growing demand.\textsuperscript{104} As described in the section describing physical assets, some districts are attempting to reduce the digital divide by extending fiber optics into adjacent, often low-income, neighborhoods. In their global work, MIT researchers focused on New Century Cities observed real growth in the development of digital systems (display and interactive communication systems designed into objects such as bus stop walls and café table tops) and digital places (the nexus of technology, the physical form, and activity creating new ways to teach/train and to entertain). These digital models are particularly pronounced in newer cities and districts in Asia (such as Seoul’s Digital Media City) and the United Arab Emirates (Masdar City in Abu Dhabi).\textsuperscript{105}

4. Promote inclusive growth
Promoting inclusive growth means using innovation districts as a platform to regenerate adjoining distressed neighborhoods as well as creating educational, employment, and other opportunities for low-income residents of the city.

Given broader trends around economic restructuring, anemic job growth, and wage stagnation, many cities and metropolitan areas have experienced substantial increases in the number of people living in poverty and near poverty over the past decade. As described below, innovation districts offer multiple opportunities for neighborhood revitalization, quality employment, and poverty alleviation. Pursuing these opportunities will lessen the tensions between innovative and inclusive growth, which have emerged in many communities.

Pursue comprehensive neighborhood revitalization
As a recent survey of urban-oriented research parks highlights, 45 percent of these parks are adjacent to, or located within, distressed communities.\textsuperscript{106} For this very reason, anchor institutions, like the University of Pennsylvania and Drexel University are pursuing the regeneration of adjoining neighborhoods through multiple strategies to improve public safety, provide quality education, enhance digital literacy and connectivity and expand affordable housing and retail opportunities.

As one practitioner explained, quality public schools are central to this multi-layered effort. To that end, several innovation districts are placing their considerable academic, real estate, and tech talent in the service of broader education reforms. This includes creating or adopting area schools, such as STEM charter schools or magnet schools, developing STEM-oriented curriculum, offering teaching assistance, and providing internship opportunities. In Philadelphia, for example, a consortium of institutions led by Drexel University is working with the city to create a K-8 school near its campus in an underserved neighborhood. The middle school program will be created and overseen by such esteemed institutions as the Science Leadership Academy high school in partnership with the Franklin Institute and the Academy of Natural Sciences of Drexel University. The development of the larger site would include a commercial component to yield capital dollars to help fund this school.\textsuperscript{107}

Increase labor market participation
Innovation districts are likely to grow jobs in multiple sectors such as housing, construction, medical, tech, services, and retail. The districts, therefore, offer ample opportunities to connect residents in high unemployment areas (particularly young residents) to occupations that require disparate sets of skills and work experience. Practitioners noted the need to be purposeful in hiring, training, and supporting local talent, with the ultimate goal of giving low-income workers economically-mobile career paths with family-sustaining wages. Further, by redirecting capital and jobs back into urban cores and urbanizing suburban parks, jobs become increasingly accessible, particularly by transit.

A number of practitioners emphasized the potential for equipping workers with the skills they need to participate in the innovation economy. Tom Andersson of Kista Science City in Stockholm, explained how they view this as their responsibility “in addressing the competence issue for the long-term.”\textsuperscript{108} One strategy a few practitioners are applying is to focus on the many innovation jobs (e.g., lab technicians) that require customized technical training in high schools or community colleges, rather than a four-year or advanced college degree. In fact, in mature science and research parks, the conventional
wisdom is that 40 percent of the jobs require high school diplomas or associate degrees, 40 percent require bachelor degrees, and only 20 percent require masters and Ph.Ds. This dovetails with Brookings research, which found that half of all STEM occupations are available to workers without a four-year college degree, arguing for an expanded definition of talent. The St. Louis and Barcelona districts are particularly focused on this potential, experimenting with school-to-work programs, apprenticeships that teach career-building skills and on-the-job training programs.

The challenges associated with linking low income residents to innovation-oriented jobs should not be underestimated given vast educational disparities. In Philadelphia, district leaders are also looking to connect area residents to job opportunities in the secondary and tertiary sectors (e.g., services, retail) that the innovation district catalyzes.

**Stimulate local entrepreneurship**

Innovation districts, finally, also offer rich opportunities for local entrepreneurial growth. In some cases, specific programs have been designed to grow or support entrepreneurs from pools of less educated residents and workers. The district in Medellin, Colombia, for example, is growing talent through its fabrication lab (known as Fablab), cultivating innovations developed by people living in informal settlements. Free to the public, the Fablab offers state-of-the-art high technology equipment, including the latest in 3-D, digital production. Drexel University and other area anchors in Philadelphia are pursuing entrepreneurial opportunities presented through local procurement. As shown by a recent report released by the Philadelphia city controller, purchases made by anchor institutions form a substantial potential market for local firms. These anchors are now coordinating efforts to hire local (including minority-, and women-owned) businesses to provide these products and services—essentially creating their own local supply chain. As Lucy Kerman of Drexel observed, "Local businesses tend to hire locally so anchors can effectively partner with local businesses, creating new jobs and new opportunities.”

**5. Ensure Access to Capital**

Capital is a necessary ingredient to fuel district growth and expansion. Financing in many forms and from a variety of sources is needed to support basic science and applied research; the commercialization of innovation; entrepreneurial start-ups and expansion (including business incubators and accelerators); urban residential, industrial, and commercial real estate (including new collaborative spaces); place-based infrastructure (e.g., energy, utilities, broadband, and transportation); education and training facilities; and intermediaries to steward the innovation ecosystem. A district-wide integrated strategy, as opposed to compartmentalized efforts, enhances the likelihood that different sources of capital will value the potential of this new form of development, ultimately supporting different kinds of firms, institutions, and activities.

**Redeploy and leverage local capital**

Many practitioners understand the importance of garnering local capital from disparate public, private, and civic sources to spur innovation district growth, particularly in the early stages. The provision of local capital, particularly at-risk capital, is a market validator and shows that local investors are willing to back the effort. To accomplish these goals, practitioners have been intently focused on redirecting local resources to new innovative purposes and smartly leveraging these resources so that they have full impact.

Practitioners point to early signs that the mixing and leveraging of different sources of local capital is already underway. City governments, for example, are smartly redirecting scarce public resources in ways that garner large private and civic investments. In St. Louis, the city government is using tax increment financing to support infrastructure improvements. The city has also designated Cortex as the master developer for the area, delegating an ample suite of redevelopment powers including the right to exercise eminent domain, abate taxes, and enter into parcel agreements with developers; those decisions have likewise leveraged hundreds of millions of dollars in private and civic sector investment. In 2003, for example, the Danforth Foundation announced that St. Louis-based plant and life sciences would be a predominant focus of its grant-making. In tandem with the McDonnell Foundation and private corporations, the Danforth Foundation led efforts to establish
the BioGenerator, a sophisticated accelerator with a non-profit seed fund. In the last five years, the BioGenerator helped close the funding gaps challenging many local startups, aiding in the successful launch of over 40 new life science enterprises. Further, this accelerator set its eyes on drawing national and regional capital, with its parent organization BioSTL hiring a dedicated person to increase access to national VCs, angel investors, and others.

Local institutional capital is also being unlocked to spur urban regeneration. MIT, for example, has used its extensive land holdings in Cambridge to spur the development of research, entrepreneurial, commercial, office and residential space. In Detroit, meanwhile, philanthropic investments have been a main catalytic force. The Kresge Foundation alone recently committed $150 million over five years to implement the recommendations and strategies outlined in the Detroit Future City report, doubling down on the investments it has already made along the riverfront, in M1 Rail, in the planning for the Detroit Future City effort, and as part of both the New Economy Initiative and Living Cities. These investments have provided a platform for large-scale federal investments (via FHA, DOT, SBA, HUD, and other sources) as well as other state and private sector commitments.

Provide a roadmap for broader private, civic and public sector investment

Practitioners understand that innovation districts will only reach their full potential when companies and investors outside the city and metropolis either decide to locate facilities in the district or otherwise deploy capital. Practitioners recognize further that innovation districts, by providing both a geographic, economic, and entrepreneurial focus, can bring together, in a disciplined and market-oriented way, the disparate elements required to accelerate city regeneration and metropolitan growth.

The practical implications of these insights: innovation districts must make a compelling case for investment and even create special investment vehicles tailored to disparate kinds of activities. Some innovation districts are experimenting in this regard as an avenue to raise capital. The emerging innovation district in Detroit, for example, is considering an investment prospectus that presents the vision and goals of the district, shows the market momentum to date (including a profile of major investors and investments), and describes current and future market opportunities. The prospectus would both make a general case for investment in the district but also target discrete classes of investors and institutions (real estate developers, equity investors, large firms, venture capital, and others).

The Detroit investment prospectus would cleverly build upon existing activities that have already attracted disparate kinds of investors to distinct opportunities. Invest Detroit, for example, has established a series of funds (e.g., a Predevelopment Loan Fund, an Urban Retail Fund, a Lower Woodward Housing Fund, a New Markets Tax Credit Fund) that try to match the expectations of private and civic investors with the financing needs of small- and medium-sized firms that serve different market functions in the downtown and midtown area. It is expected that the Detroit investment prospectus and the subsequent hosting of investor forums would educate the investment community about the market momentum in the innovation district and attract more capital to the specialized funds administered by an institution with a proven track record.

Scaling Innovation Districts

The rise of innovation districts—in all three typologies—has, to date, been a local phenomenon. Mayors and corporate, university, and philanthropic leaders, local developers, and intermediaries have largely driven their growth and development in most cities. A few national and global institutions have established a presence, with capital and facilities, in the leading edge districts, but most major companies and institutional investors have yet to acknowledge or adapt to this trend. The federal government has been an important but silent investor. With a few notable exceptions, states have largely acted without focus or purpose. To date, networks of innovation district practitioners and leaders remain nascent and isolated.

If current trends are any indication, innovation districts will continue to grow in size and scale, fuelled by market and demographic dynamics, open innovation, local leadership, and the place based investments of large anchor institutions. But if innovation districts are to realize their full potential across the country, then asset-rich companies, civic entities and financial institutions—with expertise
A. Scaling Private and Civic Investment

As described previously, local institutions and investors have, to date, played the primary role in powering growth and innovation district development forward, leveraging local institutional assets and sharpening their case for broader investment. A few institutions of national scope—tech giants like Microsoft and Google, big pharmaceutical companies like Pfizer and Novartis, large urban development firms like Forest City Enterprises and life science focused real estate investment trusts like Alexandria Equities—have spotted the emerging trend and moved facilities and capital to the leading edge innovation districts. But, for the most part, large national and global institutions have not participated at scale.

Several things are necessary if that is to happen. First, innovation districts need to be recognized as a separate sub-metropolitan/sub-urban geography worthy of focused data collection and analysis by companies that follow urban real estate and innovation trends.

Markets are created when risks and returns are made transparent, so that investors can invest in an informed way. Tracking economic trends in innovation districts (e.g., residential growth, real estate value appreciation, business formation and growth, tech transfer activity) will give investors the confidence to enter the market at scale. Companies that invest in innovative firms and start-ups will look at a broader set of cities and metropolitan areas for their investments. Companies with expertise in delivering mixed-use development and urban-oriented retail (e.g., Post Properties, Whole Foods) will see innovation districts as fertile geography for their products and services and locate accordingly. Firms that either provide innovative products and services (or provide legal, accounting, marketing, and other advice to such firms) will shift locations as well.

Given the potential for job creation in the districts, philanthropies, corporate as well as civic, will see the wisdom of supporting efforts to make innovation more inclusive. And given the entrepreneurial spirit of these new communities, demand for crowd-funding for creative and community projects will grow exponentially. Innovation districts represent, in short, a form of market creation, which will grow in size and scale as data and analytics are sharpened, first mover firms show decent returns on their initial investments and standards and models for more routinized investment are established.

Second, and more aspirational, innovation districts ultimately need to be treated as a unified asset class that recognizes the synergistic effect of disparate investments that strengthen and reinforce each other’s value, rather than as a collection of separate and unrelated investments. This is a major challenge to the status quo. Financial institutions, governmental agencies, and philanthropies compartmentalize all aspects of financing (equity investments, debt lending, and grant making just to name a few) even though the focus of these investments (e.g., housing, infrastructure, small business) are physically located in small geographies and interact in a way that enhances value for each of the disparate elements.

Innovation districts, by contrast, offer a possible vehicle for “thinking horizontally across industries and sectors” and overcoming the propensity of investments in cities to come from fragmented sources in “vertical silos.” As innovation districts evolve, the hope is that this insight will spur new financial innovations and unleash new flows of capital. Large commercial banks might establish special initiatives to bring spatial coherence to their current array of aspatial products and financing vehicles.

Other large financial institutions might invest directly in firms and intermediaries at the cutting edge of design, execution, and management of this new development form (Blackstone’s investment in the mixed use developer Eden Communities is an early example of this kind of capital shift). The end result of this: an ample supply of early stage venture capital and commercial lending becomes available in innovation districts to support the building and expansion of innovation-related firms, reinforced by real estate, small business, and community lending to create the housing and mixed-use buildings these firms and their workforce need to thrive.
B. Smart Feds, Smart States

The federal government and states, to date, have not intentionally driven the rise of innovation districts and, for the most part, have not even been cognizant of the trend. Their active engagement and involvement could accelerate the growth of districts, provided it respects the organic and differentiated nature of this nascent trend. They have three important roles to play: spurring innovation and entrepreneurial growth, financing land and infrastructure improvements, and boosting human capital.

Spurring Innovation and Entrepreneurial Growth

It is simply impossible to imagine the late 20th century rise of “cities of knowledge” in Silicon Valley, the Research Triangle, or the Boston megalopolis without recognizing the foundational role played by federal investments in basic and applied science and state investments in public universities. The federal and state governments, in short, have provided the institutional platform for innovation, the base for the generation and commercialization of ideas and the creation and expansion of companies.

The federal and state governments do, however, play disparate roles. For example, the federal government dominates in research funding, with federal actual outlays for R&D in FY 2011 of $125.7 billion, compared to state (and local) governments which account for only 1 percent of national R&D expenditures, with $3.8 billion in 2011, most of which is for academic R&D at colleges and universities. The federal government also supports the start-up, expansion, and trading activity of firms through the lending activity of the Small Business Administration and the Export-Import Bank. The states, by contrast, are major direct investors in public universities, advanced research aligned with state economic clusters and competitive advantages, and tax and spending investments in sophisticated building and equipment.

The general message to both the federal and state governments is to stay the course and continue to provide consistent platform funding and support for innovation. At a time of increasing fiscal austerity, maintaining the status quo would be victory enough. Yet there are several more targeted roles that the federal government and particularly the states should consider.

➤ The smart location of advanced research institutions: Given the shifting spatial geography of innovation, the federal government and states should consider locating new or existing advanced research facilities (or providing incentives for the location of such facilities) in innovation districts. The federal government achieved this when it located the first National Manufacturing Innovation Institute, focused on additive manufacturing, in the downtown of Youngstown, Ohio, close to the existing base of small and medium-size manufacturing firms. The state of California achieved this when it located the Institute for Regenerative Medicine in the Mission Bay district of San Francisco. As described earlier, the shifting of public university advanced research facilities to innovation districts (e.g., the location of UW Medicine in the South Lake Union district of Seattle) has become a recognized trend. In the next decade, states in particular would be wise to rethink the location of the research arms of institutions of higher learning to spur market creation and radically increase the return on state investment during a period of fiscal challenges.

➤ Targeted research funding: As federal funds for advanced research become scarcer, states would be wise to dedicate focused capital to advanced research efforts that builds on their special sector niches and competitive advantages. A recent Brookings paper noted the increased use of ballot box referendums for these purposes in California, Massachusetts, New Jersey, New York, and Texas. These kinds of targeted investments for capital projects complement the more routine funding that is available for basic science and applied research and, if located in strategic places, can promote synergy and rapid commercialization.

➤ Catalytic funding: States are often involved in particular tax and spending transactions that help grow the institutional platform for innovation in cities and metropolitan areas. The state of New York, for example, recently allocated $45 million to Buffalo to facilitate the expansion of the Columbus, Ohio-based Edison Welding Institute, one of the most advanced shared infrastructure facilities in the United States. The state of Massachusetts, meanwhile, recently made a $5 million grant to facilitate the building of the LabCentral facility in Cambridge. These kinds of targeted investments for capital projects complement the more routine funding that is available for basic science and applied research and, if located in strategic places, can promote synergy and rapid commercialization.
Financing/Regulating Land and Infrastructure

The federal government and states have traditionally played a large role in the financing and regulation of the physical realm of cities. To varied degrees, both levels of higher government make direct or indirect investments in transit, roads, other infrastructure, parks, housing, and other capital improvements. States also determine building codes and standards of construction, establish how tax delinquent properties can be foreclosed, and dictate the ground rules for using eminent domain.

As with innovation funding, federal and state funding for major physical assets have been unreliable in recent years, either due to revenue shortfalls in dedicated funds (e.g., the federal Highway Trust Fund) or partisan gridlock (e.g., the failure to reauthorize federal transportation laws on a timely basis). Thus, the first order of business is to make funding more reliable and predictable, and more flexible so that cities and metropolitan areas can apply the funding to the special needs of innovation districts.

But, several other focused engagements should be considered.

➤ **Smart removal of infrastructure barriers:** Many innovation districts, particularly those located near waterfronts and downtowns, still bear the scars of mid-20th century freeway construction that often divided communities and disrupted the organic street grid and connectivity of urban places. The removal and reconstruction of such infrastructure provides a means to spur innovative markets. The rise of the innovation district in the Boston Waterfront is, in many respects, a consequence of the Big Dig project to tear down and bury key highways, thereby re-connecting the waterfront to the broader city and metropolis. Similar efforts are underway in cities as diverse as Akron, Detroit, and Syracuse and will have enormous impact on investment and jobs once concluded.

➤ **Smart use of tax incentives:** Innovation districts often house properties of historic value, which, if renovated and repurposed, could be a critical component of a district’s brand and growth. They also tend to contain land parcels that are still contaminated by prior industrial use and require remediation that costs more than market value can bear. Targeted tax incentives for historic preservation, brownfield remediation, and land assembly have a high return on investment when applied in emerging innovation districts and should be encouraged and expanded. The Cortex district in St. Louis has already taken smart advantage of Missouri tax incentives and is a model in this regard.

➤ **Smart mortgage standards:** Innovation districts thrive when housing, retail, and small-scale innovative activities are co-designed and co-located near transit stops and anchor institutions. In the past, federal government sponsored entities and other federal and state agencies disfavored such mixed-use developments, setting a platform instead for large scale financing of single family homes. As housing reforms take hold in the aftermath of the Great Recession, sensible standards around mixed-use development and multifamily housing would benefit the smart, fiscally prudent growth of innovation districts.

Boosting Human Capital

The federal government and states heavily influence the delivery of basic education and skills training in cities and metropolitan areas. The U.S. Department of Education spent some $68 billion in FY 2011, on both K-12 and higher education, plus another $29 billion in tax expenditures related to education. States spent $261 billion of their own funds for the same purpose, while local governments spent nearly $600 billion on education. Relatedly, the U.S. Department of Labor spent $9.7 billion on employment and training programs in FY 2011.

Innovation districts benefit when these large scale federal and state resources are applied in a way that can be customized to their special education and skills needs. To this end, several models are worth considering:

➤ **Apprenticeship Carolina** helps South Carolina firms in a handful of key industry clusters establish apprenticeship programs that provide effective on-the-job training opportunities for prospective employees. It is based out of the South Carolina Technical College System. Consultants from Apprenticeship Carolina provide assistance throughout the development process, working with firms to create apprenticeships that meet the requirements of the national Registered Apprenticeship system.
Oregon’s Career Pathways initiative is focused on increasing the number of Oregonians with post-secondary certificates and degrees to prepare them for employment for jobs requiring more than a high school diploma but less than a Bachelor’s degree. It is offered through the state’s 17 community colleges and is designed to provide “stackable credentials” of academic certificates (12-44 credits) that can lead either to immediate employment or to the next academic credential within the career pathway, potentially leading to an associate’s degree. At Portland Community College, the Career Pathways initiative includes courses and certificates in fields such as accounting, manufacturing, and medical coding.

New York State Pathways in Technology Early College High School (NYS P-TECH) initiative is an effort to prepare thousands of disadvantaged students for jobs in such sectors as technology, manufacturing, healthcare and finance. The model is a six year, “9-14” program that combines high school, college, and career training and involves close partnerships with core industries.

The Path Forward

The potential for innovation district growth in the United States is exceptionally strong. Virtually every major city in the United States has an “anchor plus” play given the confluence of a strong central business district (mostly for the congregation of government and corporate headquarters, entertainment venues, and cultural functions), a strong midtown area (where advanced research institutions and medical campuses tend to concentrate), and a state-of-the-art transit corridor connecting the two.

Many cities and older suburban communities are also making progress on “re-imagined urban areas,” repositioning underutilized sections of their community through investments in infrastructure (or infrastructure removal), brownfield remediation, waterfront reclamation, and transit-oriented development.

Lastly, a handful of “urbanized science parks” (and their adjacent suburban communities) are clustering development, encouraging density, and creating spaces to allow individuals and firms to network openly.

The rise of innovation districts seem perfectly aligned with the disruptive dynamics of our era: “crowd sourced rather than close sourced, entrepreneurial rather than bureaucratic, networked rather than hierarchical.” They also intensify the very essence of cities: an aggregation of talented, driven people assembled in close quarters, who exchange ideas and knowledge in what urban historian Sir Peter Hall calls a “dynamic process of innovation, imitation, and improvement.”

Innovation districts, in short, represent a clear path forward for cities and metropolitan areas. Local decision makers—elected officials and heads of large and small companies, local universities, philanthropies, community colleges, neighborhood councils and business chambers—would be wise to unleash them. Global companies and capital would be smart to embrace them. States and federal government should support and accelerate them. The result: a step toward building a stronger, more sustainable and more inclusive economy in the early decades of this young century.
Endnotes

1. Anchor institutions are research universities and research-oriented medical hospitals with extensive R&D.


4. The term ‘innovation ecosystem’ is commonly defined and described in technology and business development magazines, newspapers, and on blogs. Brookings developed this expanded definition to incorporate a more extensive list of variables observed to contribute to the innovation ecosystem at the district scale.

5. Our observations are based on extensive interviews with practitioners and leaders on-the-ground, visits to more than a dozen districts in both the United States and Europe, reviews of other scholarly research on this trend and specific fields of study (such as the growing field of networking and the changing nature of physical planning), and a roundtable discussion held at the Brookings Institution in April 2013 with nationally-recognized urban development experts.

6. To learn more about 22@Barcelona, refer to the website: www.22barcelona.com. Another source was co-authored by the CEO of 22@Barcelona, Josep Miquel Pique’. Refer to Montserrat Pareja-Eastaway and Josep Miquel Pique’, “Urban Regeneration and the Creative Knowledge Economy: the Case of 22@ in Barcelona,” Journal of Urban Regeneration and Renewal 4 (4) (2011): 1-9.


14. Ibid.

15. Ibid.


Innovation analysis conducted in the cities of Pittsburgh, New York and San Francisco gives further evidence to this shift into the urban landscape. For New York, the report was written by the Center for an Urban Future, “New Tech City” (2012). For Pittsburgh, the paper was written by Ernst & Young LLP and Innovation Works, Inc. “Building Momentum: Investing in Pittsburgh’s Technology Sector” (2014). For San Francisco, the report was written by South Mountain Economics, LLC “A Balanced and Growing Economy: How San Francisco is Making the Transition to a Digital City” (2014).


Her Majesty’s Treasury and the Office of the Deputy Prime Minister, “Devolving Decision Making: Meeting the Regional Economic Challenge; The Importance of Cities to Regional Growth” (London: Office of the Deputy Prime Minister, 2006).


Prosperity for America’s Cities,” (Washington: Coalition of Urban Serving Universities, 2010). Research has also found a high correlation between the nation’s leading biotech clusters and the strength (e.g., medical research capacity, NIH grants, PhD graduates) of local universities. Refer to Joseph Cortright and Heike Mayer, “Signs of Life: The Growth of Biotechnology Centers in the United States” (Washington: Brookings, 2002).


42. Personal communication from Randy Howder, Senior Associate, Workplace Strategist, Gensler, February 20, 2013.


44. United States Census Bureau, “Energy Boom Fuels Rapid Population Growth in Parts of Great Plains; Gulf Coast Also Has High Growth Areas, Says Census Bureau” (2014).


50. Nelson, “Reshaping Metropolitan America.”


55. During our research, some innovation districts were found to organize their assets into two categories: hard factors and soft factors. Hard factors are defined colloquially as the “hard stuff,” such as the infrastructure and the physical structure of buildings that create the compact, urban form. Soft factors are the “soft stuff,” such as firms, people, and the important connections between them. We broke these two factors apart into economic, physical, and networking assets to enunciate the range of disciplines at play.

56. In this paper, assets are neatly bucketed under one of these three categories although several important assets can actually fit under more than one category. Shared workspace provides the best illustration of this interchangeability. While clearly a physical asset, it is also an economic asset (as economic activity is generated there), and a networking asset (as networking with adjacent start-ups often occurs there).


58. Research conducted by Hutton is particularly insightful with respect to the clustering of creative fields in urban enclaves. Refer to Hutton, “The New Economy of the Inner City.”

59. In touring innovation districts across the country, Bruce Katz witnessed repeatedly the presence of small manufacturing firms that rely on advanced technology. For more, see Alicia Rouault, “City Made: the case for small urban manufacturers,” CoLab Radio, March 26 2012, available at http://colabradio.mit.edu/city-made-the-case-for-small-urban-manufacturers/; See also Nisha Mistry


63. Personal communication from Kairos Shen, Director of Planning, Boston Redevelopment Authority, September 1, 2012.


66. Personal communications from Ylva Williams, Chief Executive Officer, Stockholm Science City Foundation, April 2, 2014.


70. Ibid.

71. Ibid.

72. Personal communication from Josep Pique’, CEO 22@Barcelona, 22@Barcelona, September 12, 2013.


74. On this subject, Saxenien explained that the differences between the Valley and Route 128 “have been overlooked by economic analysts or treated simply as superficial differences between “laid-back” California and the more “buttoned down” east coast. Far from superficial, these variations demonstrate the importance of local social and institutional determinants of industrial adaptation. Refer to AnnaLee Saxenian, “Inside Out: Regional Networks and Industrial Adaptation in Silicon Valley and Route 128,” Cityscape: A Journal of Policy Development and Research 2 (2) (1996): 41-60.

75. Personal communication from Bert-Jan Woertman, Marketing and Communications Director, High Tech Campus Eindhoven, September 5, 2013.


80. Personal communications from Dennis Lower, President and CEO, Cortex, October 3, 2013.
81. Eindhoven is not an innovation district, it is a regional economic cluster dedicated to advancing innovation-oriented sectors. Eindhoven was still used as a case given their emphasis on open innovation, entrepreneurial and small firm development, and networking.

82. Professor Etzkowitz, previously with Newcastle University in the UK, developed the Triple Helix after observing that innovation has shifted from a “hands off” linear model of innovation, which is an internal process within and among firms, to an “assisted” model of innovation that involves a coalition of three types of actors: industry, university and government. Its foundation was built on groundbreaking laws, such as the US Bayh-Dole Act of 1980 that permits universities, small businesses or non-profit institutions to pursue ownership of an invention funded by federal R&D dollars. This opened up the viability of universities transforming from a pure teaching institution to one of research and ultimately entrepreneurialism, an important shift that led to the Triple Helix. Sweden, developed a similar policy called “Teachers Exemption,” which allows teachers/professors to own the right to their own patentable inventions even if they are made during working hours.

83. Personal communications from Donn Rubin, President & CEO, BioSTL, March 24, 2014.

84. In Houston, for example, the Texas Medical Center had for decades the primary purpose of managing the parking and facilities of the nation’s most extensive medical campus. In recent years, under new leadership, the Center has expanded its role to include promoting collaboration on data and research across key member institutions.

85. Ajuntament de Barcelona, “22@Barcelona, the Innovation District,” presentation to the Brookings Institution, 2011.

86. The ecosystem and physical landscape that developed in Cambridge (around MIT), for example, is quite distinct when compared to what developed in San Francisco (around the California Institute for Regenerative Medicine) in Seattle (around the University of Washington) or in Houston (around the Texas Medical Center). Each of these innovation districts, however, is deeply enmeshed in life sciences and the bio-medical field.


103. Personal communications from Dennis Lower, President and CEO, Cortex, March 15, 2014.

104. Personal communications from Josep Piqué, CEO of 22@Barcelona, 22@Barcelona, March 27, 2013.


109. Personal communications from Dennis Lower, President and CEO, Cortex, October 3, 2013.


111. Personal communications from Lucy Kerman, Vice Provost, University and Community Partnerships of Drexel University, February 5, 2014.

112. The OECD defines informal settlements as “areas where groups of housing units have been constructed on land that the occupants have no legal claim to, or occupy illegally.”

113. Personal communications from Jenni Young, Carlo Ratti Associati, Srl, October 16, 2013.

114. Personal communications from Lucy Kerman, Vice Provost, University and Community Partnerships of Drexel University, February 5, 2014.


116. Personal communications from Lucy Kerman, Vice Provost, University and Community Partnerships of Drexel University, February 5, 2014.


122. For more on InvestDetroit’s managed funds, refer to www.investdetroit.com/managed-funds/ (April 15, 2014).

123. Some innovation district service companies are likely to initiate in one district and then expand to others. The Cambridge Innovation Center, a technology and life sciences business incubator that has helped launch over 1,200 companies near MIT since 1999, recently announced that it will expand its operations and start-up support services in Baltimore and St. Louis. See Michael B. Farrell, “Cambridge Innovation Center branches out: Kendall-based operation looks beyond Massachusetts,” Boston.com, February 17, 2013. University Park at MIT, for example, is now a model for other Forest City developments including the Science + Technology Park at Johns Hopkins in East Baltimore, the Translational Research Lab at the University of Pennsylvania in Philadelphia and the Colorado Science + Technology Park adjacent to the Fitzsimons Life Science District in Aurora, Colorado. Refer to www.forestcity.net/properties/work/science_technology (January 2013).

125. The phrase “cities of knowledge” comes from Margaret Pugh O’Mara’s excellent book of the same name. Her book is a careful exposition of the role of the federal government in creating Silicon Valley, and of the efforts of other places to create their own comparable centers of knowledge and economic development.


132. Refer to the Massachusetts Life Sciences Center, Capital Program found at www.masslifesciences.com/programs/capital/ (April 15, 2014).


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About the Authors
Bruce Katz is a vice president at the Brookings Institution and founding director of its Metropolitan Policy Program. Julie Wagner is a nonresident senior fellow with the program.

For More Information
Alex Jones
Policy/Research Assistant
Brookings Metropolitan Policy Program
acjones@brookings.edu

For General Information:
Metropolitan Policy Program at Brookings
202.797.6139
www.brookings.edu/metro

1775 Massachusetts Avenue NW
Washington D.C. 20036-2188
telephone 202.797.6139
fax 202.797.2965

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Advancing a new wave of urban competitiveness:
The role of mayors in the rise of innovation districts
June 2017
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Project background

The U.S. Conference of Mayors convened the Council on Metro Economies and the New America City: Working Group on Innovation and Placemaking in 2016. The working group agreed to explore the recent rise of innovation districts—the small geographic areas within cities where research universities, medical institutions, and companies cluster and connect with start-ups, accelerators, and incubators. These centers represent a new geography of economic development, indicating a radical shift from previously isolated suburban research parks toward amenity-rich, hyper-connected areas in our city cores.

In October 2016, the working group met in Pittsburgh to observe how the fast-growing innovation economy is emerging in several small geographies. The working group visited the Robotics Institute at Carnegie Mellon University, the Human Engineering Research...
Laboratories at the University of Pittsburgh, and Carnegie Robotics in the city’s Lawrenceville neighborhood. The group also participated in structured conversations around three themes—innovation, inclusion, and the intersection between place and innovation.

In April 2017, the working group traveled to St. Louis to learn more about the Cortex Innovation Community, an innovation district in the city’s heart. St. Louis leaders shared details on the multipronged strategy underpinning this innovation district, and, as one example, showcased a city block that includes six innovation centers. The working group gained new insights into a range of programming strategies aimed at strengthening innovation and entrepreneurial development in the downtown quarter of St. Louis and in Cortex.
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Section 1: Introduction

This is an extraordinary moment to be mayor of an American city.

A confluence of demographic and market trends is giving cities a renewed chance to leverage their economic strengths to create broad-based economic opportunity for all their citizens. These strengths are manifold: Cities are home to valuable assets—clusters of urban institutions and companies that both foster and benefit from the growing collaborative nature of innovation. Urban hubs throughout cities possess the natural attributes of walkability and culturally rich areas that talented workers value as places to live, work, and play. And cities provide better geographic access to job centers than their more sprawling suburban counterparts. In addition, the geographic proximity of many innovation districts to low-income communities creates opportunities to include residents in employment and business growth. Innovation districts also grow tax revenues, which cities desperately need for a range of urban services.

At the same time, a major shift in our American governance structure means that cities are facing an abdication of federal and state engagement—and an unreliability of funding that had for decades helped cities overcome cyclical fiscal hurdles and nurture local growth. This abdication is leaving cities, both large and small, largely on their own, requiring city leaders to design, finance, and deliver multisector economic development initiatives that were once seen as the responsibility of higher levels of government.
In the context of this shift in power, cities will be pressed to act with greater deliberation and ingenuity to identify and unlock the economic assets, physical attributes, and accessibility advantages that will drive growth in years to come. City leaders need to support the new spatial geography of their economies—how changing needs are pushing innovative workers and firms to cluster in dense urban hubs. Shaped by a range of forces, these hubs sit at the intersection of innovation, placemaking, and economic inclusion, and increasingly play vital—though varying—roles in driving local economic growth.

In some cities, at the advanced research-led end of the economy, innovation districts are developing around anchors such as universities, medical centers, or large firms. Many situate along waterfronts. Some are redeveloping science parks to be more compact and walkable. Strong in sectors such as biosciences, information technology, and creative industries, these districts cluster cutting-edge research institutions and R&D-intensive companies with start-ups, scale-ups, and business incubators. They are physically compact, transit-accessible, and offer mixed-use housing, office, and retail spaces.
In other cities, creative hubs and cultural clusters are spurring remarkable artistic collaborations and making the arts an anchor for community development. Main streets have become places where local entrepreneurs and the maker community are rebuilding communities by invigorating commercial corridors and the neighborhoods that surround them. And public markets—one of the earliest clustering of entrepreneurs—are creating new avenues of regional food production using local ingredients to inspire world-renowned culinary scenes. The markets also advance access to fresh food in underserved areas and improve public health outcomes.

This handbook offers a guide for how American cities can become stronger and more competitive by identifying and leveraging these hubs, with a specific focus on innovation districts, defined as geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators. Districts are also physically compact, transit-accessible, and offer mixed-use housing, office, and retail.1

Innovation districts are emerging in the downtowns and midtowns of cities like Atlanta, Cambridge, Indianapolis, Philadelphia, Phoenix, Pittsburgh, and St. Louis, where advanced research universities, medical complexes, and clusters of tech and creative firms are sparking business expansion as well as residential and commercial growth. They can be found in cities like Little Rock, Ark., New Bedford, Mass., and Chattanooga, Tenn., where other types of anchors, such as utilities and cultural institutions, are collaborating with universities to stimulate innovation activity. They can also take the shape of emerging tech hubs, which are growing in older city cores and along waterfronts in Boston, Detroit, Los Angeles, and Providence, R.I., to take advantage of lower land prices or authentically “gritty” building stocks.

U.S. mayors have an instrumental role to play in the growth and evolution of innovation districts—a role that will likely evolve over time. Mayors can serve as conveners, providing a venue and platform for the development of a collective vision on the 21st-century imperative:

To be clear, a district strategy is hyper-local—where leaders at that scale are at the helm. In most cities, mayors will play a supportive role, albeit a powerful one.
collaborate to compete. Drawing on their skills as leaders, mayors can be **champions** by offering a vision for growing a successful innovation economy. Drawing on their regulatory powers, mayors can be **catalysts** by devising new tools or streamlining old rules to incentivize district growth.

This handbook offers city leaders a way forward.
Mayors and their administrations can meaningfully support the rise of innovation districts by understanding this model with some degree of specificity. While many researchers and observers have documented the trend of highly localized, place-based innovation, the 2014 Brookings Institution report *The Rise of Innovation Districts* surfaced this new geography of innovation for American audiences. Brookings defines innovation districts as geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators. Districts are also physically compact, transit-accessible, and offer mixed-use housing, office, and retail.

Unlike the hyper-segregated business parks and residential districts that have for decades populated most cities and suburbs, innovation districts include a range of distinctive traits and assets. Districts contain three categories of assets:

- **Economic assets** are the firms, institutions, and organizations that drive, cultivate, or support an innovation-rich environment.

- **Physical assets** are the public and privately owned spaces—buildings, public spaces, streets, and other infrastructure—
designed and organized to stimulate new and higher levels of connectivity, collaboration, and innovation.

- **Networking assets** are the relationships between actors—individuals, firms, and institutions—that have the potential to generate, sharpen, and/or accelerate the advancement of ideas.

Innovation districts reach their full potential when all three asset types are fully developed in a supportive, inclusive, and risk-taking culture. The resulting ecosystem is a synergistic relationship between people, firms, and place (both the physical geography of the district and a community’s common sense of it). Innovation districts, are not simply real estate developments, nor are they some new government-defined program. They are communities that value diverse leadership and talent, recognizing that a multiplicity of backgrounds and perspectives is essential for generating and producing new ideas.

The blending of economic, physical, and networking assets to create an innovation district is not easy to achieve. Brookings and PPS observations across the United States and abroad has revealed that the creation of an innovation district first requires a range of actors—institutions, companies, nonprofits, and government—willing to act...
in unison. Moving forward demands a clear understanding of the district’s competitive position and how to leverage the cluster strengths of the city and region; careful thinking about how to creatively finance projects and programming to build a robust ecosystem over time; and the ability to choreograph a critical mass of economic, physical, and networking assets to elevate synergies.

This last point is worth illustrating in detail. A major takeaway from a review of districts in the United States and globally is that this convergence of assets is not occurring as frequently as one would imagine. Public spaces and activities that draw the community together are often the weak link. Not enough is being done to build denser social networks, both intentionally and serendipitously, and a sense of community—important precursors to strengthening innovation.

The following illustration—depicting the concentration of economic, physical, and networking assets within one node of an innovation district—offers an example of how these assets could better meld. While an innovation district commonly ranges in size from 300 acres to 1,000 acres, creating a critical mass at specific nodes—the natural hubs for community interaction—is proving to be essential to a smart and successful strategy that can be geographically extended over time. These hubs can take shape in many configurations: Sometimes along a key corridor; sometimes centered on a public space (such as the one illustrated below); and sometimes surrounding a magnetic innovation center or hub.
This illustration depicts the concentration of economic, physical, and networking assets within one node of an innovation district—the size of a full city block. While a district commonly ranges in size between 300 acres and 1,000 acres, creating a critical mass at specific nodes or a key corridor, which then extends over time and space, is proving to be a smart and successful strategy.

### Physical Assets
1. A walkable street grid provides the backbone of the innovation district—strengthening connections between people and firms.
2. Public spaces are designed and managed to spur interaction, learning, and networking.
3. Ground floors of buildings are activated with coffee shops, cafes, and gathering places—wired, comfortable, and inviting.

### Economic Assets
4. A mix of institutional, company, and start-up spaces are concentrated in close proximity—including affordable workspaces.
5. Major research facilities of large companies are also located near firms and institutions to help “crack the code” on new innovation.
6. Tech transfer offices, to support commercialization, are located where people and firms are innovating—not tucked away on a university campus.

### Networking Assets
Innovation District Typology: No One Size Fits All

Innovation districts are emerging in radically different ways across the United States. While *The Rise of Innovation Districts* (Brookings, 2014), emphasized three types of innovation districts, deeper investigation reveals that the phenomenon is far more nuanced. Several types of innovation districts appear to be emerging, their growth variably driven and shaped by:

- Dense concentrations of university and medical centers connecting with companies and start-ups to commercialize research
- Nontraditional “anchors,” such as government facilities or large corporations
- A critical mass of start-ups creating entrepreneurial districts of various sizes and compositions
- A reimagining of underused urban land, typically located along historic waterfronts or in industrial areas, and often catalyzed by recent investments in transit
- The redevelopment of suburban-oriented science parks to increase density, proximity, and amenities in key nodes—ideally accessible by transit
- The remaking of downtowns via new investments, innovative firms, and “satellite” campuses of universities and research institutions

In documenting the growth and evolution of districts across these various typologies, several important observations stand out:

- First, some cities intentionally cultivate an innovation district, while other districts emerge organically through market and community dynamics.
• Second, smaller clusters of innovation, though important, should not be mistaken for innovation districts. A smattering of co-working spaces, for example, does not reach the scale, the intensity, and the intentionality described in this handbook.

• Third, the range of actors participating in district development—civic institutions, companies, intermediaries, foundations, developers, and government—varies from place to place. Their role in advancing districts also changes quite radically. In one district, the mayor convened local anchors and companies to think through a district play; in another district, a university president played that role.

Why Innovation Districts Are Emerging

The rise of innovation districts across U.S. and global regions is a product of several powerful economic, cultural, and demographic forces:

• Districts are catalyzed by a global economy increasingly reliant on innovation. Today, approximately 20 percent of all U.S. jobs are in science, technology, engineering, or math (STEM) related occupations—a share that has doubled since the Industrial Revolution.4

• Districts support the changing nature of innovations, which is increasingly a collaborative process. Research—including a review of 19.9 million papers and 2 million patents—demonstrates how teams are consistently generating greater breakthroughs as compared with lone inventors.5 This is further precipitated by the growing adoption of “open innovation,” where companies and firms generate new ideas and bring them to market by drawing on both internal and external sources.6

• Districts attract talent and companies when they are appealing places to live, work, and play. Shifting demographic and household dynamics, including among millennials and senior citizens, are fueling demand for more walkable neighborhoods where housing, work, and amenities intermix.7 A density of firms, a diversity of amenities, and lively places are proving to be powerful enough to “un-anchor anchors”—that is, to entice seemingly unmovable institutions and corporate research facilities to relocate into districts.8
Integration is the essence of successful innovation districts. As such, intentional efforts to support or cultivate their growth require a holistic approach, applying these 12 principles in concert.

1. **The clustering of innovative sectors and research strengths is the backbone of innovation districts.** The concentration of innovative sectors and research strengths is what drives innovation districts from the start. Rather than government attempting to pick industry winners or developers focusing on a real estate play, districts thrive by concentrating and leveraging their city or regional economic strengths. For example, Oklahoma City’s strengths include health care and energy, while in Eindhoven, The Netherlands, it is precision machinery. Bottom line: Cities need to grow their own firms and, when possible, recruit from elsewhere.

2. **For innovation districts, convergence—the melding of disparate sectors and disciplines—is king.** Many economic developers think about the world in terms of industry verticals (e.g., agriculture, aerospace, health care). But innovation platforms—IT, new materials, robotics—are technology enablers that serve many industries. As hubs of research and next-generation technologies, innovation districts are more aptly defined by these horizontal platforms than by sectorial silos. As
such, district stakeholders need to build their capacity to connect seemingly dissimilar industries through collaborative research, conversation, and cross-cutting technologies.

3. **Districts are supercharged by a diversity of institutions, companies, and start-ups.** The strength of innovation districts comes, in part, from this eclectic mix. Districts that are largely comprised of large institutions often lack the accelerated innovative growth that small, nimble firms provide. And districts characterized by a density of start-ups have fewer opportunities for well-funded partnerships and alliances. The “magic in the mix” comes from aligning incentives between these and other public, private, academic, and civic institutions.

4. **Connectivity and proximity are the underpinnings of strong district ecosystems.** A well-connected district is paramount to its success—transit, bike paths, sidewalks, car-sharing, and high-speed fiber. Identify gaps and invest wisely. At the same time, districts should measure their success by steps not miles. The experience of proximity—or a physical concentration of firms, workers, and activities—is what differentiates a “buzzing” district from a boring one.
5. **Innovation districts need a range of strategies—large and small moves, long-term and immediate.** Innovation district development requires a mix of large investments (e.g., in transit, high-speed fiber, venture and other capital funds) and smaller strategies (e.g., reactivating a neglected park and programming spaces). These approaches are complimentary: Large-scale investments set the foundation upon which other activities can be layered, while short-term, community-led processes can inform bigger and lengthier undertakings and create crucial momentum.

6. **Programming is paramount.** Programming—a range of activities to grow skills, strengthen firms, and build networks—is the connective tissue of a district. A major misstep is to undervalue programming within and across the district, both indoors and out.

7. **Social interactions between workers—essential to collaboration, learning, and inspiration—occur in concentrated “hot spots.”** A handful of social hot spots in a district will likely punch far above their weight in terms of building community. They may be organic, like Silicon Valley’s legendary Walker’s Wagon Wheel, or designed, like Venture Café near the MIT campus. Districts should identify, analyze, protect, and support such exceptional places.

8. **Make innovation visible and public.** Daylighting innovation in public and private spaces helps inspire curiosity in aspiring innovators, start conversations between neighbors, and convey the story of an innovation district to potential recruits or investors. It also transforms public spaces into “living labs” to test prototypes. To help further, activities like hackathons (a sprint-like event encouraging collaboration generally on software/hardware development), symposiums, and health clinics, which typically occur indoors, might

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Some districts are testing innovations in public spaces, such as using light posts to analyze weather or traffic conditions. Illustration credit: Brookings.
accomplish more in the public realm. And finally, greater transparency at the ground level of buildings allows pedestrians to connect with the innovation activities inside.

9. **Embed the values of diversity and inclusion in all visions, goals, and strategies.** Innovation districts not only promote new technologies, they grow a range of new firms and new jobs with living wages. At a time of rising social inequality, innovation districts must become an avenue to economic opportunity for city residents—particularly for those in nearby neighborhoods that struggle with poverty and disinvestment. But growth alone is not enough. Only through intentional training, hiring, business development, and placemaking efforts can districts cultivate new local talent, encourage more diverse ownership structures, and help address poverty and disinvestment in surrounding communities.

10. **Get ahead of affordability issues.** Successful districts can, over time, drive up market pressures, impacting the ability of start-ups, maturing firms, and neighboring residents to remain in these areas. Smart districts respond early, getting ahead of the curve through a range of policy moves and strategic projects that preserve affordability and the diversity it engenders.

11. **Innovative finance is fundamental to catalyzing growth.** Most innovation districts require new finance streams to advance innovative and inclusive growth without straining existing and limited resources. As districts will likely receive less funding from states and the federal government to support their efforts, creative financing tools—including ways to leverage city-owned and district assets—should be explored with an eye toward sustaining financing over time.

12. **Long-term success demands a collaborative approach to governance.** An innovation district’s work ethic and culture is “collaborate to compete.” A bottom-up horizontal governance model—involving business, academic and civic institutions, government, workers, and residents—can best orchestrate what must be done collectively: Identifying assets; design, finance and strategic initiatives; public space management; and evaluating progress.
Most American cities—namely small to mid-size cities—will have one shot at successfully leveraging economic assets to cultivate an innovation district in today’s economy that is globally competitive, connected, and vibrant.

Mayors, who naturally possess a citywide view, should commission and oversee an “audit” process to identify geographic areas within the city where economic, physical, and leadership assets concentrate. Based on those findings, mayors and their staff should select the area with the greatest potential to grow into a thriving innovation district, and target efforts toward its development.

While selecting one innovation district may seem risky, or even insensitive to the economic growth potential of other city hubs, the level of effort and investment necessary to cultivate a robust innovation ecosystem demands geographic focus, especially within the context of shrinking state and federal funding. Most places, in fact, will only be able to create the necessary density of actors, amenities, and institutions in one area.

To identify the geography with the strongest set of starting assets from which to develop an innovation district, mayors and city experts in economic development and other specializations (e.g., city planning and transportation) should ask three primary questions:
1. Where are the city’s highest concentrations of economic assets?

The goal of this first step in the analysis is to identify areas that have a density of assets needed to produce talented workers, grow and attract firms, and drive new investment activity. This analysis is also to determine if these same areas are aligning their distinctive assets in ways that make them competitive at the national and global level.

Areas with a **critical mass of assets**—high density of firms, institutions, workers, and researchers:

**Data to examine**
- Total employment by sector
- Real estate density
- Office, retail, and housing occupancy rates

*Look for areas with a concentration of assets higher than the city average*
Areas that are carving out a **competitive advantage**—economic specialty or growing set of niches developed by firms and anchors within a certain part of the city:

- Employment, output, and productivity by industry
- Venture capital (dollars and deals) by industry
- Degree to which start-ups are becoming job generators

**Data to examine**

Seek to understand how the area's competitive advantage links to the broader industry clusters of a region

Areas with **innovative capacity**—institutions, companies, and/or public facilities that possess specific technical capacities:

- Total research and development (R&D) dollars)
- Number of patents filed annually by the public and private sector
- Technology transfer metrics for anchor institutions (start-ups, patents, licensing deals by academic institutions)

**Data to examine**

Look for areas with a concentration of assets higher than the city average

After compiling a short list of potential areas, actors engaged in the evaluation process should proceed to the next step, an early analysis of physical assets.
Connectivity to the city and region is essential to the long-term success of any district.

2. Are these hubs of economic assets enhanced by quality and connected physical assets?

The goal of this second step is to determine how existing and potential physical characteristics can create the right platform for innovative growth. Ideally, it will show where people and firms are connecting and collaborating at levels far higher than in other parts of the city and where people and firms are drawn to quality, vibrant spaces.

Hubs with some degree of connectivity with other parts of the city and/or region. Connectivity to other parts of the city and region is essential to the long-term success of any district.

Factors to evaluate

- Whether identified economic hubs have transit access to other parts of the city or region, including regional or city rail and bus routes
- Whether there are physical barriers present that limit access to these areas, such as highways, railroads, bodies of water, or large parks that limit overall accessibility
Hubs with some degree of **internal connectivity**. Innovation districts need a high level of internal connectivity to strengthen connections between people and firms.

**Factors to evaluate**

- The extent to which internal streets are part of a continuous, walkable grid with frequent intersections
- Whether streets are designed for slow but continuous car traffic to promote pedestrian safety and comfort
- Whether sidewalks are wide and comfortable. Is there, for example, space allocated for multiple modes of transportation including bikes?
- The extent to which there are ample destinations to make an area walkable
- Whether discrete parts of hubs are cut off or made less accessible by gated developments, dead-end streets, railroad tracks, excessively long blocks with no active uses, or other barriers

Hubs with some degree of **density and mixing** to create a highly networked and “buzzing” innovation community. This evaluates the hub’s ability to create a mix of residential and commercial buildings, ground-floor activity, public markets, cultural amenities, public spaces, and other uses that connect people to one another (as determined by zoning and how uses are currently mixing on the ground).

**Factors to evaluate**

- Employment and residential densities
- The ability to mix uses
- The ability to have a range of ground floor uses (e.g., retail, restaurants, community spaces)
- The extent to which there are 'destination streets', like a walkable strip of retail or a street fronting a lively park, that make it an interesting place to walk
- The extent to which there are publicly accessible, social destinations that attract workers and residents. One way to identify these destinations is the Power of 10, as outlined in the references section.

Additional research should then be undertaken to answer a third and final question.
The ability to develop innovation districts that are competitive and collaborative ultimately rests with local leadership.

3. Are these hubs of economic and physical assets home to a constellation of visionary, forward-thinking leaders willing to collaborate and take risks?

The goal of this third and last step is to identify the leadership potential within potential innovation districts. While mayors can play an important role in supporting innovation districts, achieving true success ultimately rests with the local leadership of anchor institutions, companies, civic organizations, and intermediaries at the district level.

Factors to evaluate

- Whether local leaders of potential innovation districts have a collective vision of success. In other words, have they demonstrated, through past or present work, the willingness or capacity to move beyond conventional thinking and devise a new vision for growth?

- Whether these leaders are inclined to be collaborative and act beyond individual interests.

- Whether local leaders have demonstrated a willingness to take new risks in projects where the outcomes were far from certain.

One final note: Ideally, a city completing this audit will identify their assets and challenges and then compare those results with similar “peer” cities to see how they perform on the national and global stage.
Section 5: Mayor as convener—engaging local leaders to consider a district strategy

A convener is a role mayors play by gathering local actors, individually or collectively, as a means to explore a new agenda or to reconcile a conflict. As a convener, mayors are not normally viewed as neutral facilitators but as leaders and advocates driven to advance public policy goals. As such, they can—and often do—use their powers to persuade, convince, and incentivize local actors to move in a new direction.

Within the context of innovation districts, to serve as a convener means drawing together leaders of local institutions to find a set of common interests compelling enough to take a collective approach to innovative growth. This is where mayors can be most useful, as their citywide lens allows them to see the big picture—drawing important connections between people, places, and ideas. And it is this very perspective that will enable disparate local actors to see what’s possible.

On its face, the role of convener appears to be relatively straightforward—to make a series of arguments about the changing nature of our economy and how leaders at the district level have a...
central role to play. Early evidence from emerging districts suggests, however, that convening a diverse set of local actors requires more than a few private meetings. Academic anchor institutions, global companies, and even medium-size firms have long histories of advancing their own, individual agendas. Asking them to shift their method of leadership, alter how they operate, and even change their organizational culture is no small ask.

Interviews with stakeholders of innovation districts that have been under development for a decade or more reveal how critical leadership is to driving change. Why one organization drags its feet and finds reasons to delay decisions, while another zooms into action and realigns its mission, ultimately boils down to leadership. This section of the handbook provides a five-step process for mayors and their teams to work closely with local leaders to pursue an innovation district strategy:

1. Be armed with research and basic empirics to argue for a district play.

It is important to understand where the city has the strongest district play and what other comparable cities are advancing innovation districts. Before mayors reach out to a set of actors to discuss an

Mayor as Convener: Brokering a Biomedical Campus in Downtown Phoenix

Decades of investment in Phoenix—in two sports arenas, convention centers, and cultural and performing arts centers—transformed the downtown into the region’s entertainment epicenter. In the early 2000s, while business and civic leaders were clamoring for a third downtown stadium, Mayor Skip Rimsza saw an opportunity to shift the city’s economic trajectory toward knowledge and innovation. Leveraging Arizona’s biomedical cluster strategy, the mayor used his convening power to persuade the International Genomics Consortium and Translational Genomics Research Institute, the University of Arizona, and Arizona State University to locate in downtown Phoenix. Quietly assembling the land for the anticipated stadium and pumping in $50 million from the city, he successfully brokered a new biomedical campus for the downtown.

While Mayor Rimsza took the critical first steps, it took the convening power of two other mayors to deliver a concentration of innovation anchors into the heart of the city. For example, Phil Gordon, Rimsza’s immediate successor, led a successful city bond initiative in 2006 to advance education, research, and innovation assets in the downtown. Current Mayor Greg Stanton convened a group of entrepreneurs and university leaders in 2016 to develop an innovation district strategy—something that would have seemed implausible 15 years earlier. Today, driven largely by mayoral leadership, Phoenix’s innovation district has gained traction. Anchored by the biomedical campus, it is replete with enviable innovation assets. The presence of 15,000 students has stimulated investments in housing, restaurants, and shops—creating a vibrant 24/7 neighborhood where people mix and mingle. Today, the biomedical campus is estimated to generate $1.3 billion annually in economic value—more than the financial equivalent of hosting two Super Bowls.
innovation district strategy, they must understand—at a very high level—where their cities have the greatest potential to cultivate a successful innovation district. (The Audit of City Assets section of this handbook outlines a streamlined approach to determine where the clustering of important assets can be found in the city.)

To supplement this empirical analysis, mayors and their teams should examine comparable cities with mature and/or emerging innovation districts. Examining cities with similar economies (e.g., a strength in life sciences or computer science) and similar economic markets (e.g., overheated employment/housing market or a slow-growing economy) is particularly useful.

2. Meet with key stakeholders individually to garner interest.

Armed with the above information, mayors should meet individually with local leaders whose organizations are located within the proposed district area. This could include a research university or learning hospital president, a company CEO, and (if possible) an intermediary for entrepreneurs. At these meetings, mayors should:
• Outline a readiness for the city to strengthen the stakeholders’ competitiveness given the economic strengths and important actors located there

• Provide early evidence that the proposed geography offers real promise, referencing the high-level audit conducted across the city

• Illustrate how other comparable cities are aligning themselves in this way

• Express a desire to spur a similar effort, emphasizing how this requires local leadership at the innovation district scale

As important as it is to get these points on the table, it is of equal or even greater value to listen. Local leaders should be encouraged to talk through this concept and ask questions. Find out their first impressions of this strategy, the top reasons they might favor this approach, the barriers they foresee in realizing such a strategy, and who they believe are the other key players at the local level.

Once the mayor has met with a few key leaders, a decision should be made whether it is best to draw together a small group of local leaders

Mayor as Convener: Coalescing Providence Leaders to Conceive a District Strategy

When Providence Mayor Jorge Elorza convened a meeting with the president and provost of Brown University, the top agenda item was to explore what they could do together to strengthen the local economy. An earlier analysis, led by the State and Governor Raimondo, had determined that a promising strategy would be to reinforce the area’s cluster strengths in biomedical innovation (including health, wellness, and food), “blue technologies” (otherwise known as marine-based innovations), and design.12 The analysis also pointed toward specific geographies—innovation districts—to advance such an agenda. Early leadership by the state, driving the initial re-make of an area adjacent to Interstate 95 and successfully lobbying for resources from the legislature, set the stage for both state and city efforts to recruit new companies.

This was why the engagement of Brown’s president and provost and other local leaders proved so essential. In addition to Brown, the University of Rhode Island, Rhode Island College, the Rhode Island School of Design, Providence College, Care New England and Lifespan hospitals, and Johnson & Wales University, the Innovation & Design District is now home to new knowledge economy tenants such as the Cambridge Innovation Center, Johnson & Johnson, and GE Digital. Mayor Elorza and his team structured many convenings that, over time, involved a growing number of local leaders and members of the community to shape a collective agenda.

With the mayor and his team diligently and deliberatively serving as conveners, local leaders and the city have made important advancements to their budding innovation ecosystem. One recent decision was to create an incubator to advance a cluster on aging—a shared space for Greater Providence stakeholders to collaborate and accelerate innovation.13
or to first gather more information about their individual interests. If there is skepticism, move to the third step below.

3. **Conduct an assessment to identify where shared interests can be leveraged.**

Research from public policy negotiations, where various actors actively participate to shape an optimal policy solution, argue that processes tend to be the most sound when an early assessment of interests are identified and documented prior to convening all parties together.\(^{14}\)

While mayoral staff might possess the skill sets to play this role, there are a number of external consultants well steeped in these processes who can be helpful facilitators if not advisors. Drawing on interviews with district leaders, a short report (5–8 pages) is developed to give mayors a broad sense of specific priorities, shared interests, conflicting interests, and a facilitator’s assessment of next steps.\(^{15}\)

4. **Convene as a group to determine the viability of an innovation district strategy and outline key tasks.**

The process of meeting with stakeholders as a group is uniquely tailored to local conditions. In the case of Providence, the mayor initially met with a very small group of leaders and, over time, added new actors to join the conversation and make decisions. In the case of Phoenix, the mayor met with a few key institutions privately until a deal was struck. (See the sidebar in this section.) Both cities’ experiences reveal that conversations to develop an innovation district strategy will take place over an extended period of time, often for a year or more.\(^{16}\)

In fact, the layering of details and the incremental formulation of strategies—a process that occurs over time—is what often helps establish collective buy-in. While those dialogues are the right way forward, mayors and their administrations should also move the group toward completing specific tasks, such as:
• **Identifying a district boundary.** A boundary is necessary to gather and analyze important data, develop a collective vision, and ultimately brand the district. Mayors can play a helpful role here as they possess a citywide view and can see possible connections or synergies that other stakeholders simply may not. Mayors can also advise local leaders that district boundaries will change over time in response to market forces and/or specific opportunities in surrounding communities.

• **Conducting a lengthier audit of assets.** The audit outlined in this handbook helped determine, in broad strokes, a possible location for an innovation district. Once local leaders in a particular geography have agreed to move forward, more data should be gathered about critical mass, competitive advantage, quality place, and other variables. (See the references section for more information.)

• **Setting up an informal governance structure to organize their efforts.** Brookings's work on the ground reveals that a lack of governance is a common reason why areas brimming with potential fail to “take off” and why other places with forward-thinking governance advance with alacrity and focus.
• **Implementing a Lighter, Quicker, Cheaper approach to build momentum and energy across the district.** Put simply: Cities do not need to wait for a lengthy planning process to unfold before creating excitable change. (See the Mayor as Champion section of this handbook for a discussion of Lighter, Quicker Cheaper.)

• **Developing a vision or plan.** Depending on the complexity of issues, consider encouraging actors to develop a broader vision or plan. While this can include city government, plans are also developed with local actors, engaging city government in key moments. (See the Mayor as Champion section of this handbook to learn more.)

5. **Stay apprised—and continue to encourage leaders to forge a strong collective agenda.**

Once local leaders are working together to create and advance a collective roadmap, mayors and their teams can shift into a different role. The next two sections describe the role of mayors as a champion and a catalyst.
A champion is one of the most natural roles for mayors to play. It draws on the visionary and leadership skills that mayors tap in their attempt to move their cities on a path to greater prosperity.

To act as champion for an innovation district means to serve as the visible city leader who offers a clarion call—a vision—such that the city can become stronger and more competitive. Being a champion also means creating the right conditions for future development, either by offering a roadmap for future growth or by delegating powers so that others may lead. A champion also stands out front, celebrating success and advocating for the hard work to continue. A champion, in short, engages in a range of roles—from bold and transformative to lighter and more experimental.

This section highlights the most typical and likely activities in which mayors can engage as champions of innovation district growth.

1. **Relay a vision or call of action.**

A mayor is often viewed as being at his or her best when declaring a vision of future prosperity that is grounded in empirics and conveyed
with conviction and purpose. A handful of U.S. and European mayors, in their inaugural or state of the city addresses, have shared a vision for cultivating innovation. In several cases, mayors have tied their vision of innovative growth to a specific geography—a district—for future activity and investment. In 2010, in his fifth inaugural address, then-Boston Mayor Thomas M. Menino sketched his vision for redeveloping the Seaport district into an innovation district.17 (See the sidebar in this section.) Mayor Joan Clos of Barcelona conveyed the need to leverage the changing economic landscape as a means of strengthening his city’s competitive advantage.18 In his 2014 State of the City address, Mayor Andy Berke of Chattanooga, Tenn., conveyed a vision for strengthening the city’s innovation potential through the development of an innovation district.19

While the idea of publicly announcing an innovation district is provocative, particularly to business and city interests and the press, background work is a prerequisite. Ideally, this will include conducting an initial audit analysis to determine if the city has, or is growing, competitive assets (see the Audit of City Assets section); talking with local civic, corporate, community, and nonprofit leaders to assess their interests and to build consensus; and holding internal discussions regarding role the city is willing to play (e.g., staff and resource time, planning support, and leadership involvement).

2. Delegate powers to others.

In some cases, mayors may find that the strongest avenue for growth is to cede power to others who have the time and competencies to orchestrate efforts at the hyper-local scale. (Refer to the sidebar to learn how this was accomplished in St. Louis.)
3. Develop a strategic, action-oriented, plan.

Under the leadership of the mayor, city administrators can play a role in planning, working in tandem with local leaders. For many, the concepts of planning and plan development can evoke stories of lengthy, cumbersome, and costly processes. For innovation districts, the ideal scenario is to strike that healthy balance: To be grounded in empirics that inform what advantages to leverage; to offer just enough specificity to excite and coalesce local actors; and, to be nimble enough to respond to healthy changes in the market.

Barcelona, St. Louis, Providence, and the Research Triangle Park (an urbanized science park model of a district in North Carolina) are all examples of innovation districts that developed a plan to strengthen their distinctive economy-shaping, placemaking, network-building, and inclusion opportunities. While in Barcelona the city led, designed, and funded the planning process, the city played a supporting role in St Louis. In all cases, mayors (or similar executives) served as champions.

Mayors and their administrations can also champion short-term, low-cost, but high-impact efforts aimed at strengthening innovation districts and the relationships between the people who live and work there. The placemaking strategy Lighter, Quicker, Cheaper (LQC) is a way for innovation district planners to think creatively about low-cost improvements to public spaces that can be implemented quickly. Practices on the ground are demonstrating that even the smallest and simplest efforts can lead to big change.

Instead of, or in concert with, more intensive planning processes, LQC can help communities celebrate innovation districts as ever-evolving works in progress. This speaks to an important advantage of LQC: The ability to create and test a project immediately with direct community involvement. The early implementation of LQC projects can help:

- Bring life and amenities to previously lifeless public spaces—a common challenge in many innovation districts

- Break down resistance to change, while empowering vulnerable or overlooked communities that may have lost faith even in the possibility of change

LQC can help communities celebrate innovation districts. Residents in Winston-Salem’s Innovation Quarter enjoy an evening of music. Photo credit: Lindsey Yarborough.
• Generate the interest of potential investors, both public and private

• Establish (or reestablish) a neighborhood’s or region’s sense of community

• Inform best practices for later planning efforts and long-term improvements to public spaces

• Encourage community buy-in (by demonstrating, for example, how a new street design would impact traffic flows not only for cars, but also for pedestrians

• Jump-start networking events crucial to supporting innovation

One example of a district applying the LQC approach—with city government playing a meaningful role—is the Wake Forest Innovation Quarter in Winston-Salem, N.C. With health and wellness being a major focus of the Quarter, workers and neighboring residents spurred the creation of Bailey Park, a 1.5-acre public space that had once been the center of African-American life in the city. On any given week, an array of community activities, lectures, and classes take place throughout the Quarter, along with other events and activities designed to engineer interactions between tenants and the community and to foster even more innovation.

Mayor as Champion: Ceding Power for Success in St. Louis

Although home to an impressive collection of institutions engaged in plant and life sciences research, St. Louis was losing homegrown talent and start-ups in their quest to scale up elsewhere. In 2000, these institutions joined together to create an innovation community in an effort to reverse this trend. The concept was officially cemented in 2006 when Mayor Francis Slay and the Board of Alderman granted powers to a local nonprofit to oversee the creation of an innovation district.

Cortex, a tax-exempt 501(c)3 formed in 2002, was granted an astounding array of powers—a decision that its current leaders say has been vital to the district’s success. Cortex was given the authority to develop a master plan for transforming a 200-acre industrial neighborhood into a technology innovation hub. In consultation with local institutions and the community, Cortex developed a master plan, which was subsequently adopted by the St. Louis Planning Commission. Cortex also received the power of master developer with the authority to issue tax abatements and exercise eminent domain. Its collective powers allowed Cortex to expedite the transformation of a blighted neighborhood into a thriving innovation district. Since 2004, $600 million has been invested to create 4,200 tech-related jobs and to construct 1.7 million square feet of development. When fully developed, the Cortex Innovation Community is expected to encompass over $2 billion of construction and 12,000 jobs.
5. Identify how districts become an avenue for inclusionary growth by applying all of the above strategies.

Mayors can use their role as champions to ensure that innovation districts grow and develop in inclusive ways that encourage diversity, access to jobs, and fiscal stability. Specifically, innovation districts offer a roadmap to strengthen the fiscal condition of cities—in growing jobs, wages, and property values—essential for cities fiscally strapped due to pension liabilities and the unreliability of funding.

This requires a multipronged approach that starts with setting a citywide vision for economic development that includes broad-based prosperity as a central goal—and which recognizes innovation district growth as a key way to realize it. There are good reasons for this approach. Advanced, technology-based industries that comprise innovation districts have a strong economic multiplier effect, driving firm and job growth across a range of sectors. Moreover, as a group these sectors employ workers with a range of education and skill levels. For example, Brookings found that over 55 percent of jobs in innovation districts in Philadelphia and Oklahoma City did not require a four-year degree.

Given that many urban innovation districts are adjacent to or embedded within low-income neighborhoods, a rich opportunity

**Mayor as Champion: Designating a District in Chattanooga to Channel Growth**

In early 2015, Mayor Andy Berke publicly announced Chattanooga’s new innovation district—a 140-acre area in the city’s downtown—before an assembly of local leaders and residents. “Coupled with the fastest internet in the Western Hemisphere,” the mayor argued, “our innovation district will strengthen our place as leaders in the 21st-century economy.” The announcement—and all the hard work since then—has put Chattanooga on the map. Splashed across local newspapers, internet blogs, and global-reaching outlets such as the *New York Times* and *Fortune*, readers learned of how a mid-size city of the South was claiming a role for itself in the innovation economy.

The idea for Chattanooga’s innovation district was built on months of research, refined through conversations with leading experts, and cemented in sessions of the Technology, Gig, and Entrepreneurship Task Force. Comprised of business and civic leaders, the 27-member mayoral task force found innovation districts to be an optimal strategy for leveraging Chattanooga’s unique assets, which included a 1-gigabit fiber network, which offers speeds 200 times faster than the national average. Today, the district is home to the new Edney Innovation Center, a 90,000 square foot hub that supports and strengthens the district’s growing entrepreneurial base. In its first 12 months, the Edney Center hosted over 1,000 events with over 25,000 participants.
exists to connect these residents to job opportunities. Still, while business and job growth is a prerequisite to economic opportunity, it is not enough. Mayors should also champion strategies and plans that integrate public workforce programming, educational initiatives, business development efforts, and neighborhood revitalization programs into emerging innovation districts—tailoring them to support inclusive district development. Evidence from nonprofits and anchor institutions in the West Philadelphia Skills Initiative and University Hospitals of Cleveland demonstrates that such place-based efforts reduce employee turnover, create a more diverse workforce, and help leverage public resources by better linking them to employer needs.33

While creating a more inclusive innovation economy is a long-term endeavor, mayors can demonstrate short-term action and momentum using the LQC approach described above. This can include partnering with innovation district stakeholders on public programming designed to draw residents into the district to mingle with students, researchers, and other district workers. They can also help fund public art projects, public space revitalization, or other small-scale physical improvements that demonstrate the city’s commitment to surrounding neighborhoods.
A catalyst is a role that mayors and their administrations play by using their legal and legislative powers to influence a particular outcome or set of outcomes. Since city governments are extensions of state governments, the range of powers mayors can leverage as a catalyst for growth varies from state to state. In general, however, city governments have the power to raise certain taxes and other local revenue, set future land uses, and make changes to local zoning ordinances.

Acting as a catalyst within the context of innovation districts means knowing how to apply, with deep intentionality, specific regulatory tools, regulations, and financial incentives, including the strategic reuse of publicly owned property.

A review of innovation districts across the United States reveals three consistent challenges that are limiting their true potential—challenges that can be meaningfully addressed, in part or in whole, by the mayor serving as catalyst.
1. Many emerging districts lack the physical platform necessary for innovative growth—connectivity, proximity, and density.

While land-use regulations cannot stimulate the emergence of an innovation district, they can set a crucial framework for development. Conversely, an outdated, inappropriate, or inflexible set of land-use regulations can seriously impair, if not prevent, a district’s ability to create a vibrant and integrated environment. The right zoning tools can be extremely useful, especially when there is a viable real estate market. Described below are specific tools to help cities strengthen this physical platform.

**Tools for cities with strong and growing economies**

The balancing act between maximizing use and preserving affordability is a particular challenge for these cities that are trying to create lively, attractive innovation districts. A key ingredient to achieving that goal is a mix of uses and types of users. Cities may consider across the board “up-zoning” within innovation districts as an easy and effective way to increase density, proximity, and mixing. The challenge with this approach is that it can inadvertently lead to

1) Wide streets encourage fast-moving traffic and are challenging for pedestrians to cross. 2) Buildings set back far from the street undercut connectivity and proximity. Setbacks such as these fail to create an enclosure—where buildings work in concert with streets and sidewalks to create a public realm. 3) A lack of ground floor activities helps explain why people are not seen here. Photo credit: Project for Public Spaces.
higher land prices. The best zoning solutions in strong markets keep the base zoning low, with uses limited to producer-type activity, but then permit extra density or more profitable residential, retail, and commercial uses through a planned unit development (PUD) or similar discretionary zoning process.

**Planned unit development:** Through a PUD process, the developer can obtain flexibility from zoning constraints (usually allowing more density than would normally be permitted) in exchange for providing a commensurate benefit to the public. Keeping the base zoning low allows city staff to negotiate with developers to provide the key attributes and assets missing within the district, such as:

- Provision of space or a structure for an incubator, innovation hub, or center where the public or aspiring entrepreneurs can gather and exchange ideas
- Open spaces for food trucks and/or farmers markets
- Special streetscape improvements
- Fiber for high-speed broadband (1 gigabit)
• Completing gaps in pedestrian or bike networks or providing shared-bike stations

• Shuttles for inter- or intra-district circulation

District Hall in Boston’s innovation district was created through a negotiated PUD-type process. As part of its Community Benefit Agreement, property developer Boston Global Investors agreed to provide District Hall at no cost to the city in exchange for approval of its 23-acre waterfront development plan. District Hall is a new type of dedicated civic space for the innovation community to gather and exchange ideas. It includes open work and teaching spaces, event spaces, and flexible use spaces. District Hall has become the “hub” if not the heart of Boston’s innovation district.

Overlay zones: Most states give cities sufficient authority over local zoning regulations that the city can specify the uses and amenities they desire within a designated area. This is usually referred to as an overlay zone, because it is “overlaid” on top of existing zoning. Initial planning first identifies the desired innovation-related uses that are later used as a basis for changes in the defined area. Cities usually grant property owners extra density in exchange for compliance with the uses expressed in the plan as an incentive or to avoid being subject to a “takings” suit. A taking is where a property owner alleges that the public sector must compensate them for taking some or all of their property value by virtue of requiring less profitable uses.

Mayor as Catalyst: Incentivizing Clean Tech in Los Angeles

When former Los Angeles Mayor Antonio Villaraigosa identified clean tech as a prime economic cluster to cultivate, his administration—along with the city’s redevelopment agency, the Department of Water and Power (LADWP), and the area’s major universities—determined that it would require a unified effort to truly catalyze growth. They set their eyes on a 4-mile corridor to attract clean tech companies to the area. The cornerstone of the initiative is the new 60,000 square foot La Kretz Innovation Campus, which now houses the city’s clean tech incubator (LACI), a prototyping shop, wet and dry labs, a training center, and importantly, the co-location of LADWP’s R&D research and development labs.

Under current Mayor Eric Garcetti’s leadership, the clean energy initiative received an infusion of $47.4 million in city, state, federal, and philanthropic funds to build the innovation campus. The co-location of LADWP’s R&D labs with clean tech start-ups is a success story in the making: Since the campus opened in 2011, it has delivered over $120 million in funding to participating companies and helped create over 1,300 jobs. Over the long term, the clean tech district is expected to deliver over $300 million in economic value to Los Angeles.
There are two caveats to keep in mind for this kind of overlay zone. First, the real estate market must be strong enough for property owners and developers to perceive sufficient return on investment to outweigh the costs of the public benefits. Second, since the real estate market is often quite fluid, the negotiated PUD mechanism may be more desirable than the less flexible overlay zone approach.

Tools for cities with weak-market economies

Cities with a slow real estate market and little growth often require other tools to shape development. Although zoning is less useful as a direct tool for these municipalities, the mayor should ensure that existing zoning does not provide obstacles to creating vibrant innovation districts. For example, several cities have nascent innovation districts in former industrial or warehouse districts; often the zoning there prohibits residential uses. Enabling residential uses, at least in conjunction with creating live-work buildings, is an important step.

In these economies, city governments should consider the strategic reuse of government-owned properties in or near a nascent innovation district to help stimulate growth. (See page 46 for more detailed information.)

Tools for all city economies

Special design standard district: Overlay districts can focus on uses, as described above, or aim more at creating the right environment for street vitality through design standards. This tool—which has a defined boundary within which proposed construction or renovation is subject to specific controls—can carve out how the area should grow with every new development by:

- Requiring transparency in buildings at the ground level along streets so pedestrians can see what is happening inside the building
- Establishing minimums (typically at least half of the ground floor) that must be filled with activating uses such as retail, cafes, bars
or restaurants, maker spaces or public “third places,” galleries or performing arts spaces, etc.

• Creating “build to” lines, which require new construction to extend to the property-line limits, better framing the public space and minimizing empty voids

• Prohibiting parking between the curb and the front of a building, and restricting curb cuts for parking and loading along major pedestrian routes

• Requiring wide sidewalks or other public space improvements

Reducing zoning-related parking minimums to encourage multimodal transportation. If the innovation district location is sufficiently well served by various transportation modes, then the zoning regulations that require a certain minimum amount of parking can be reduced within a designated area. The reduction or elimination of parking can enhance both pedestrian vitality (few facades are more deadening to the pedestrian experience than a multilevel parking structure or a surface parking lot) and improve the potential for interaction by reducing the isolation of individual developments in the district.36
Employing strategies to create great public spaces. Effective public spaces are essential to creating connected, inspiring, and welcoming innovation districts. The alternative—a barren public realm—mirrors the challenges found in remote science parks that isolate people and firms. If designed and programmed well, public spaces can be the connective tissue between people and firms, effectively serving as the heart of a healthy and vibrant innovation ecosystem. While there are multiple strategies that cities can use to make public spaces lively and active in districts, some of the more pertinent are:

- Identifying new, active uses for existing public spaces through a community-based placemaking process.

- Investing in new public spaces, potentially using publicly owned property (as described in the following section).

- Creating a public/private place management entity, such as a community benefit district or business improvement district. Key to building a strong and healthy public realm, place management in districts should provide more than the standard “clean and safe” functions of many business improvement districts. Community-driven programming and improvements that increase usage of public spaces are also vital.

Mayor as Catalyst: Opening up Pittsburgh as a Living Lab

If someone were to drive across Pittsburgh today, they would see something remarkable happening on its city streets. Pittsburgh has become a living lab, where the ride-sharing company Uber is testing its autonomous vehicle technology. Uber’s decision to advance its robotic prowess in Pittsburgh was years in the making. Before Uber’s arrival, Carnegie Mellon University’s National Robotics Engineering Center (NREC) had been at the forefront of autonomous vehicle research and development for more than two decades. Because of its highly industry-focused and collaborative culture, Uber aggressively recruited a number of lead researchers from NREC. Rather than fight back, CMU viewed it as a chance to practice “open innovation” — drawing on these firms for insights and inspirations.37

Of course, none of this would have mattered if the local government did not openly embrace the idea of Pittsburgh’s roads becoming a global testbed for autonomous vehicles. “It’s not our role to throw up regulations or limit companies like Uber,” said Bill Peduto, Pittsburgh’s mayor, in an interview with the New York Times. “You can either put up red tape or roll out the red carpet. If you want to be a 21st-century laboratory for technology, you put out the carpet.”38 In fact, Mayor Peduto successfully demonstrated to Uber what it means to be a catalyst. Not only did the city help the company lease a large plot of land to become a test bed, it rallied to block a state ban on ride-sharing services.39 Even with recent bumps between the city and Uber, this platform for growth has only opened more doors for autonomous vehicle testing.40 For example, Ford recently invested $1 billion in Argo, a CMU robotics spinoff company. The interplay between global research and a supportive mayor has put Pittsburgh on the map.
• Removing bureaucratic obstacles. Excessively arduous permitting processes, highly restrictive zoning and traffic engineering rules, and prohibitions on amenities like sidewalk cafés can hinder forward movement on an innovation district. By contrast, a "bureaucracy free" zone frees the public realm and the community to innovate.

2. Many cities have not leveraged publicly owned land or facilities to unlock the real potential of innovation districts.

In many American cities, government-owned property and facilities can be found in both nascent and maturing innovation districts. Many of these properties have not only failed to catalyze the growth of innovation districts, they have become barriers to development. In one city now brimming with innovation potential, city land found in the heart of its innovation quarter is being used to store unused city vehicles. Unfortunately, this exemplifies the norm rather than the exception.

To unlock these assets as a means of catalyzing growth, mayors and their administrations will need to play a central role in the process of:

• **Identifying and making transparent city ownership in innovation districts.** It is quite feasible for up to 10 separate ownership structures or agencies—such as school boards, fire and police departments, and other city agencies—to own property within the innovation district. Identifying and making ownership transparent is a crucial first step. “Siloed” government entities that often fail to share information can be nudged, if not cajoled, by mayors to offer up their ownership records.

• **Strategically engaging city government in a collective vision process.** Simply put, mayors have a critical role to play here. Encouraging government agencies to engage in a locally driven process might require some persuading. The concept is for governments to recognize the contribution their individual properties can play in strengthening a city’s overall competitiveness. Among other tools, mayors can use the capital
budgeting process to establish funding priorities for city facilities which meet these broader objectives.

- **Identifying a process for reimagining city properties.** Cities can optimally leverage their land to allow important uses that strengthen innovation ecosystems but cannot pay market rents. These include maker spaces, public innovation centers, training and meeting space, affordable housing, and other spaces. The use of city land for these purposes is an especially valuable tool where the real estate market is not strong enough for the profit from conventional development to subsidize these important, but less profitable uses. The city can dispose of the land in the traditional fashion—through Requests for Proposals or Requests for Expressions of Interest—but strong consideration should be given to the city to retaining and ground leasing the land. Not only does this reduce the cost to the developer for delivering the project, it will contribute to the city’s portfolio—particularly helpful when the district’s collective assets appreciate over time.
3. Most emerging innovation districts have not fully embedded economic inclusion strategies and incentives into their development plans.

Cities need to be intentional about designing, aligning, and financing programs and incentives that connect local residents—particularly those from nearby neighborhoods—to district employment and business opportunities.

Mayors and their administrations could:

- **Catalyze anchor-based procurement initiatives.** Cities can be a central hub for organizing procurement demand from district anchor institutions and firms; then provide technical and financial assistance for minority- and woman-owned businesses to help them capture those opportunities. For example, Philadelphia’s Anchor Procurement Initiative—an effort of the city controller’s office—focuses on organizing joint demand from the city’s many anchor institutions and developing new sources of supply through providing technical assistance to local business to scale up to meet the demand. The combined purchasing power of multiple anchors not only increases the total dollar amount of goods and services purchased locally, but also simplifies and routinizes the process for firms to engage with multiple institutions. It also helps to ensure that local firms have a steady stream of business, enabling them to grow and ultimately create jobs.⁴²

- **Negotiate incentives tied to community benefits.** Financing or other incentives supporting innovation district development often include specific provisions designed to benefit the local community. One approach, particularly suited for hot markets (and described earlier in this section) is to engage the community from the outset to design a package that meets its needs. Doing so can help foster greater trust among developers, residents, and the city while ensuring that the benefits best serve the community’s interest. For example, as a part of the Hunter’s Point Shipyard and Candlestick Point project in San Francisco, developers pledged nearly $36 million toward affordable housing and job training
for local residents as a part of its Core Community Benefits Agreement with the city.  

- Use tax increment financing (TIF)—the use of municipal bonds to pay for improvements—with an emphasis on inclusion outcomes. The establishment of the innovation district can build on a provision that earmarks some of the revenue generated for community benefits. For example, Oklahoma City’s amended tax increment financing plan creates a $52 million fund that includes $18 million for enhanced education, working with city schools and the Metro Technology Center. Revenues are used to support residential and commercial activities in surrounding neighborhoods, several of which are very low-income, and to finance education, skills training, internship, and workforce development programs.
Many American cities are riding a new wave of urban competitiveness. With our national and regional economies increasingly reliant on innovation, and with urban assets and amenities now revalued as the right platform for this growth, innovation districts can be a powerful economic strategy.

What is the role of mayors in advancing what is largely a hyper-local strategy—with anchor institutions, companies, civic organizations, and others at the helm? As expressed in different ways and through different roles described in the pages of this handbook, mayors of American cities have many vital roles to play:

- Shaping early conversations about the value and ideal location of an innovation district
- Using their pulpit to outline a vision of leveraging homegrown economic strengths into a more robust innovation play
- Serving as the chief spokesperson for the city—conveying the district’s distinctive assets to potential investors and companies outside the region.
• Reforming regulations or reimagining government properties as a means to unlock a district’s real potential

Ultimately, mayors will play a highly tailored role in advancing a district strategy in their cities. Some will drive the strategy from conception, serving as convener, champion, and catalyst to support and accelerate change. Other mayors will engage only when local efforts are stymied by city regulations. In either scenario, or with the range of possibilities in between, the contribution of mayors and their administrations can make all the difference.
Research on Innovation Districts

Research on the innovation district paradigm:


Bass research and strategy reports for U.S. innovation districts:


Research on Innovation and the Intersection on Innovation and Place


Research and Practice on Placemaking


Additional Resources Referenced in: Mayors as Conveners


- Julie Wagner and Nate Storing, “So You Think You Have an Innovation District?” Brookings Institution, March 30, 2016, [www.brookings.edu/blog/metropolitan-revolution/2016/03/30/so-you-](http://www.brookings.edu/blog/metropolitan-revolution/2016/03/30/so-you-)
think-you-have-an-innovation-district/. This blog post provides an overview on the process of conducting an audit.

- Bass research and strategy reports for U.S. innovation districts (listed earlier in this section under “Research on Innovation Districts”) also include detailed findings from an audit process.

**Additional Resources Referenced in: Mayors as Champions**


- Master plans or strategic plans referenced in this handbook that could be found online are included here:

**Additional Resources Referenced in: Mayors as Catalysts**

• Form-Based Codes Institute, formbasedcodes.org/. This site offers information about how Form-Based Codes can strengthen quality place objectives.


• STIPO, The City at Eye Level, www.thecityateyelevel.com. This document describes the design features that are important for street vitality.


Appendix 1: Employing strategies to create great public spaces

As described in the “Mayor as Catalyst” section of this handbook, effective public spaces are essential to creating connected, inspiring, and welcoming innovation districts. The alternative—a barren public realm—mirrors the challenges found in remote science parks that isolate people and firms. If designed and programmed well, public spaces can be the connective tissue between people and firms, effectively serving as the heart of a healthy and vibrant innovation ecosystem.

This appendix offers greater specificity on the three strategies cities can use to make public spaces lively and active in districts.45

1. Identifying new, active uses for existing public spaces and investing in new public spaces

Developed by the Project for Public Spaces as a means of evaluating and facilitating placemaking at multiple city scales, the Power of 10+ is a powerful tool for generating constructive conversations to identify targeted placemaking efforts. The idea behind the concept is that places thrive when users have a range of reasons—ten or more—to be there (see below). When ten or more such lively places cluster into a destination, they become more than the sum of their parts, shifting
Mayors and Innovation Districts

public perception of the city as a whole and increasing people’s attachment to their community.

This simple yet powerful idea provides the framework for a useful exercise to identify where a city should focus its placemaking efforts. A Power of 10+ workshop convenes a diverse range of community stakeholders, including municipal representatives, residents and workers, community groups, and city building professionals. Working in groups of 10 or fewer, participants affix color-coded dots to a map of the city (or district) to identify what they consider the best places (green), the most challenging places (red), and the places with the greatest opportunity for improvement (yellow), while keeping notes on why each one was selected. The process of classifying these places helps stakeholders think through the importance of creating substantive physical and social connections between existing spaces, the strategic creation of new places, and the energy that can
be generated through the creation of a network of destinations. By aggregating the results of this exercise, the city can quickly identify the community’s existing place assets as well as city-owned lands or public spaces that city agencies could influence to become better-used places.

The city can use the insights from the Power of 10+ workshop to initiate a placemaking process. Whether beginning with an existing public space (like a park or a square) or underutilized city-owned lands (like a street, parking lot, or vacant building), a placemaking process can help city agencies better understand existing assets as well as current and potential users, and to generate a plan of action with community buy-in for moving forward.

The placemaking process takes place during one or more community workshops. Much like the Power of 10+ exercise, the city should start by convening a diverse group of stakeholders, including representatives from relevant agencies, city building professionals, business owners and founders, nonprofit and institutional representatives, and nearby residents and workers.

In working with over 4,000 communities around the world, PPS has identified four key characteristics that make a place well-used and well-loved:

- It has a variety of uses and activities.
- It is physically and visually accessible and well connected to its surroundings.
- It is comfortable and is perceived to be clean, safe, welcoming, and unique.
- It is sociable—a place where you take friends and family, run into people you know, and meet new people.

After explaining these characteristics and pointing out examples of beloved places (local ones and global ones), stakeholders travel in small groups (10 or fewer) to the public spaces selected in the Power of 10+ exercise. There, individuals evaluate the space using the four characteristics described above as a framework by observing how people use the space and asking them questions about their use and perceptions of it. Upon returning to the workshop, each group
discusses their findings, summarizes key issues, and brainstorms ideas to improve the performance of the space. The focus of this brainstorming session should be on “Lighter, Quicker, Cheaper strategies that can be accomplished quickly and with minimal resources. If necessary, additional input can be collected through a variety of other strategies, including interviews and surveys with users on-site, focus groups on specific topics, or booths at local events and festivals.

For each public space, these findings can be synthesized into a vision for the place’s future use. This can take the form of a concept diagram, which illustrates the new uses that would animate the public space, and an activation plan, which lists all desired improvements along with
the resources, time, and partners needed for implementation. The first items on the activation plan should be the easiest ones to accomplish. It is important at this point to build momentum by implementing these first items immediately, evaluating the results, and continuing down the list.

2. Creating a public/private place management entity

While cities direct significant time and resources to new projects and new facilities, the resources needed for place management—including the maintenance of public spaces—are commonly underestimated, if they are considered at all. For instance, when cities construct schools or recreation facilities, annual maintenance budgets are necessary to ensure that the facilities operate at a high level of efficiency and provide a satisfactory return on investment. Public spaces should be viewed in this way, too—although the programming and maintenance of these spaces can be led by entities other than city agencies.

Just as city builders overestimate the potential of expensive design interventions to transform how people use a space, cities
often underestimate the importance of managing places. Place management organizations—such as business improvement districts, community benefit districts, and friends of parks groups—are the backbone of placemaking as an ongoing strategy of public space improvement. In the cities where placemaking is highly valued, the responsibilities of these organizations extend beyond keeping streets clean and safe to include events and programming; Lighter, Quicker, Cheaper design interventions; and data collection about foot traffic and how a public space is used. Without their constant presence, the iterative process of community engagement, experimentation, and observation breaks down—making it likely that a space will fail to keep up with community needs and opportunities.

Place management organizations work best as independent nonprofit organizations. This does not, however, mean the city has no role to play. Municipal governments can—and should—actively support place management organizations by initiating placemaking campaigns and processes that galvanize community interest in a space and, of course, by providing limited but consistent operational funding for staff and improvements.

Philadelphia’s University City District (UCD) is one of the best examples of a place management organization operating in an innovation district. Founded in 1997 by neighbors, small businesses, and district anchors, including the University of Pennsylvania, Drexel University, and Amtrak, UCD today is responsible for far more than just maintenance and public safety. UCD assists in economic development and innovation strategies; it operates the West Philadelphia Skills Initiative, a pioneering program that connects the innovation economy to local residents through training and recruitment; it works with neighborhood groups to produce community programs, such as a composting facility; and it improves public spaces throughout the district, including The Porch at 30th Street Station, one of the best-used public spaces in the city. UCD receives a limited amount of public funding, which it leverages into far more giving from institutions, foundations, corporations, small businesses, and individuals.
3. Removing bureaucratic obstacles

Through the placemaking process, can often realize that the strategies that have the greatest impact on the usage of a public space are often surprisingly inexpensive, impermanent, and quickly implemented—Lighter, Quicker, Cheaper. Much can be accomplished without significant investment, extensive studies or plans, or professional design and construction. However, when it comes to getting more done with less in public space, the greatest barrier is often bureaucracy.

This does not mean that city agencies should dismantle regulations willy-nilly. Rather, they should get involved in the placemaking process—often as stakeholders and facilitators rather than leaders. This experience will help them identify which permitting processes, fees, land-use restrictions, traffic engineering conventions, and other municipal policies are burdensome. Common examples include restrictions on food trucks, sidewalk cafés, signage, and street vending. Mayors should encourage agencies to find creative solutions to reducing or removing these burdens. Agencies have the power to reexamine these restrictions, which can severely limit the use of public space, and they should also look at how other cities have dealt with similar issues.

One simple way to test whether a regulation needs to be removed or reformed is to create a temporary “bureaucracy-free” zone. For a period of six months or so, the city allows a place management entity to experiment with improvements and uses in a limited geographic area, regulating the process using discretion rather than current rules. As the use of the space changes, the city observes whether the same negative impacts arise that the regulations were originally intended to mitigate. If by the end of the trial period, no negative impacts (or different negative impacts) have been identified, the city should rewrite the regulations accordingly. This simple process can help municipal agencies to respond to changing circumstances in public spaces, while leaving room for innovative uses that current regulatory systems have not anticipated.
Appendix 2: Paying for it all—financial incentives and sources to help districts succeed

Research reveals a broad range of incentives that cities have provided, or can avail themselves of, to foster or enhance innovation districts. Clearly, a substantial part of the investment needed to create a successful innovation district must come from the private sector, as for-profit developers and nonprofit institutions tap sources of debt, equity, and philanthropic capital. However, the “secret sauce” of great innovation districts—the lively and attractive public realm, the public innovation centers, and related programs—are not likely to be recipients of traditional private finance. This appendix explores financial and other incentives that cities can provide, particularly to address these more unconventional programs.

**Municipal bonds**

General obligation bonds (GO) or special instrumentalities, such as industrial revenue bonds, are the most widely used tool for infrastructure investment. These tax-exempt financial instruments are used to finance roads, public facilities, and other capital expenses, making use of the city’s ability to borrow at relatively low rates. For many cities, however, caps on borrowing authority, combined with demands for maintenance and replacement of older infrastructure, can limit the availability of this tool, particularly if the proposed
infrastructure investment is designated to benefit an innovation district in a relatively small area of the city.

**Tax increment financing**

Most often used to finance infrastructure or other capital-intensive improvements in a defined area, tax increment financing (TIF) allows the city (generally through a TIF entity) to borrow funds to pay for improvements while also freezing tax revenues (usually property tax revenues) at their existing level. As the district begins to generate increased tax revenue, any increases over existing tax yields are earmarked to repay the bonds. In most cases, TIF funding requests must meet a “but for” test—that is, the developer requesting the funds must demonstrate that, if not for the TIF funds, it would be extremely difficult or impossible for key parts of the innovation district to proceed.

In practice, there are a number of variations in how TIF operates. St. Louis, for example, after providing limited funding for infrastructure in a particular project, uses the balance of the increment during the remainder of the defined period to provide for other improvements.46 In Oklahoma City, a TIF is being used to provide new infrastructure, replace obsolete infrastructure, and rehabilitate existing properties deemed worth saving. Some tax increment is reserved for job training and educational improvements.47

**Public/private partnerships**

Public/private partnerships (P3s) are an increasingly popular financing mechanism. P3s rely on private firms to finance and often provide the infrastructure, with the commitment of the public sector to pay off the private investment through fees, typically through some type of user charge. The most common type of P3s involves developing city-owned (or anchor institution-owned) land. The private sector provides the financial capital and generally implements the public improvement. The public sector might be contribute an asset, such as city land, as its part of the partnership, or it may agree to earmark revenues resulting from the project to repay the private partner’s investment and profit.
The advantage of both TIFs and P3s is that the burden of repayment falls upon the beneficiaries of the investment. The disadvantage is that they entail fairly steep “soft costs” for consultant studies, legal and accounting fees, etc., and, depending on the accounting practices of the municipality, they may count against the city’s debt cap. In fact, there is a trade-off here: To the extent that investors feel that the borrowing is backed by the full faith and credit of the municipality, the loan interest rates will be lower; but the bonds are more likely to be viewed by rating agencies as increasing the risk to the city’s credit rating, which in turn can either bump up against the debt cap or increase the cost of borrowing.

**City capital budgets**

Every city has a capital budget, usually covering a period of at least five years, which identifies necessary public facilities and the financing tools to pay for them. City capital investment is a potentially overlooked resource for innovation districts, particularly with respect to the co-location of facilities. For example, if the city has identified the need for a new or expanded library in proximity to the district, a maker center or public co-working space could be incorporated into the library at little or no additional expense. In Washington, D.C., the main downtown library (currently closed for renovations) incorporated 17,000 square feet of space dubbed the Digital Commons that includes public-use computers, a 3D printer, an Espresso book publishing printer, and large and small conference rooms. The conference rooms are offered for free to those who agree to provide a lecture on some aspect of tech or provide technical assistance.

**City-owned land**

City-owned land can be an extremely valuable asset to make the district work as a place, if there is an available parcel located within or proximate to the district. Optimally, the city can leverage its land to establish catalytic uses that cannot pay market rents, such as maker spaces, public innovation centers, training and meeting spaces, affordable housing, and “third places” or open spaces, which are particularly desirable for young tech employees compelled to rent micro-units or share spaces to keep monthly rent low.
A city can simply give the land to a developer or nonprofit to provide the desired facilities, but it can also follow more traditional approaches—approaches that are less likely to be viewed as favoritism or a misuse of city resources. The city can issue a Request for Expressions of Interest to solicit best thinking for the use of the space, and then request a best and final offer for those ideas it deems most desirable. If the city has a definite use concept in mind, it can either issue a Request for Proposals or provide the desired structure as a city-owned and constructed facility. The Texas Medical Center innovation district in Houston traces its roots to 1943, when the city donated 134 acres of land adjacent to Hermann Hospital. The medical center subsequently leveraged this donation into more than a thousand acres of research and health care facilities, with numerous spin-off tech start-ups.48

City officials should not overlook the potential to use city-owned rights-of-way within or adjacent to innovation districts to provide space for public activities. Even if the city does not have a vacant parcel, closing streets or alleys on a temporary or permanent basis can provide open space or areas for vending, food trucks, or markets. Another option, if the city’s particular right-of-way is not located in the right place, is to swap with property owners who have vacant land where the city wants to provide amenities.

**Tax abatements**

Tax abatements are commonly used to reduce land prices for a purpose that contributes community benefits, particularly affordable housing. They are of somewhat limited value for innovation districts anchored by “eds and med,” since most nonprofit education and medical organizations are tax exempt, especially for sales and property taxes. For private, for-profit developers and employers, however, tax abatements are very valuable. Abatements can also extend to deed and recordation taxes, personal property taxes, franchise taxes, and sales taxes. They can be offered broadly, for any private buildings established in the district, or targeted to specific uses or buildings. For example, in Boston the city government provided tax abatements for all the uses in District Hall except for the restaurant, because it was perceived as likely to be more profitable. 
and thus able to pay property tax more easily.49

Credit enhancement

Developers, particularly those who serve disadvantaged communities, whether nonprofit or for-profit, may have a difficult time finding lenders, especially if the development includes a large public benefit component. Even established developers may have difficulty if the proposed facility, such as an innovation center, is seen as novel and risky financially. In these instances, cities can provide a big boost by offering financial backing to the developer, generally by providing a loan guarantee, which makes the lender feel more secure in its investment.

In the past, cities have used the U.S. Department of Housing and Urban Development’s Section 108 program to use their anticipated Community Development Block Grant (CDBG) fund entitlements as collateral for a loan guarantee. At this time, the future viability of that program is not certain. But even if the CDBG program is discontinued, the city could either utilize capital funds that are awaiting use for a public project that has not yet begun or establish a loan guarantee fund from capital or operating funds. So long as the city is careful in its advance project evaluation and somewhat conservative in assessing its financial position, the risk to the city’s funding is minimal, and the loan guarantee leverages substantial investment capital without a direct expenditure of city funds. This can make the difference in the viability of an innovation district project, and also allow the developer to access funds at lower interest rates and fees.50

Federal sources

RRIF: Railroad Rehabilitation and Improvement Financing (RRIF) is a federal financial source adjacent to rail stations or transportation facilities. It can be used to finance private development with loans up to 35 years at 2.9 percent. The loans can provide construction, takeout and permanent financing at a 75 percent loan to value ratio for private development and 100 percent of infrastructure costs. Repayment terms can be quite flexible.51 RRIF was successfully used at Denver’s Union Station to make improvements to the train station as well as
significantly redevelop the surrounding area. Amtrak has identified RRIF has a potential funding source to support upgrades to 30th Street Station, which lies at the heart of the Philadelphia innovation district.

**TIFIA:** The Transportation Infrastructure Finance and Innovation Act (TIFIA) is intended to leverage limited federal resources and stimulate capital market investment in transportation infrastructure by providing credit assistance in the form of direct loans, loan guarantees, and standby lines of credit (rather than grants) to projects of national or regional significance. TIFIA is also very flexible in terms of the range of investments it can fund, including parking garages.52
The Anne T. and Robert M. Bass Initiative on Innovation and Placemaking

The Anne T. and Robert M. Bass Initiative on Innovation and Placemaking is a collaboration between the Brookings Institution and Project for Public Spaces to support a city-driven and place-led world. Using research, on-the-ground projects, and analytic and policy tools, the initiative aims to catalyze a new form of city building that fosters cross-disciplinary approaches to urban growth and development.

The Anne T. and Robert M. Bass Initiative on Innovation and Placemaking is part of the Brookings Institution’s Centennial Scholar Initiative. This broader initiative cultivates a new style of scholarship at Brookings, fostering work that is cross-program, interdisciplinary, international, and intensely focused on impact.

About Brookings

The Brookings Institution is a nonprofit organization devoted to independent research and policy solutions. Its mission is to conduct high-quality, independent research and, based on that research, to provide innovative, practical recommendations for policymakers and the public. The conclusions and recommendations of any Brookings publication are solely those of its authors, and do not reflect the views of the Institution, its management, or its other scholars. Brookings is committed to quality, independence, and impact in all of its work. Activities supported by its donors reflect this commitment.

About Project for Public Spaces

Project for Public Spaces Inc. (PPS) is a nonprofit planning and design organization that is dedicated to advancing the comfort and attractiveness as well as the social, cultural, and economic vitality of public spaces. Founded in 1975, PPS has helped over 4,000 communities, large and small, grow their public spaces into vital community places complete with programs, uses, and people-friendly settings that highlight local assets, spur rejuvenation, and serve common needs. Driv-
ing these results is a unique community-led process that puts residents and stakeholders at the heart of the planning process by using structured observations, surveys, focus groups, and stakeholder interviews. PPS’s pioneering “Placemaking” approach is grounded in the basic premise that successful public spaces should be lively, safe, and distinctive places that help communities flourish.

For more information, contact Julie Wagner at jwagner@brookings.edu

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development for the City of Providence, R.I.; Dennis Lower, president and CEO, Cortex Innovation Community in St. Louis; Emily Vander Does, business analyst in the Office of Planning and Development, City of Providence; and Mary Jo Waits, consultant, Phoenix Innovation District.

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The views expressed in this report are those of its authors and do not represent the views of the donors, their officers, or employees.
Anchor institutions are research universities and research-oriented medical hospitals with extensive R&D.


This research includes Mary Disis and John Slattery, "The Road We Must Take: Multidisciplinary Team Science," *Science Translational Medicine* 2, no. 22 (2010), pp. 22cm9, http://stm.sciencemag.org/content/2/22/22cm9.full; Stefan Wuchty, Benjamin Jones, and Brian Uzzi, "The Increasing Dominance of Teams in Production of Knowledge," *Science* 316, no. 5827 (2007), pp. 1036-39, science.sciencemag.org/content/316/5827/1036.


This overview was developed drawing on personal communications with Mary Jo Waits, consultant, Phoenix Innovation District, May 8, 2017. The City of Phoenix provided additional comments on May 17, 2016.

University of Arizona, "Economic Impact of the University of Arizona College of Medicine–Phoenix/Health Services," December 2014, cdn.uanews.arizona.edu/s3fs-public/UA_COMP_EIR_Infographic.pdf.


This overview was developed drawing on personal communications with Mark Huang, director of economic development, and Emily Vander Does, business analyst in the Office of Planning and Development, City of Providence, R.I., May 10, 2017.


In some settings, this report is often released to local stakeholders (and in these cases, names and confidential information should not be included) to help in later conversations. Mayors and their teams should determine what makes the most sense given their local context.
Personal communications with Mark Huang, director of economic development, and Emily Vander Does, business analyst in the Office of Planning and Development, City of Providence, R.I., May 10, 2017; personal communications with Mary Jo Waits, advisor, Arizona State University, May 8, 2017.


These five districts are stellar examples of the deliberate actions various actors undertook to establish innovation districts in their cities. Angelo Battaglia and Diane-Gabrielle Tremblay describe how 22@Barcelona serves as a model of urban regeneration and economic revitalization (including for Montreal) and highlight the role of decisionmakers surrounding the governance, economics, and inclusion policies of 22@. See Angelo Battaglia and Diane-Gabrielle Tremblay, "22@ and the Innovation District in Barcelona and Montreal: A Process of Clustering Development between Urban Regeneration and Economic Competitiveness," Urban Studies Research 2011 (2011), www.hindawi.com/journals/usr/2011/568159/.

In St. Louis, the evolution of the Cortex Innovation Community is documented in series of articles by Mary Mack at EQ. To read Mack's articles, see chapter 1, eqstl.com/conceiving-cortex-cortex-special-feature-chapter-1-2000-2002/ (February 27, 2017); chapter 2, eqstl.com/creation-cortex-cortex-special-feature-chapter-2-2002-2009/ (February 28, 2017); chapter 3, eqstl.com/cortex-shifts-focus-cortex-special-feature-


In 2013, Rhode Island’s I-195 Redevelopment Commission took possession of 22 parcels of land to be turned into an innovation district that would generate job growth and encourage cross-disciplinary interaction between the state’s seven growth industries. In 2016, the commission released a report that laid out the vision and goals of the Providence Innovation and Design District. To read the report, see “Providence Innovation and Design District,” January 2016, www.195district.com/_resources/common/userfiles/file/2016.11%20-%20I-195%20Final%20Report%2012PM.pdf.

Over the last 18 months, Brookings and PPS conducted a comprehensive analysis of the strengths and weaknesses of the Oklahoma City innovation district. The report, published in April 2017, makes recommendations that Oklahoma City can undertake to better leverage their assets. See Positioned for Growth: Advancing the Oklahoma City Innovation District, www.brookings.edu/wp-content/uploads/2017/04/csi_17042017_okc_report.pdf.

North Carolina’s Research Triangle Park (RTP) is one of the oldest innovation districts in the United States; over sixty years ago, it transformed 7,000 acres of forest into a leading space for research and technological discovery. In 2011, the leaders of RTP came together to propose a structural change that would take the park into the 21st century. Learn more about RTP’s vision here: “Research Triangle Park Master Plan,” November 2011, aws-master.s3.amazonaws.com/wp-content/uploads/2014/08/CONCISE-MASTER-PLAN.pdf.


This overview was developed drawing on personal communications with Dennis Lower, president & CEO, Cortex Innovation Community, May 2, 2017.

Project for Public Spaces, "The Lighter, Quicker, Cheaper Transformation of Public Spaces."

Drawing from personal communications with James Patterson, Director of Marketing and Communications at Wake Forest Innovations and Wake Forest Innovation Quarter, on May 5, 2017, the City of Winston Salem regularly engages with the Wake Forest Innovation Quarter on various local programs in an effort to engage members of the community. Some examples of the partnership between the City and the Innovation Quarter include: holding various mixers to promote minority and women's business enterprises; different walk and bike rides for families to come out for a day of walking and biking around the Innovation Quarter; and the Venture Innovation Café's Annual Entrepreneurship Mixer, which allows participants to learn more about organizations in the area who are committed to local small businesses. These activities are all considered Lighter Quicker Cheaper activities.

Personal communications with Lindsey Yarborough, senior manager of community relations, Wake Forest Innovation Quarter, February 18, 2016.


The Enterprise Center, "Request for Proposals: The Edney Building 110 Market Street, Chattanooga, TN 37402," January 12, 2015, static1.squarespace.com/static/54a0561ae4b0d1a214afcf82/t/54b6ab69e4b0b6572f717ac8/1421257577834/Enterprise+Center+Request+for+Proposals+1.12.2015.pdf.

This overview was developed drawing on personal communications with Ken Hays, president and CEO, The Enterprise Center, and Ann Coulter, strategic planning consultant, May 4, 2017.


For the last 18 months, Brookings and PPS have conducted in-depth analysis on both Oklahoma City and Philadelphia. To read more about these cities and their innovation capabilities, see these reports on the Brookings website: Connect to Compete: How the University City-Center City Innovation District Can Help Philadelphia Excel Globally and Serve Locally (2017), www.brookings.edu/research/connect-to-compete-philadelphia/; and Positioned for Growth: Advancing the Oklahoma City Innovation District (2017), www.brookings.edu/research/positioned-for-growth-advancing-the-oklahoma-city-innovation-district/.

This overview was developed drawing on personal communications with Steve Andrews, senior policy advisor, Mayor’s Office of Economic Development, City of Los Angeles, April 27, 2017.

District Hall is a new type of innovation space. More information about this space can be found at www.districthallboston.org/about/.

It is also worth noting that in addition to tying FARs to activation of ground level spaces, the city used parking and transportation demand management (PTDM) plans to incentivize higher density development by allowing developers to increase FARs in exchange for reducing land dedicated to parking.


Ibid

Ibid


In his analysis of U.S. innovation districts, Bruce Katz, Centennial Scholar at the Brookings Institution, has identified fragmented ownership as a particular challenge when determining how to leverage city assets.


For more on the evaluation and community-led improvement of public space, see Kathleen Madden, How to Turn a Place Around: A Handbook for Creating Successful Public Spaces (New York: Project for Public Spaces, 2000).

Personal communication with Dennis Lower, president & CEO, Cortex Innovation Community, May 2, 2017.


Twelve principles guiding innovation districts

Julie Wagner, Scott Andes, Steve Davies, Nate Storring, and Jennifer S. Vey

Ignited by emerging economic trends and demographic preferences, many cities across the United States, Europe, and other global regions are witnessing a new geography of innovation: innovation districts. Brookings documented their emergence in the 2014 research brief, the Rise of Innovation Districts. This work defined innovation districts as geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators. Districts are also physically compact, transit-accessible, and offer mixed-use housing, office, and retail.

Since then the Anne T. and Robert M. Bass Initiative on Innovation and Placemaking has conducted research to advance this emerging practice. In the paper How Firms Learn, we analyzed how firms and other institutions are altering their processes for innovating. In the paper Innovation Spaces: The New Design of Work, we observed how many innovation spaces are now being designed to reflect the increasingly collaborative and cross-sector nature of innovation. We also conducted deep engagements in burgeoning innovation districts, such as in Oklahoma City and Philadelphia, where, in concert with local actors, we developed strategies for accelerating their innovation ecosystems. Lastly, working with the US Conference of Mayors, we developed a handbook to support city leaders in their desire to facilitate this emerging geography of innovation.
Drawing on this and other work globally, we have developed these 12 principles to guide how innovation districts are to grow and evolve—a process that requires cities to take an integrated approach:

1. **The clustering of innovative sectors and research strengths is the backbone of innovation districts.** The concentration of innovative sectors and research strengths is what drives innovation districts from the start. Rather than government attempting to pick industry winners or developers focusing on a real estate play, districts thrive by concentrating and leveraging their city or regional economic strengths. For example, Oklahoma City’s strengths include health care and energy, while in Eindhoven, The Netherlands, it is precision machinery. Bottom line: Cities need to grow their own firms and, when possible, recruit from elsewhere.

2. **For innovation districts, convergence—the melding of disparate sectors and disciplines—is king.** Many economic developers think about the world in terms of industry verticals (e.g., agriculture, aerospace, health care). But innovation platforms—IT, new materials, robotics—are technology enablers that serve many industries. As hubs of research and next-generation technologies, innovation districts are more aptly defined by these horizontal platforms than by sectorial silos. As such, district stakeholders need to build their capacity to connect seemingly dissimilar industries through collaborative research, conversation, and cross-cutting technologies.

3. **Districts are supercharged by a diversity of institutions, companies, and start-ups.** The strength of innovation districts comes, in part, from this eclectic mix. Districts that are largely comprised of large institutions often lack the accelerated innovative growth that small, nimble firms provide. And districts characterized by a density of start-ups have fewer opportunities for well-funded partnerships and alliances. The “magic in the mix” comes from aligning incentives between these and other public, private, academic, and civic institutions.
4. **Connectivity and proximity are the underpinnings of strong district ecosystems.** A well-connected district is paramount to its success—transit, bike paths, sidewalks, car-sharing, and high-speed fiber. Identify gaps and invest wisely. At the same time, districts should measure their success by steps not miles. The experience of proximity—or a physical concentration of firms, workers, and activities—is what differentiates a “buzzing” district from a boring one.

5. **Innovation districts need a range of strategies—large and small moves, long-term and immediate.** Innovation district development requires a mix of large investments (e.g., in transit, high-speed fiber, venture and other capital funds) and smaller strategies (e.g., reactivating a neglected park and programming spaces). These approaches are complimentary: Large-scale investments set the foundation upon which other activities can be layered, while short-term, community-led processes can inform bigger and lengthier undertakings and create crucial momentum.
6. **Programming is paramount.** Programming—a range of activities to grow skills, strengthen firms, and build networks—is the connective tissue of a district. A major misstep is to undervalue programming within and across the district, both indoors and out.

7. **Social interactions between workers—essential to collaboration, learning, and inspiration—occur in concentrated “hot spots.”** A handful of social hot spots in a district will likely punch far above their weight in terms of building community. They may be organic, like Silicon Valley’s legendary Walker’s Wagon Wheel, or designed, like Venture Café near the MIT campus. Districts should identify, analyze, protect, and support such exceptional places.

8. **Make innovation visible and public.** Daylighting innovation in public and private spaces helps inspire curiosity in aspiring innovators, start conversations between neighbors, and convey the story of an innovation district to potential recruits or investors. It also transforms public spaces into “living labs” to test prototypes. To help further, activities like hackathons (a sprint-like event encouraging collaboration generally on software/hardware development), symposiums, and health clinics, which typically occur indoors, might accomplish more in the public realm. And finally, greater transparency at the ground level of buildings allows pedestrians to connect with the innovation activities inside.
9. **Embed the values of diversity and inclusion in all visions, goals, and strategies.** Innovation districts not only promote new technologies, they grow a range of new firms and new jobs with living wages. At a time of rising social inequality, innovation districts must become an avenue to economic opportunity for city residents—particularly for those in nearby neighborhoods that struggle with poverty and disinvestment. But growth alone is not enough. Only through intentional training, hiring, business development, and placemaking efforts can districts cultivate new local talent, encourage more diverse ownership structures, and help address poverty and disinvestment in surrounding communities.

10. **Get ahead of affordability issues.** Successful districts can, over time, drive up market pressures, impacting the ability of start-ups, maturing firms, and neighboring residents to remain in these areas. Smart districts respond early, getting ahead of the curve through a range of policy moves and strategic projects that preserve affordability and the diversity it engenders.

11. **Innovative finance is fundamental to catalyzing growth.** Most innovation districts require new finance streams to advance innovative and inclusive growth without straining existing and limited resources. As districts will likely receive less funding from states and the federal government to support their efforts, creative financing tools—including ways to leverage city-owned and district assets—should be explored with an eye toward sustaining financing over time.

12. **Long-term success demands a collaborative approach to governance.** An innovation district’s work ethic and culture is “collaborate to compete.” A bottom-up horizontal governance model—involving business, academic and civic institutions, government, workers, and residents—can best orchestrate what must be done collectively: Identifying assets; design, finance and strategic initiatives; public space management; and evaluating progress.
AGENDA CAPTION:
Executive Session item in accordance with Section §551.071 of the Texas Local Government Code, Consultation With Attorney, to seek advice of legal counsel regarding:

A) Resolution 2018-95R, a subordination agreement with Goldman Sachs Mortgage Company and JPMorgan Chase Bank that subordinates the City’s Deed of Trust lien against the Embassy Suites Hotel Property securing a note in the principal amount of $1,500,000 to the lien of such entities securing their loan to JDHQ Hotels, LLC. (a subsidiary of Atrium Hospitality) for the purchase of the hotel from JQH-San Marcos Development (a subsidiary of John Q. Hammons Hotels and Resorts) and

B) Resolution 2018-96R, a loan assignment and assumption agreement between the City, JQH-San Marcos Development, LLC. (a subsidiary of John Q. Hammons Hotels and Resorts) and JDHQ Hotels LLC. (a subsidiary of Atrium Hospitality) that assigns the duties and obligations of JQH Development LLC under various loan documents with the City related to the development of the Embassy Suites Hotel and Conference Center to JDQH Hotels, LLC. in connection with the sale of the hotel from JQH-San Marcos Development, LLC to JDQH Hotels LLC.