Providence Innovation and Design District

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January 2016

Executive Summary

The ability of Providence and Rhode Island's diverse institutions and private businesses to create jobs, conduct research, and educate students will be substantially enhanced by collaborations that promote innovation. Across the nation, such "innovation districts" facilitate institutions and private businesses ability to cluster then connect with start-ups, business incubators, and accelerators. Innovation districts combine the economic driver of innovative talent in specialized facilities with the powerful real estate trend of mixed-use live, work, and play districts.

Providence has an opportunity to leverage public lands on the footprint of the former I-195 highway to create an innovation district. The I-195 Lands are a remnant of the I-195 Highway and are located at the intersection of emerging urban neighborhoods and significant employment assets in higher education, creative industries, healthcare, business services, and more. These vacant lands present an opportunity to implement a statewide economic strategy that will drive scientific innovation, commercial growth, and regional economic development. The I-195 Lands also offer a significant city-building opportunity. An aggressive infrastructure and place-making strategy focusing on high-quality open space, amenities, streets, and transportation networks will help catalyze the revitalization of Downtown Providence and support broader economic development.

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Rhode Island's diverse array of growth industries offer significant opportunities for the Providence Innovation and Design District to define a distinct brand, develop unique physical spaces for transdisciplinary collaboration, and attract institutions and firms across diverse sectors. Business incubation and accelerator spaces, innovation centers, and university and industry sponsored collaborative lab spaces should support the development of growth industries and foster transdisciplinary collaborations among anchor institutions and companies.

To create a successful innovation district, the State of Rhode Island and the City of Providence should implement the following action plan:

1. **Form an Advisory Council that can help to guide the development of the district, including the aligning and securing of financial and physical commitments** from anchor institutions and private businesses. This entity will leverage the strengths of the universities and private sector to create a coordinated, aligned innovation effort.
2. **Broaden the innovation district's geography** to include DownCity and the Jewelry District in addition to the I-195 Lands and link its strategy to the state's economic development goals to incentivize a funding platform.
3. **Leverage the strengths of Providence's anchor institutions** to provide opportunities for multi-university collaborations in transdisciplinary research and practice areas, including biomedical sciences, food, health and wellness, high design-content products, and cyber security and data sciences. Build on existing collaborative commitments and diversified strengths, integrating efforts of JWU, Brown, RISD, and URI to anchor the innovation initiatives.

Executive Summary

4. **Coordinate infrastructure development, place-making strategies, and private sector job creation to create a prosperous innovation district.** Place-making should be anchored in a coordinated open space and public realm strategy, establish a retail program, define appropriate locations for particular uses, address the National Grid site and Garrahy Parking Garage, and coordinate needed transportation infrastructure investment.
5. **Collaborate with Wexford Science & Technology and CV Partners** to develop buildings and urban amenities in Providence.
6. **Create an innovation center for collaboration between institutions and firms** to anchor the innovation district by defining physical space for future innovative activity.
7. **Attract a robust research and commercialization center** to facilitate the relocation of outside corporations to Providence and promote problem-solving in high-value, creative sectors and others where meaningful growth is occurring.
8. **Access a world-class culture of design thinking at a new Product Prototyping and Evaluation Lab** to test new products and solutions across multiple disciplines using state-of-the-art production techniques and equipment.
9. **Ensure that the I-195 Commission has the resources to support the rapid implementation of an action plan and organize anchor involvement.** In addition, the management entity should define a strong brand that creates an identity for the innovation district.

Innovation District Milestones

The nine step action plan includes milestones that contain near-term actions and long-term considerations. Near-term milestones should be reached within the first twelve months of implementation requiring focus and financial resources The Innovation District should secure 3 to 5 potential private and institutional anchor partners to guide transdisciplinary collaboration. Sizeable contributions to initial funding should be committed by the institutions to their own expansion in the Innovation District over the next five years. This action should be supported by strengthening the I-195 Commission's capacity, hiring key staff, and developing a comprehensive infrastructure, parks and public realm strategy. Immediately following the accomplishment of near-term milestones, the construction of the Wexford/CV Partners Phase I should be underway. In addition, the completion of the Garrahy Parking Garage, creation of a signature park and transformation of the National Grid site, attraction of a corporate innovation center, and establishment of a permanent space for the Innovation Center should all have made substantial progress. Programs that fund workforce development initiatives in partnership with local academic institutions should be instituted.

Draft Vision Statement

The Providence Innovation and Design District can become a preeminent, high-density, mixed-use, physical and social environment recognized for its unique facilitation of trans-disciplinary collaborations together with the advancement of innovations through translational research and world-class design thinking. Through facilities and activities that exist and occur in the district, products will be pioneered, prototyped, evaluated, and entered into the market; human and societal problems will be remedied and addressed.

Rhode Island's Strengths Cut Across Industries

The Innovation District should drive a new statewide economic strategy to enhance scientific advancement, commercial innovation, and regional economic development. Rhode Island has lost traction in its high-value advanced industry sectors and can stimulate growth in those sectors and catalyze state-wide economic growth through the action items contained in this plan. Rhode Island's diverse set of advanced and opportunity industries are interconnected and complex, requiring talent and cross-cutting solutions that draw on multiple disciplines and fields of inquiry. In an increasingly spiky and competitive global economy, Providence's Innovation and Design District will help the region attract, maintain, and retain employment.

Rhode Island's seven growth industries should benefit from significant cross-disciplinary interaction, and should reflect the increasingly transdisciplinary nature of science and technology driving the innovation economy. The State's growth industries increasingly require interactions and collaborations across life sciences, physical sciences, food, health and wellness, mathematics, computational sciences, engineering and design disciplines. Specific opportunities in growth industries for Rhode Island reside largely at overlapping intersections within these disciplines.

Physical space that recognizes and embraces the need for fluid connectivity and multi-sectoral interactions is necessary to drive Rhode Island's current and emerging growth industries. The ongoing growth of these and other industries in Rhode Island will demand unique physical spaces that contribute to the specialized ecosystem needed for empowering translational sciences, transdisciplinary collaborations, innovation, and product commercialization.

The I-195 Lands can provide space that facilitates interfacing, conversations, and sharing of ideas – both accidental and planned – that stimulate creative approaches to solving challenges and creating innovations of commercial value. The development of the innovation district will be crucial to the creation of unique translational research partnerships between industry, universities, and the public-sector. A prototyping lab will provide access to the design thinking expertise and culture, fostered in Providence by RISD, that is currently in great demand across all sectors.

Rhode Island's Growth Industries

Advanced Industries

- Advanced Business Services
- Biomedical Innovation*
- Cyber-Physical Systems & Data Analytics
- Design, Materials & Manufacturing*
- Maritime

Opportunity Industries

- Arts, Education & Tourism*
- Transportation, Distribution & Logistics

Source: Metropolitan Policy Program at Brookings Institution and Battelle Technology Partnership Practice preliminary analysis
Note: Food, Health, and Wellness included in these industries

Establishing Global Partnerships

International Partnerships

Each of the four world-class universities with a current or near-term presence of significance in the Providence Innovation and Design District has continued to build and expand partnerships with higher education institutions around the world.

University of Rhode Island

With over 30 international academic partnerships, the University of Rhode Island (URI) is connecting faculty and students to international institutions and scholars, building and enhancing the curriculum, and advancing research. This translates into expanded academic and research opportunities for students at all levels. Although the partnerships span the globe, most are with Asian universities. Typical arrangements include:

- Reciprocal exchange of non-degree and degree students for a semester or year.
- Admission of incoming international undergraduate and graduate students that include earning, respectively, a degree from a partner institution and URI (not a joint degree).
- Receive or send students to participate in collaborative research at a partner institution.
- Receive or send a student intern to intern with an employer and/or research firm overseas or Rhode Island employers with which URI has a Memorandum of Understanding.

Specific example include dual PhD degree program between URI's College of Engineering and Ocean University of China, a agreement to provide summer language and cultural immersion between URI's Colleges of Engineering and Business Administration and Tunghai University in Taiwan.

Brown University

Brown University similarly has developed and sustained partnerships with universities across the globe, from Brazil to Japan, Cuba, and the United Kingdom. Brown, in fact, has partnerships with four or more institutions of higher education or research institutes in Brazil, China, India, Japan and Spain. These relationships provide opportunities for undergraduate students to study abroad, graduate students to engage with peers and mentors, faculty to conduct individual or collaborative research with colleagues, and to implement innovative curricula for students. These international collaborations also allow students, visiting scholars, and faculty from partner universities to come to Brown and participate in teaching, research, and community activities.

Specific examples include research projects between researchers working in public or private research and/or teaching institutions in the State of São Paulo in Brazil and researchers at Brown, and exchange of faculty between Brown and the Indian Institute for Technology in Bombay, India for ten days to conduct at least one mandatory lecture, in addition to workshops, classroom visits, meals, and meetings with colleagues.

Brown is currently focused on strengthening existing partnerships and on exploring innovative approaches to the development of new partnerships.

Establishing Global Partnerships

Rhode Island School of Design

RISD Global is a hub for discourse and cross-cultural exchange that supports students, faculty and members of the RISD community on campus and in the world. Its mission is committed to developing and sustaining opportunities, programs and networks that address the challenges, meanings, and importance of art and design in a global context, and prepare creative agents for a changing world. Its main roles are to:

- Work with RISD faculty, administrators and partners to host international visitors to campus, including visiting delegations, scholars, and artists.
- Create, develop, expand, and sustain RISD's global opportunities, and networks of partners and programs.
- Co-create and lead forums for discussion and debate around issues relating to art and design in a global context.
- Communicate RISD's global teaching, learning, and research to the community and broader world.
- Support and advise students and members of the community about global programs and opportunities, on and off campus.
- Advocate for the importance of global teaching and learning for, and with, the RISD community and our peers.

Specific examples include collaboration between RISD and the American Academy in Rome, which provides fellowships for RISD students to conduct independent exploration with their counterparts in Rome, and a five-week winter course in Paris that encourages photography students at RISD to hone their technical skill and personal vision.

Johnson and Wales

JWU has specific study aboard programs for its students in 12 countries around the globe. Through these programs, students are challenged to develop and demonstrate valuable skills while learning more about themselves and the world around them. Specific examples include a summer semester Peruvian Cuisine or Baking & Pastry course in the Universidad San Ignacio de Loyola in Peru, and a semester-long Intercultural Management program with Sejong University in Seoul, Korea.

Making Providence Competitive

The I-195 Lands are located at the intersection of emerging urban neighborhoods and significant employment assets in higher education, creative industries, healthcare, business services, and more. The site offers access to the riverfront and proximity to Providence's developing food, entertainment, and arts clusters. The removal of Highway I-195 presents a unique opportunity to create the Providence Innovation and Design District: a meaningful, high-density mixed-use physical and social environment recognized for its leadership in transdisciplinary collaborations and urban design.

A vibrant Innovation District can be developed to provide an environment that is purposefully collaborative, transdisciplinary, and multi-functional. This District should contain the mixed assets and amenities that appeal to the knowledge-workers, creative-class individuals, and entrepreneurs who power the modern economy. This plan will create an environment where creative artists, industrial designers, programmers, life scientists, engineers, materials scientists, social scientists, and others can purposefully interact to enhance creativity, integration of ideas, and spur commercial innovation.

The Providence Innovation and Design District should leverage the unique convergence of distinctive yet complementary world-class institutions and business sectors. The District can attract innovators, entrepreneurs, institutions, and existing businesses seeking a stimulating modern environment that promotes creative thinking and problem solving. As innovation remains a source of competitive advantage for high-value firms, strategically located innovation districts with well-developed innovation centers, academic partnerships, branding, and urban realm components are attracting corporate innovators interested in collaborative activity occurring in increasingly urban areas.

The Providence Innovation and Design District should contain:

Collaborative research, office, and lab space: University and industry sponsored collaborative innovation center, including an intensely programed events space, highly competitive business incubation and accelerator space, and well equipped prototyping and maker-spaces • Internship opportunities to support local students • Collaborative research institutes that span multiple universities and private sector companies • Corporate commercialization centers that employ local residents.

Infrastructure and place-making: High quality open space and public amenities • Lively and active streets and meeting spaces • Significant density of residential and retail uses • Highly connected transportation network.

Creating the Innovation District requires the immediate completion of near-term, small, but important actions and the execution of long-term, more substantial projects. Near-term actions include fostering a highly programed innovation center that can anchor the Providence Innovation Ecosystem and function as a hub for all ecosystem actors and interested Providence residents. Long-term actions include the creation of significant real estate and urban realm improvements, including the construction of the Wexford/CV Partners Phase 1, creating superbly designed urban amenities, and attracting corporations to innovate in Providence. The State and City should take action on both the near-term and long-term actions today to create an Innovation District that can transform Providence and support sustainable statewide economic growth into the future.

Drivers of Innovation District Success

To create a successful Innovation District the State of Rhode Island and City of Providence should address six key challenges.

1. **Partners:** *Facilitating institutional, private sector, and government collaboration.*

2. **Ecosystem Innovation:** *Ensuring tools, resources, and physical spaces promote a culture of innovation.*

3. **Urban Realm:** *Creating density and mix of uses that attracts innovative talent and firms.*

4. **Workforce Development:** *Ensuring education and training exists to fill the innovation talent pipeline.*

5. **Financing:** *Funding capital improvements and operating programs to support innovation.*

6. **Branding:** *Identifying industry sectoral strengths to focus innovation district development.*

These challenges were identified through a series of case study research that can be found in the Appendix to this report. Innovation Districts in St. Louis, Detroit, Winston-Salem, Kitchener-Waterloo, Baltimore, and Buffalo were studied.

Build Upon the Partner and Ecosystem Momentum

1. Partners: *Facilitating institutional, private sector, and government collaboration.*

Momentum:

Important anchor institutions and firms are beginning to coalesce. Brown, URI, JWU, RISD, Lifespan, Care New England, and the Rhode Island Foundation have expressed interest in future collaborations with the I-195 Commission to create an innovation district that leverages the I-195 Lands.

Goal:

Establish an organized Advisory Council of academic institutions, medical centers, private sector, and non-profits anchored around a single vision and committed to financial participation of Innovation District development and implementation.

Lessons from Case Studies:

Aligning 3 to 5 partners catalyzed key public investments which led to innovation district success in St. Louis, Detroit, Winston-Salem and Baltimore. Initial financial commitments of $2 million to $30 million from anchor partners in these cities initiated efforts to form the innovation districts and provided the platform for significant public-sector support through tax-increment financing, historical preservation tax credits, and brownfield remediation tax credits.

2. Ecosystem Innovation: *Ensuring tools, resources, and physical spaces promote a culture of innovation.*

Momentum:

Leading national innovation facility operators are looking to expand into Providence. CV Partners is working with Cambridge Innovation Center to create an impactful incubator and grow innovation in Providence. This space can be additive to the existing Providence Innovation Ecosystem.

Goal:

Create a physical home to support innovation activity to anchor and grow the ecosystem. The facility should include incubators, shared offices, and event space filled with frequent collaborative programing.

Lessons from Case Studies:

Developing a 20,000 to 50,000 SF innovation center can act as an ideal focal point for partner collaboration and jumpstart the district. The Communitech innovation hub in Kitchener-Waterloo's renovated warehouse building is recognized as the driver of the region's tech ecosystem, sharing collaborative space with prominent private and institutional anchors. Innovation centers across nearly all innovation districts were located in reused or renovated buildings.

Improve the Physical Environment and Talent Pipeline

3. Urban Realm: Creating density and mix of uses that attracts innovative talent and firms.

Momentum:

Developers with national experience and demonstrated capacity are actively interested in Downtown Providence. Wexford and CV Partners are already shaping the Innovation District in Providence. Other districts have attempted to attract Wexford to their city. Providence should capitalize on Wexford's interest and act pursue the opportunity to create a high-quality, amenity-rich, and mixed-use development.

Goal:

Partner with entities who are committed and capable of developing mixed-use projects focused on improving public realm and urban infrastructure.

Lessons from Case Studies:

St. Louis, Baltimore, and Winston-Salem engaged Wexford to build large-scale mixed-use developments, catalyzing new infrastructure and public-realm investments. Private-sector development was supported by $12 million to $34 million in public-sector tax credits and hundreds of millions in public-private urban realm financing in all three cases. For example, in Winston-Salem, the public-sector relocated rail lines, buried transmission lines, widened streets, and developed a destination park to ready the innovation district for Wexford's developments.

4. Workforce Development: *Ensuring education and training exists to fill the innovation talent pipeline.*

Momentum:

Key universities are expanding student retention efforts and furthering collaborations between students and companies. Interviews with Brown, URI, JWU, and RISD have indicated a desire to ensure that students remain in Providence and are supported in ways that allow them to contribute to the innovation economy. Additionally, the Wavemaker Fellowship program will help attract and retain STEM, finance, and design graduates.

Goal:

Encourage academic institutions to strengthen the talent pipeline of existing residents, current students, and new community members.

Lessons from Case Studies:

In Kitchener-Waterloo and Baltimore, collaborative workforce development initiatives were implemented in partnership with local academic institutions. The University of Waterloo offers a non-academic dormitory incubator for its most entrepreneurial students, which cost $1 million per year to operate. The University also runs a co-op program placing hundreds of students in local tech firms every year. The UMB BioPark in Baltimore developed a joint associates degree program with a local community college at its facilities. All of the programs received strong pubic-sector support.

Leverage Financial and Marketing Resources

5. Financing: Funding capital improvements and operating programs to support innovation.

Momentum:

The State of Rhode Island passed a comprehensive package of economic incentives that will support Innovation District development. Tax credits for real estate development, tax increment financing, tax stabilization agreements, and the I-195 Development Fund are new financing tools that should be used to build new physical spaces for innovation and help catalyze new real estate development.

Goal:

Provide significant public financing to support capital and programming activities.

Lessons from Case Studies:

In St. Louis and Winston-Salem, financing for urban realm improvements were structured through carefully structured multi-layered public, private, and institutional anchor partnerships. Federal competitive grants, state transportation funding, and city TIFs were all supplemented with anchor and master-developer funds allocated through the Cortex consortia in St. Louis. In Detroit, the public and philanthropic sector partnered to fund programs encouraging anchor institutions to commit to local procurement, purchasing, and hiring along with a set of housing incentives designed to encourage anchor employees to move to and invest in Midtown Detroit.

6. Branding: *Identifying industry strengths to focus innovation district development and tenant attraction strategies.*

Momentum:

The Metropolitan Policy Program at Brookings Institution and Battelle Technology Partnership Practice have identified on a preliminary basis seven high-potential growth areas of competitive advantage to emphasize future innovation district growth in Providence. These industries can build upon and leverage the unique convergence of Rhode Island's academic and business leaders. These are areas of potential growth. The brand for the district should emerge from those industries clusters committed to locating that growth in the innovation hub.

Goal:

Incorporate specific regional sectoral strengths from committed institutions into tenant attraction and marketing.

Lessons from Case Studies:

Innovation districts in St. Louis and Winston-Salem developed distinct brands by focusing on anchor partner and regional sectoral strengths. Both attracted major brand tenants who have developed their national headquarters in conjunction with Wexford within the innovation district, contributing to cluster development and job growth. Wexford helped attract biotech firms in Winston-Salem by developing state of the art wet-laboratory spaces, catering to the innovation districts brand.

Providence's 9-Step Action Plan

#1: Form an Advisory Council to Guide the Development of the District

Providence Innovation and Design District Advisory Council

Providence's anchor institutions and businesses currently operate independently of one another, creating silos of capital and innovative capabilities. Leadership should form an Advisory Council charged with guiding the development of the district in part through securing financial and physical commitments from anchor partners. The organization should rapidly leverage the willingness of Providence's key research and educational stakeholders to implement the district vision. The Advisory Council should work in collaboration with the I-195 Commission.

Institutional Interest

The Rhode Island economy is comprised of a diverse range of universities and associated academic and institutional strengths, major federal defense research operations, and emerging clusters of innovative private-sector businesses. Anchor institutions and businesses currently act independently of one another and function in silos of innovation. Collectively, these organizations present an opportunity to facilitate collaborations and multi-institution partnerships under a coordinating entity charged with directing the creation of the Providence Innovation and Design District. This high-level Advisory Council should secure financial and physical commitments from anchor partners to address Providence's six key challenge areas to ensure the success of the Innovation and Design District.

The leaders of Brown, URI, RISD, JWU, and other key research and education stakeholders have exhibited a willingness to create intra- and inter-institutional transdisciplinary collaborations. This openness to collaboration should be leveraged to convene the anchors. Leaders of the anchor Providence institutions should align their visions and commit resources to the creation of the Innovation and Design District.

Mission

Develop, manage, and secure financing for collaborative programing and capital infrastructure to support transdisciplinary partnerships for the continued growth of Providence's innovation economy.

Members

Representatives should be senior leaders with both strategic insight and operational authority that can guide the decision making processes of the I-195 Commission.

Financial Commitments

As demonstrated in other successful innovation districts, each partner will need to allocate a portion of their existing spending to support the Innovation District.

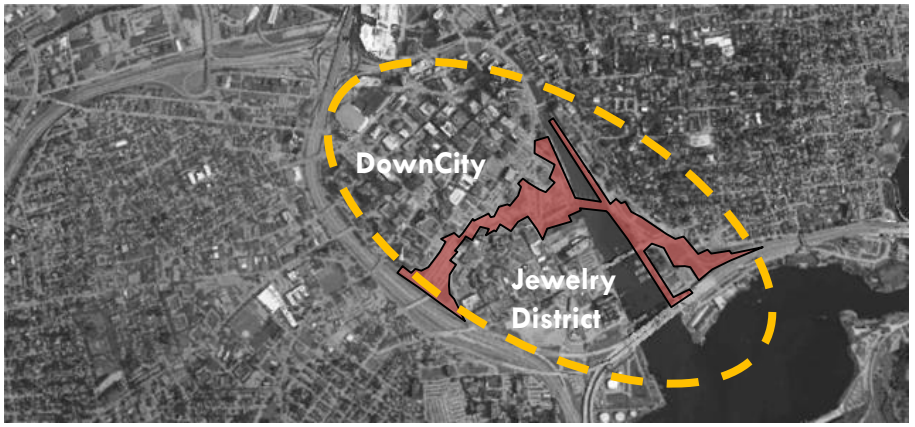
Resource Commitments

Academic partners should dedicate faculty time to advising and mentoring start-ups within the incubators and accelerators; as well as establishing funding mechanisms supporting business formation and growth. Each should also contribute meaningful resources to support frequent ecosystem events and programs at the Innovation Center.

#2: Broaden the Geography and Link to Statewide Strategy

Innovation Cannot be Limited to the I-195 Lands

The Providence Innovation and Design District should be greater than the I-195 Lands' boundaries. The I-195 Lands are a remnant of a former highway, resulting in an atypical land form and a lack of cohesive space. At just 25 acres, the proposed footprint of the district is significantly smaller than comparable innovation districts in St. Louis, Detroit, San Francisco, and Winston-Salem, which all range from 145 to 300 acres. Broadening the planned innovation district to incorporate DownCity and the Jewelry District will increase the district's size to nearly 320 acres and include key anchor institutions such as JWU and URI. This scale has proven successful in cities across the nation and allows for a longer-term development vision and planning. Expanding the district will ensure that the I-195 Lands are no longer identifiable as a divisive former highway. Combining the unique warehouse building stock of the Jewelry District with the density and mix of uses present in DownCity will create an environment that promotes innovation and problem-solving in high-value, knowledge-intensive sectors.



Citywide Benefits

An expanded innovation district centered on the I-195 Lands also presents an opportunity to develop more comprehensive district infrastructure, open space and public-realm strategies, integrating the broader area in a cohesive design framework. Signature open spaces and transportation networks enhancing connectivity should be prioritized. New high-quality housing developments should be encouraged throughout the Innovation District. Already, Downtown Providence's job density is greater than other city's with active innovation districts, including the downtown's of St. Louis, Winston-Salem, and Detroit, though each of these downtown's remain challenged. However, Downtown Providence's residential density is not strong enough to create an energetic place for innovation. Supporting the addition of 500 new residential units as a initial goal will increase its vibrancy and support greater retail and other innovation economy amenities which should lead to more substantial increases in density over time.

Statewide Benefits

The Providence Innovation and Design District's strategy should be linked to the broader statewide effort to encourage growth in key economic sectors. The District should work to attract business and corporate research centers that align with Rhode Island's priority areas through targeted branding and outreach activities. The Innovation District should also incentivize sector-specific entrepreneurship and incubation activities, and work with local academic institutions to bolster programs to train workforce in these sectors. Positioning the Innovation District as an explicit target of the State's efforts to grow certain economic sectors will help incentivize a funding platform for further innovation and business formation in Providence.

#3: Leverage the Strengths of the Providence Anchor Institutions

Transdisciplinary Collaboration

Providence's strengths across multiple academic institutions should be leveraged to forge unique transdisciplinary research and innovation partnerships that encourage engagement with industry and support growth industries. Developing facilities and programs that actively facilitate transdisciplinary collaborations will bring together faculty, students, research sponsors, and corporate innovators from diverse fields and backgrounds. The amalgamation of multiple collaborative disciplines will enable the Providence Innovation and Design District to address significant opportunities relevant to the region's growth industries.

Existing Collaborations and Diversified Strengths

Across the universities, commitments to the Providence Innovation and Design District vision exists today. JWU's College of Culinary Arts and Brown's Alpert Medical School launched a collaborative pilot program in 2012 to offer a joint curriculum for medical students, food scientists, and chefs to combine skills and knowledge in new approaches to health and wellness. JWU is seeking to expand this collaboration with Brown Medical and the URI Nursing School to develop a nutrition-focused health sciences research center. Focused on innovative new food-medical distribution systems, the research center could help attract large food corporations to the Providence Innovation and Design District.

Collaborative academic partnerships among the Rhode Island Universities span a diverse sets of institutions, industries and initiatives. Current collaborations include:

Industrial Innovation: Brown, NUWC, RISD, and URI are collaborating on joint work at the intersection of industrial design and new manufacturing technologies.

Center for Excellence in Undersea Technology: NUWC and URI are pooling expertise on ocean science and engineering to develop technologies for marine environmental protection and homeland security applications.

Cyber Security: Brown, Roger Williams, and URI are all collaborating on three cyber-security initiatives including the URI Digital Forensics and Cyber Security Center, the Brown Cyber Security Center, and the Roger Williams FANS lab.

Food, Health and Wellness: JWU and Brown Medical have offered a joint curriculum for medical students, food scientists, and chefs to combine skills and knowledge in new approaches to health and wellness.

Rhode Island Consortium for Nanoscience and Nanotechnology (RIN3): Brown and URI are collaborating to develop joint nanoscience infrastructure and R&D programs.

Joint Nursing Facility: Brown, URI, and Rhode Island College have launched a join initiative to train nurses and collaborate with regional health systems in the restored South Street Power Station.

#3: Leverage the Strengths of the Providence Anchor Institutions (cont.)

Opportunities for Continued Collaboration

Providence's core competencies in academic research across its institutions can be leveraged for the future development of robust collaborative initiatives across each growth industry. Opportunities for multi-university collaborations within Providence are evolving - including, JWU and Brown's experience developing programs at the intersection of nutrition, culinary arts, and food-medical distribution systems, with complementary offerings from URI's Department of Nutrition and Food Sciences, JWU's culinary arts programs and RISD's packaging, illustration, and industrial design programs.

Four areas of collaboration are can be anchored in the Providence Innovation and Design District:

Biomedical Sciences: Developing collaboration between Brown and URI in neuroscience, together with associated competencies in medical device design and engineering, biopharmaceuticals, and mood and movement disorders presents opportunities for innovation in neurological devices and biopharmaceuticals for neurological and psychiatric applications. JWU and Brown's experience developing programs at the intersection of nutrition, culinary arts, and food-medical distribution systems is another opportunity area for further multi-university collaborations. URI's Department of Nutrition and Food Sciences, JWU's culinary arts programs and RISD's packaging, illustration, and industrial design programs promise opportunities for future collaboration.

High Design-Content Products: Bringing together the world-class industrial design and arts capacity of RISD with the engineering, data science, and life science expertise of Brown, URI and others, there is an opportunity to leverage these strengths to form a holistic and integrated product design and development program that would be a unique draw for industry partnerships and collaborations.

Food, Health and Wellness: Expanding the JWU and Brown Medical collaboration to include the URI Nursing School to develop a nutrition-focused health sciences research center. Focused on innovative food-medical distribution systems, the research center could help attract large food corporations to the Providence Innovation and Design District.

Data Sciences, Security and Cyber-Physical Systems Development: Focusing on cyber security for embedded and connected systems, and in big data analytics in life science, defense, financial and other application areas is possible. The combination of Brown's diverse strengths in computer science and mathematics, URI's capabilities in computational sciences, and expertise at the Navy Undersea Warfare Center (NUWC), provide distinct capabilities around which the transdisciplinary industry may be formed within the district.

Providence's focus areas of can leverage existing collaborations to build R&D momentum in the Innovation and Design District. Universities are also developing multi-institutional collaborations around key sectors, and should be supported with shared innovation space within redeveloped and purpose-built facilities. Together JWU, Brown, URI, and RISD are well-positioned to provide the necessary resources, programs, and vision in the near-term to lead initiatives that will drive the future success of the district.

#4: Support Infrastructure and Place-Making Strategies

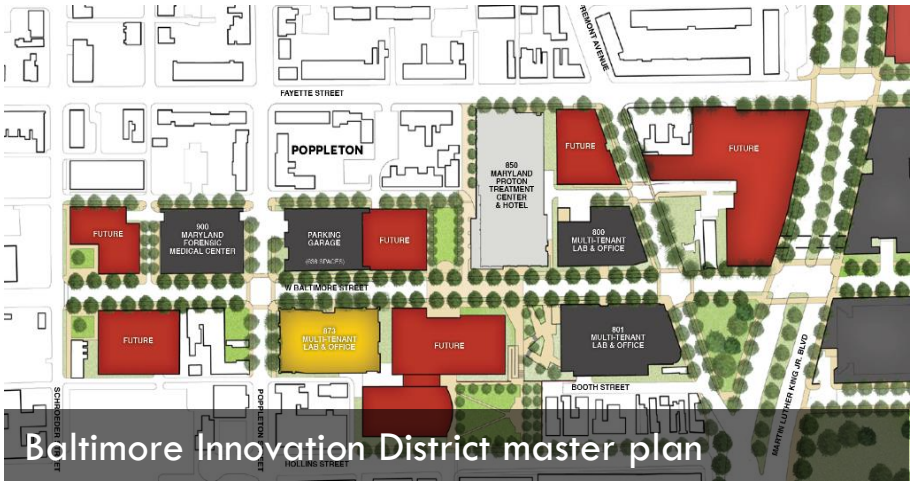
Thoughtful, Excellent Urban Realm is Important

Place-making, public realm, and infrastructure improvements are essential to creating prosperous innovation districts that attract innovative and cross disciplinary firms and workforce. Key stakeholders can help drive the success of the Providence Innovation and Design District by supporting infrastructure investment, coordinated open space and public realm improvements, and significant transportation investments. While implementing thoughtful place-making strategies takes time, temporary, tactical urbanist strategies such as food truck rallies and temporary infrastructure can also be encouraged to animate the I-195 Lands today.

Place-Making

There is a significant need for streetscape and infrastructure improvements in the district. As in other locations, planning efforts should focus on a mix of uses, setting aside parcels for housing, retail, hotels, open spaces, and public amenities. Development goals should include infrastructure, transit, and public realm improvements along with anticipated total square footages at the district's future build-out. Focusing on a comprehensive public realm strategy, these efforts can help transform the Jewelry District's neglected streets, large surface parking lots, and inconsistent lighting. The effort should call for physical spaces such as the Innovation Center's co-working facilities and incubators to be situated in central, highly visible, and accessible locations that span both indoor and outdoor environments. In addition, anchor institutions and companies should be engaged in the development of plans and initiatives, allowing individual plans and vision to coalesce into a unified document for the Providence Innovation and Design District.

Winston-Salem streetscape improvements



Baltimore Innovation District master plan

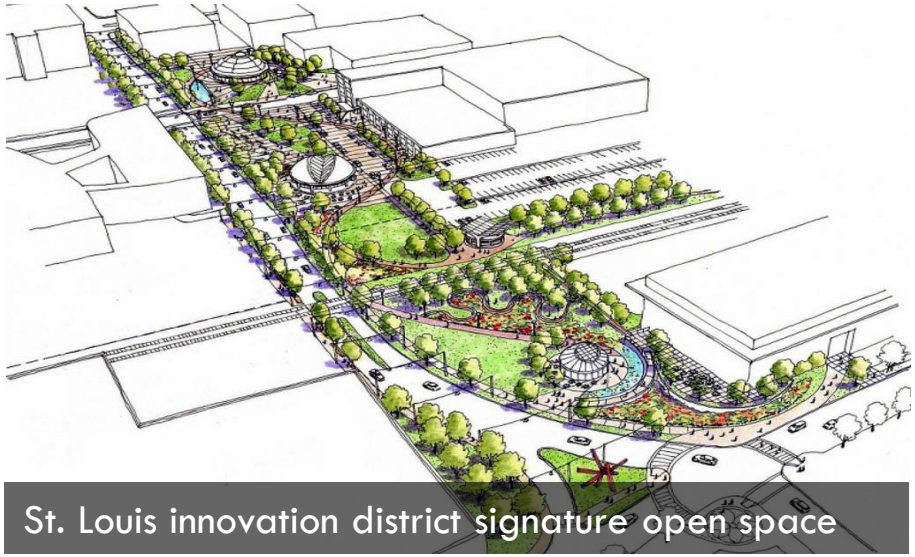
#4: Support Infrastructure and Place-Making Strategies (cont.)

Coordinated Open Space Strategy

To establish an identity and build attractive amenities, the I-195 District needs to create a signature open space and a coordinated network of programmed parks. Dynamic improvements to open space and the public realm in urban centers are a critical driver of economic development and downtown transformation, as has been seen in many North American cities in recent years. Signature projects, such as the High Line and Brooklyn Bridge Park in New York, and Millennium Park in Chicago, have helped transform conventional downtowns into mixed-use districts, attracting critical residential populations, improving the quality of life, and building a more competitive city. The Providence Innovation and Design District's open space and public realm strategy should aim to attract multiple layers of users to ensure consistent vitality and activation through programming, unlock value for real estate and community development, and undertake practical and achievable interventions in a densely built urban area to ensure that investments produce maximum effect. The District's open space and public realm strategy should be supported by a high standard of capital investment and operations and maintenance through creative, public, private, and institutional approaches to financing.

Signature Bridge

A new pedestrian bridge should connect Fox Point and eastern Providence to the Jewelry District. The bridge's design excellence should be incorporated into the signature waterfront park, providing gathering spaces for residents and workers, highlighting the city's history, creativity and innovation. The Bridge should be the beginning of an integrated system of open spaces moving into the Jewelry District.



St. Louis innovation district signature open space

Streetscape Improvements in Winston-Salem

#4: Support Infrastructure and Place-Making Strategies (cont.)

Infrastructure Investment Strategy

The District should solicit and dedicate government, private, and anchor funds for major amenities, streetscape, and public-realm repairs and improvements to create value and improve the attractiveness of the Providence Innovation and Design District.

Garrahy Judicial Complex Garage

The District lacks sufficient parking to support future development. The State's redevelopment of the Garrahy Judicial Complex parking lot into a seven-level 1,250-space parking garage is estimated to cost approximately $45 million. The site will include ground-floor retail and is expected to serve future Providence Innovation and Design District development-driven demand. Bonds are planned to be issued to finance development and the State has released funding for the planning process, including a request for proposals. The garage should move forward to support future development in the district.

National Grid Strategy

The National Grid riverfront property presents an opportunity to improve a critically located parcel of land for well-planned waterfront linkages and connectivity to the South Street Landing Project. Currently, the property is unsightly, blocks access to the riverfront, and the seawall along National Grid's site and southward in front South Street Landing are in need of rebuilding. These actions would require significant public support and a fully coordinated effort between various government and regulatory bodies. Despite the high costs and risks, transforming the National Grid site will combine the open space strategy and the South Street Landing project into an immediate and tangible initial phase of the Providence Innovation and Design District.

Location of future Garrahy Garage

National Grid Substation Site

#5: Collaborate with Wexford and CV Partners

Development Partners

Induced innovation districts are often aided by a professional and well-capitalized developers. Wexford Science and Technology is a national leader in developing physical spaces and urban amenities in mixed-use innovation districts. The developer has expressed a strong interest in Providence, proposing a one million square foot mixed-use life sciences complex in partnership with CV Properties. The State and City should demonstrate a strong commitment to Wexford/CV Partners to ensure the success of the Providence Innovation and Design District. The developer and the public should work together to create place-making, public realm, and urban amenities that demonstrate a strong commitment to the Providence Innovation and Design District. The proposed mixed-use life sciences complex by Wexford and CV Properties is essential to catalyzing Providence's Innovation and Design District. This complex is expected to be the cornerstone of the Providence Innovation and Design District, and commercially reasonable efforts should be made to make the deal a success.

Proven Excellence

Wexford is a national leader in developing physical spaces and urban amenities in mixed-use innovation districts. The master developer's record of success in St. Louis, Winston-Salem, Baltimore, and more can be leveraged in Providence as a catalyst for early stage public-sector and anchor investments in the Innovation and Design District. Innovation districts that have partnered with Wexford have demonstrated an upswing in firm attraction and job growth. With a similarly sized first phase, St. Louis is now supporting 200 tenants and over 3,500 jobs. Innovation districts throughout the country have spent years attempting to attract Wexford, Providence should capitalize on the master developer's interest by ensuring its success.

Coordinate With Major Investments

The first phase of the Wexford/CV Partners development is planned to include nearly 500,000 SF of academic, research, residential, hotel, and parking space anchored by Brown's research and development efforts and School of Professional Studies. Officials should demonstrate its commitment by securing the development of this initial phase and supporting other large projects in the Jewelry District, including the South Street Landing project. Coupled with a concurrent effort to enhanced open space and increased housing in the broader downtown area, these efforts will enhance Providence's brand and create a dynamic mixed-use Innovation and Design District, re-enforcing Wexford's proven excellence in planning districts that help catalyze innovation.

Commit to Wexford

Wexford/CV Partners are in active negotiations with the I-195 Commission. The State and City should support the I-195 Commission to ensure the negotiations are successful and Wexford is engaged to construct its proposed Phase I. The deal should be mutually beneficial for both the public and Wexford/CV Partners. To ensure that the project helps catalyze future innovation, the I-195 Commission should incorporate into the deal, goals for a mix of ground floor uses, targets for design excellence, and preferences for businesses cultivated through anchor institution collaborations. The negotiations should be completed in the near-term and the City and State should facilitate a streamlined land use approvals process to reduce the time between deal execution and ribbon cutting ceremony.

#6: Develop a Center for Innovation

A Center for Innovation and Collaboration

Providence should develop a center for collaboration and interaction that provides the physical space for future innovative activity and defines a brand for the Innovation and Design District. The center should be comprised of incubator, co-working environments, lab and prototyping spaces and events and meeting spaces. Cambridge Innovation Center, a leading full-service office facilities operator, has expressed interest in being part of the Providence Innovation Center.

Innovation Space

In addition to Cambridge Innovation Center, the proposed Hub should provide support services and accelerate the work being conducted in the Providence Innovation and Design District through incubation programs and shared innovation spaces that include wet-labs, commercial kitchens, and design and manufacturing prototyping labs. Incubators in other innovation centers managed by Cambridge Innovation Center provide venture services, networking opportunities, mentorship, temporary office space, and advisory serves for entrepreneurs looking to grow their ideas and companies. St. Louis' new Cambridge Innovation Center in a Wexford developed facility began with 20 founding tenants, with room for up to 75 tenants in a 32,000 SF space sharing facilities with anchor universities and medical centers.

Event and Meeting Forum

The Innovation Center should contain civically-oriented meeting and events space, hosting year-round events, seminars, and educational programs to bolster community development, gather entrepreneurs, and build formal and informal relationships in the district. The space should be filled with both events and continuous offerings of food and beverage to encourage casual convening. Innovative JWU culinary creations should be prominently featured, creative RISD prototypes should be showcased, and integrated health initiatives should be promoted. Anchor institution faculty, staff, students, and alumni as well as Providence's Innovation Ecosystem community members should be welcomed at the Innovation Center and treat it as their home for innovation and collaboration.

Commitment to Providence

Organizations that benefit from the Innovation Center's incubation resources should demonstrate a commitment to Providence through hiring graduating students from local universities and committing to rent market-rate space in the Providence Innovation and Design District, following matriculation from the incubator.

Operations

In the initial years, the Center should have dedicated funding from the district Advisory Council. Programing and business support services should be guaranteed by anchor partners with a multi-year commitment to supporting the Center. To market the incubation services, the center should choose resident firms through a highly selective and well-publicized competition. In addition to business support, funds should be allocated to facilitate venture capital investment in the resident firms. Financial support should be competitively managed with minimal requests for ownership stakes in the firms.

#7: Attract Corporate Research and Commercialization Centers

Strengthen Targeted Industries

The Providence Innovation and Design District presents a significant long-term opportunity to attract leading corporations that would strengthen Rhode Island's targeted growth industries, through creation of corporate research labs and commercialization centers. Industrial research, development, and design no longer take place in the mid-20th century suburban research park. Increasingly, spatially isolated corporate campuses are being replaced or supplemented by the creation of urban research labs located in vibrant mixed-use downtown areas near anchor institutions, most notably research universities and medical campuses. The Providence Innovation and Design District is well-positioned to respond to these changing needs.

Commercialization Components

As the Providence Innovation Ecosystem activates and expands, corporations will start to see Providence as a hub for innovative talent and activity. As the interest develops from established corporations that align with targeted growth industries, the City and State should incentivize the creation of corporate research labs and commercialization centers that encourage collaboration within the Providence Innovation Ecosystem. The facility should include ground floor retail to activate the street and promote the district as a lively and attractive place to innovate. The Commercialization Center should be developed by the corporations, and the corporations should commit to employing people in Providence. If interest from corporations is slow to develop, the City and State should work together to create a developer RFP process to jump-start the process.

Capitalize on Corporate Trends

Corporate research labs are attracted to well-established innovation districts. Leading bioscience firms such as Pfizer, Novartis, and CVS have recently opened new research and commercialization spaces in Boston looking to take advantage of the nearby clustering of academic institutions, sector-specific talent, hospitals, innovation centers, and startups. In Atlanta, AT&T, NCR, Panasonic, and ThyssenKrupp have all responded to the Tech Square Innovation District initiative near Georgia Tech University by establishing R&D labs and offices. In downtown Kitchener-Waterloo, Google operates its largest Canadian office in a shared, reused space with the city's leading innovation center and the incubation facilities of a local university.

Many of the nation's fastest growing and most advanced firms are supplementing internal R&D initiatives with new open and networked innovation models. These models are best served by well-established urban innovation districts that have developed a critical mass of clustered talent, cutting-edge facilities, and institutional anchors. The Providence Innovation and Design District has the components in place that may develop this critical mass, and should set a long-term goal to attract corporate research labs that should accelerate the pace of innovation and strengthen the region's growth industries.

#8: Access a World-Class Culture of Design Thinking at a Product Prototyping and Evaluation Lab

Culture of Design Thinking

A new, cutting-edge Product Prototyping and Evaluation Lab located within the Providence Innovation and Design District will enable engineers, scientists, designers, and artists to combine their expertise in practical, creative, and solution-focused ways that will bring new concepts to market faster and more efficiently.

Applying Design to Modern Business

Today's technology and business solutions are increasingly complex and require iterative approaches that focus on user experience, simulation, prototyping, and evaluation. Major companies such as PepsiCo, Samsung, IBM, and GE are incorporating design thinking into prototypes for new ideas, products, and services – creating new opportunities for Providence. The Product Prototyping and Evaluation Lab will serve to grow in-state companies and attract out-of-state companies to Providence and the State of Rhode Island.

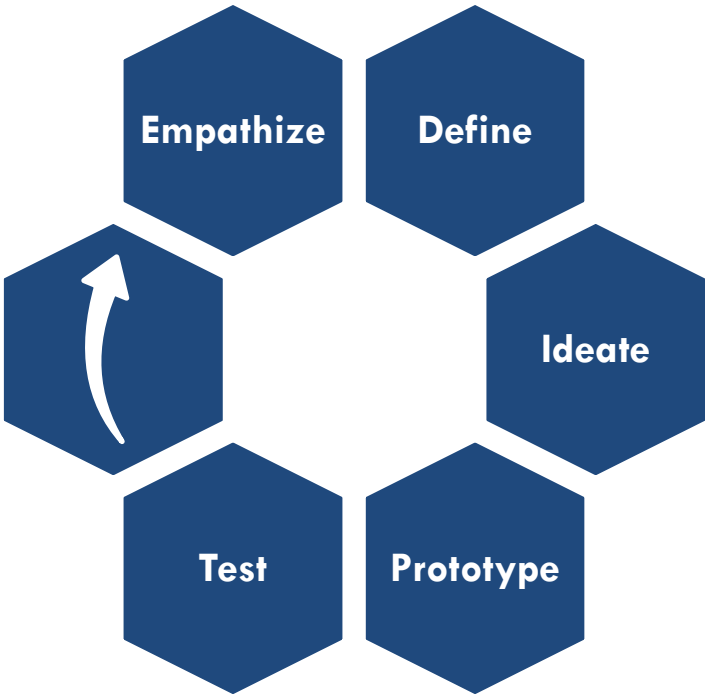
Diverse Product Development

The Product Prototyping and Evaluation Lab will include the following activities that span across the alpha and beta stages of product development:

- Low resolution modeling and rapid prototyping
- Computer modeling and finite element analysis
- Early expert evaluation teams
- Computer rendering
- High resolution prototyping
- Consumer testing, sensory evaluation, and psycho-social evaluation

Staff

This independent development center will include university researchers as well as dedicated staff. Each university's strengths will be integrated and leveraged as needed for specific product development projects. In this manner, RISD's strengths in industrial design and graphic design could be combined with Brown's data science department, Johnson and Wales' culinary expertise, and the University of Rhode Island's engineering prowess to create new and exciting concepts.



#9: Properly Staff and Fund the Managing Entity – The I-195 Commission

Implementation Structure

In order to fully realize the potential of Providence's Innovation and Design District, The State of Rhode Island should ensure that the I-195 Commission is provided with proper tools and resources to support rapid strategic implementation and facilitate the collaboration among the anchor institutions within the Providence Innovation and Design District Advisory Council. While the Advisory Council should exist to align anchor partners around a common district vision, the Advisory Council needs to be supported by a managing organization that is mandated with executing action plans. The managing entity and its staff should have the capability to convene the committed anchor partner institutions and key public stakeholders necessary to make decisions regarding the creation of an innovation center, execution of the Wexford/CV Partners deal, development of urban realm improvements, and expansion of the Innovation and Design District beyond the I-195 Lands. The I-195 Commission should be mandated to efficiently allocate the $25 million I-195 Development Fund along with any additional funds to progress key actions.

Management

Staffing should recognize the broad array of funding requirements, development approvals, programming needs, and anchor management that is required to successfully execute a vision for the Innovation and Design District. At least 3 to 5 full-time staff members should be dedicated to organize and implement the Innovation and Design District action plan.

Brand, Programming, and Curation

The implementing structure should oversee and guide the Innovation and Design District's brand, identity and presence to enhance marketability to potential tenants. Ongoing curation should occur to ensure the mix of uses, amenities and services to facilitate optimal development of the district.

Key Milestones and Timeline

Near Term

- Define district brand and identity informed by Providence's sectoral strengths.
- Broaden district geography to include surrounding DownCity and Jewelry District.
- Dedicate funds and additional staff to implement action plan.
- Support innovation programming for Cambridge Innovation Center operations in Providence.
- Develop partnership with Wexford and CV Partners to create its proposed initial phase, ensuring rapid development timeline.
- Pave the way for the Garrahy Parking Garage to be constructed immediately.

Medium Term

- Identify potential private and institutional anchor partners and implement a partnership to guide collaboration and secure financial commitments.
- Complete planning process in order to develop a comprehensive infrastructure, parks, and open space strategy to support the development of high quality urban amenities.
- Commit staff and budget to transform National Grid site to better connect the district to South Street Landing.
- Dedicate funding, equipment, and academic resources to the Product Prototyping and Evaluation Lab.

Long Term

- Begin construction on Wexford Phase I and Garrahy Parking Garage.
- Encourage the creation of 500 residential units.
- Commence implementation of urban realm strategy.
- Construct a signature park project.
- Develop a signature bridge.
- Provide public-sector funding to support workforce development initiatives in partnership with local academic institutions.
- Complete transformation of National Grid site.
- Involve all levels of government to contribute funding to infrastructure.
- Attract one to two leading corporations to establish research lab or center.

APPENDIX

Innovation District Case Studies

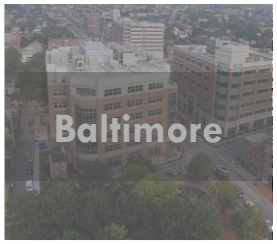
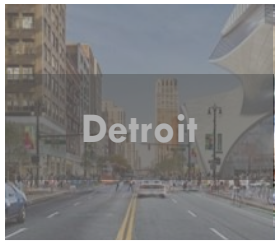
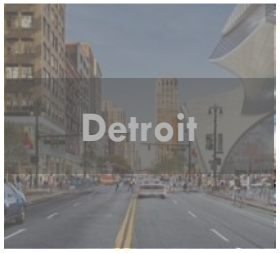
Lessons from similarly sized cities can provide guidance for Providence.

	Population	Jobs	Type	Start Year
St. Louis	320,000	220,000	Anchor Plus	2002
Detroit	710,000	230,000	Anchor Plus	2010
Winston-Salem	230,000	130,000	Re-imagined Urban Area	2002
Kitchener-Waterloo	480,000	280,000	Anchor Plus	1997
Baltimore	620,000	310,000	Anchor Plus	2003
Buffalo	260,000	130,000	Anchor Plus	2011
Providence	180,000	100,000	*TBD*	*TBD*

Strategies should be built on the successes from other innovation districts.

Partners	Ecosystem Collaboration	Urban Realm	Workforce Development	Financing	Brand
 St. Louis	 Kitchener-Waterloo	 St. Louis	 Baltimore	 Detroit	 St. Louis
 Detroit	 St. Louis	 Winston-Salem	 Kitchener-Waterloo	 Buffalo	 Winston-Salem

St. Louis' Cortex Innovation Community is a successful model of public and private sector collaboration supporting innovation district formation.

Partners	Ecosystem Collaboration	Urban Realm	Workforce Development	Financing	Brand
 St. Louis	 Kitchener-Waterloo	 St. Louis	 Baltimore	 Detroit	 St. Louis
 Detroit	 St. Louis	 Winston-Salem	 Kitchener-Waterloo	 Buffalo	 Winston-Salem

200 acres of mixed-use office, residential, hotel, and retail space is supported by 5 public, private, and institutional anchors.

CORTEX innovation community

OVERVIEW

200-acre mixed-use innovation hub for bioscience and technology R&D and commercialization founded in 2002.

CURRENT COMPONENTS

- **1 million** SF of new and rehab space
- **$350 million** in total investment
- **Over 1,000** residential units
- **200** companies
- **3,600** employees working in district

ANCHOR PARTNERS

- Washington University in St. Louis
- University of Missouri – St. Louis
- City of St. Louis & State of Missouri
- Wexford Science & Technology
- BJC Healthcare


West End Lofts residential development

@4240 office and lab space

200 acres of mixed-use office, residential, hotel, and retail space is supported by 5 public, private, and institutional anchors.

CORTEX innovation community

ECOSYSTEM COLLABORATION

- Cambridge Innovation Center
- TechShop
- BioGenerator
- Center for Emerging Technologies

BIO-AGRITECH BRAND

- LemnaTec (plant phenotyping)
- Kaiima (agricultural innovation)
- Solae (food sciences)

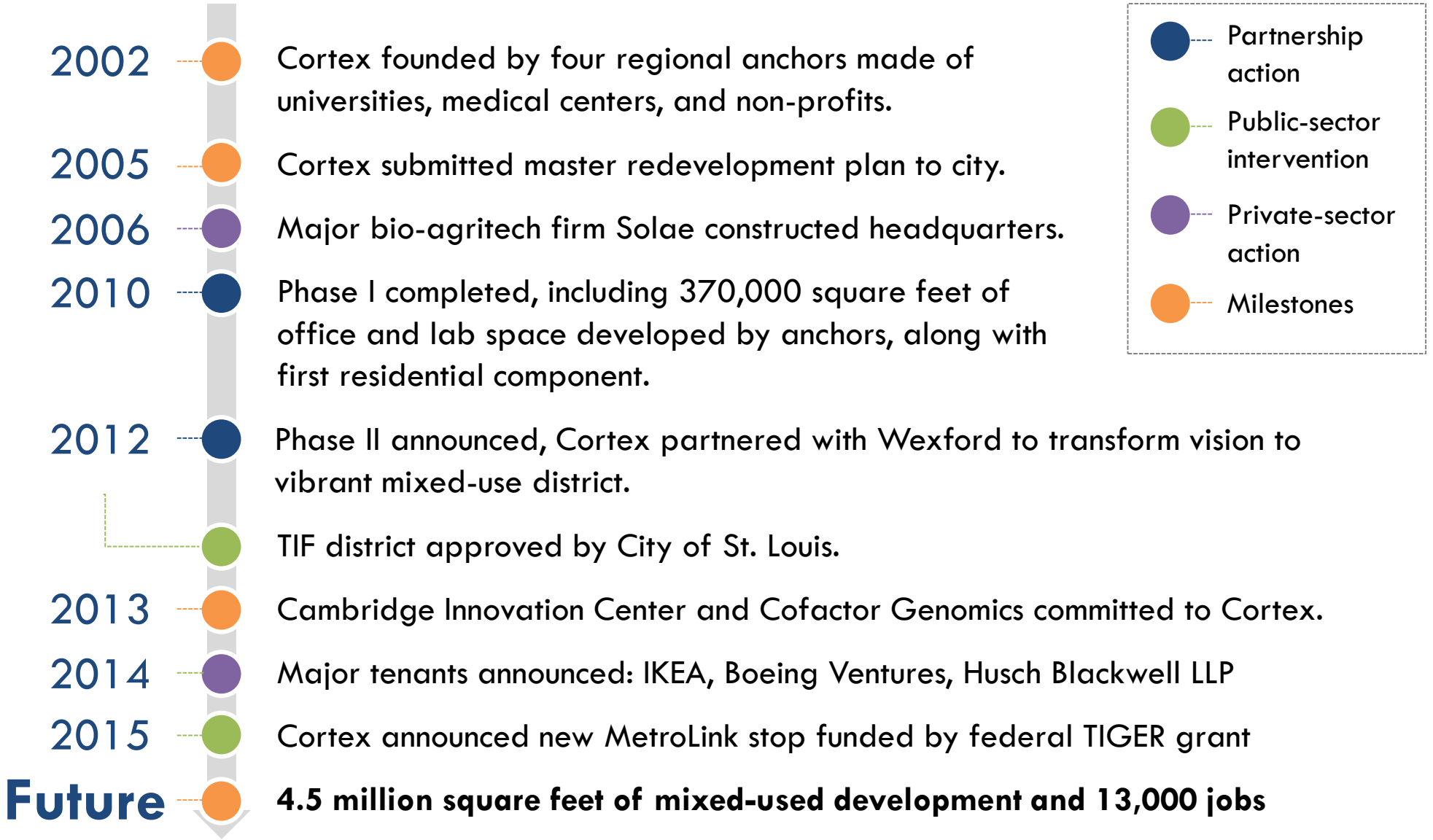
URBAN REALM

- New MetroLink station
- Enhanced retail
- Linear parks
- Improved streetscapes

Partners, anchors, and tenants


BioGenerator Labs

Cortex's recent focus on mixed-use development has attracted tenants.



The public-sector supported Cortex over the years through infrastructure subsidies, tax incentives, and urban realm investments.

Tax Credits (City, State)

2003: Missouri Development Finance Board approves $12 million in 2:1 tax credits designed to spur the construction of Cortex's first phase.

2008: City of St. Louis supported the development of Wexford's Center for Emerging Technologies with $8 million worth of historic preservation and brownfield remediation tax credits.

Tax Increment Financing District (City)

2012: St. Louis Increment Financing Commission granted Cortex $168 million in TIF financing, of which $32 million was granted to IKEA in **2014.**

Urban Realm Improvements (City)

2012: City of St. Louis contributed $15 million for new streetscapes and a linear public park in the Innovation Community, known as Cortex Commons.

Transportation Commitments (Federal, State)

2013: Missouri Department of Transportation contributed $16 million towards the new I-64 interchange leading into the Innovation Community.

2014: Federal Department of Transportation awarded St. Louis over $10 million for new MetroLink station construction in the Cortex Innovation Community.

St. Louis: Relevant lessons to address Partnership, Ecosystem Collaboration, Urban Realm, and Brand.

1. Cortex required an initial investment of **$29 million from committed anchor partners** to successfully launch and develop first phase of innovation district.

2. The City of St. Louis granted Cortex the power to leverage **tax-increment financing to raise over $150 million.**

3. Cortex developed a variety of diverse spaces to support **ecosystem collaboration** across sectors.

4. Innovation District grew in phase II due to Cortex's decision to **engage master developer Wexford with a focus on mixed-use communities.**

5. Cortex's tenant attraction strategy leveraged St. Louis' **underlying regional agri-tech brand and sectoral strengths.**

Midtown Detroit's coordinated anchor and financing strategy brought new residents, businesses, and development to a new neighborhood.

Partners	Ecosystem Collaboration	Urban Realm	Workforce Development	Financing	Brand
St. Louis	Kitchener-Waterloo	St. Louis	Baltimore	Detroit	St. Louis
Detroit	St. Louis	Winston-Salem	Kitchener-Waterloo	Buffalo	Winston-Salem

Place-based economic development in Midtown Detroit has been supported by coordinated initiatives between anchor institutions.

MIDTOWN DETROIT INC.

OVERVIEW

Revitalization strategy financed by the Kresge and Hudson-Webber Foundations to support tech-business formation and facilitate anchor collaboration between **Wayne State, Detroit Medical Center,** and **Henry Ford Health System.**

TechTown Innovation District

ANCHOR PARTNERS

- **Live Midtown:** Provides employees of three anchors with four different incentives to live and invest in Midtown homes.
- **Source Detroit:** Encourages three anchors to identify strategic areas for local procurement.
- **Hire Detroit:** Helps local residents access employment at three anchor institutions

INNOVATION DISTRICT FINANCING

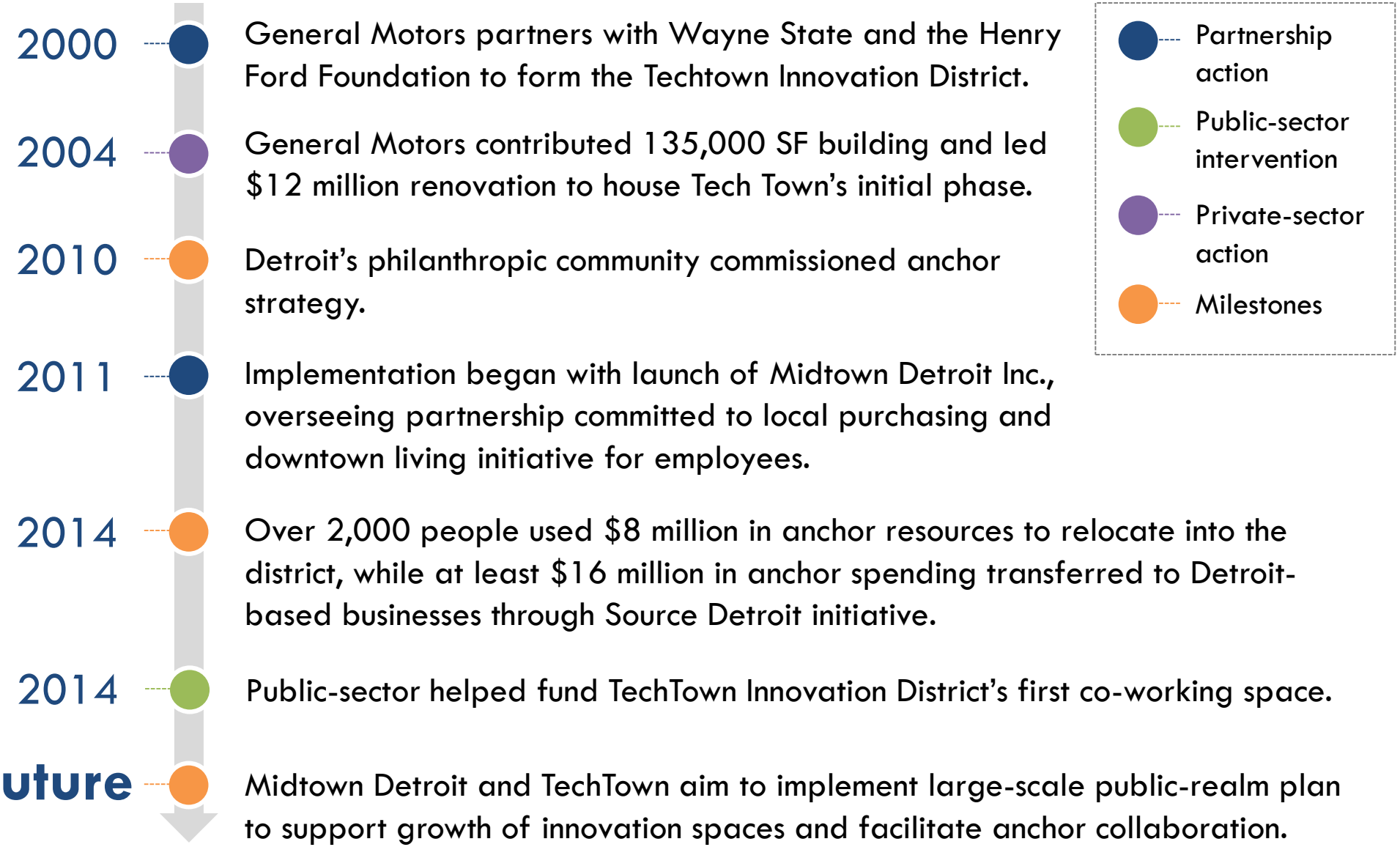
- Master plan and implementation of TechTown innovation district financed by public-sector.

HIREDETROIT!™

livemidtown

TECHTOWN DETROIT

As a first step, philanthropic leaders financed and commissioned an anchor institution strategy and master plan.



Midtown Detroit has benefitted from strong public sector and philanthropic support.

Philanthropic Community (Local)

2010: The Kresge Foundation, Knight Foundation, JPMorgan Chase Foundation, and Hudson-Webber Foundation initiated anchor strategy program and continue to work closely with resulting initiatives.

TechTown Innovation District Funding (Local, State, and Federal)

Ongoing: TechTown Innovation District is partially funded by the Michigan Economic Development Corporation, U.S. Department of Housing and Urban Development, and Michigan Small Business Development Center, along with major local foundations and universities.

Midtown Detroit Inc. (Local)

Ongoing: Over six public entities contribute over $1 million annually towards the community development organizations ongoing work to revitalize Midtown Detroit.

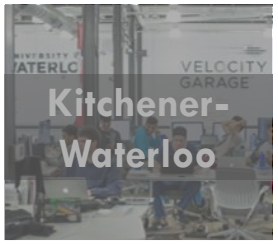
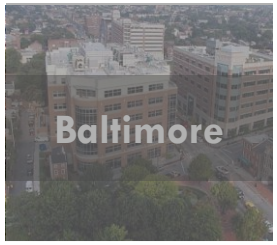
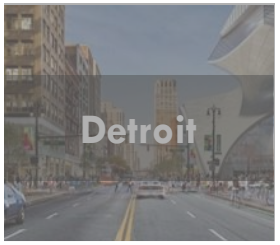
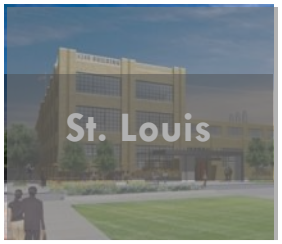
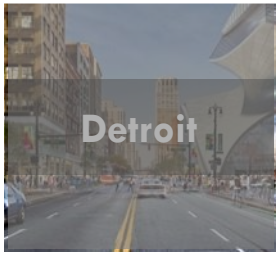
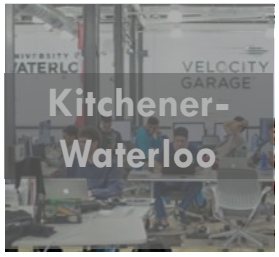
Detroit: Relevant lessons to address Partnership and Financing.

1. Midtown Detroit's strategic revitalization was **led and funded by a consortium of local foundations, which directly catalyzed major public-sector involvement** and contributions.

2. Three major anchor partners **built coordinated strategies** to help strengthen Midtown Detroit.

3. Public-sector largely funded **$1.5 million, 20,000 square foot renovation of co-working space**, and provided a $1 million grant to launch the **Detroit Technology Exchange Venture Accelerator**, supporting ecosystem collaboration.

Winston-Salem is concentrating development at the "Wake Forest Innovation Quarter" in former downtown tobacco factories.

Partners	Ecosystem Collaboration	Urban Realm	Workforce Development	Financing	Brand
 St. Louis	 Kitchener-Waterloo	 St. Louis	 Baltimore	 Detroit	 St. Louis
 Detroit	 St. Louis	 Winston-Salem	 Kitchener-Waterloo	 Buffalo	 Winston-Salem

Encompassing 145 acres and employing over 3,000 people, the Wake Forest Innovation Quarter is revitalizing downtown Winston-Salem.

Wake Forest™ innovation quarter

OVERVIEW

$500 million innovation district encompassing 2.5 million square feet of mixed-use space.

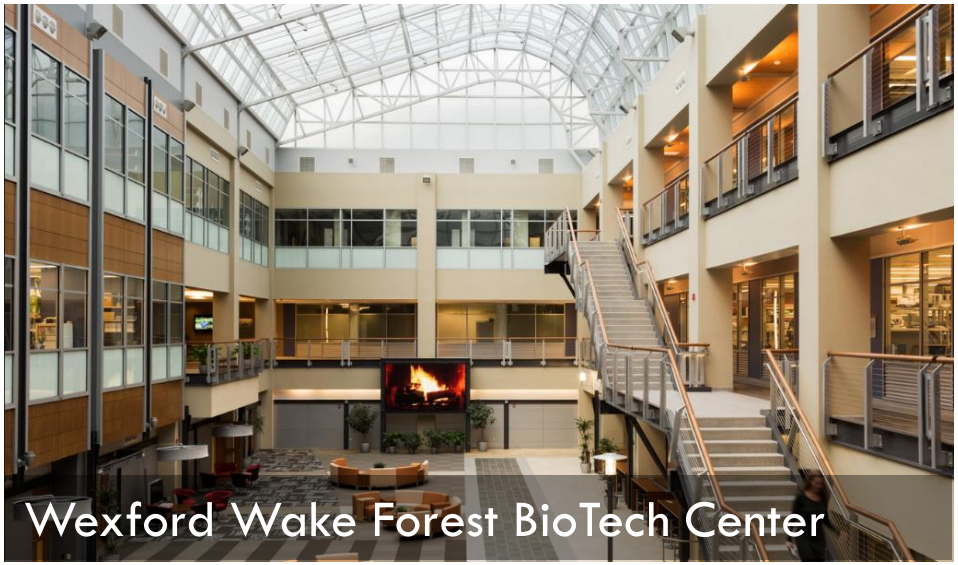
ANCHOR PARTNERS

- City of Winston-Salem & State of North Carolina
- Wake Forest Baptist Medical Center
- Wake Forest University
- Wexford Science and Technology

CURRENT COMPONENTS

- 16 buildings with office, academic, research, and wet-lab space.
- 180,000 square feet of Wet Lab LaunchPad collaborative accelerator space for start-ups.
- Conference center with 15 rooms, an auditorium, and a 7,500 square foot atrium


Wake Forest Innovation Quarter


Wexford Wake Forest BioTech Center

Encompassing 145 acres and employing over 3,000 people, the Wake Forest Innovation Quarter is revitalizing downtown Winston-Salem.

Wake Forest™ innovation quarter

BRANDING

- City officials intent on rebranding Winston-Salem into a hub for information management and pharmaceutical technology.
- Built two floors of wet laboratory space to support biotech research and testing.
- Nearly 1/3rd of Innovation Quarter employees work at Inmar Inc. – a leader in data analytics and solutions.

URBAN REALM

- Created destination programmed park in center of Innovation Quarter.
- Relocated three rail lines.
- Added street trees, improved sidewalks, widened streets, and buried power lines.
- Created stormwater retention pond.
- Building new roads to improve connectivity.

Streetscape Improvements

Bailey Park

The Wake Forest Innovation Quarter is halfway into a 25-year master planned build-out.

The Wake Forest Innovation Quarter benefitted from public investments that cleared the path for development.

Urban Realm Financing (State and Federal)

2008: State and federal funding financed the relocation of Norfolk Southern Railroad lines, burying Duke Energy transmission lines, and construction of a new rail bridge to ready the Innovation Quarter for development.

Tax Incentives (State)

2012 - present: North Carolina's tax credits program for historic building restoration provided over $140 million in investment capital for renovations in the Innovation Quarter, $34 million of which were used by Wexford to support BioTech Place redevelopment.

Direct Capital Funding (State)

2010: State of North Carolina contributed $10 million to purchase 4 acres of land for a new development to house the Center for Design Innovation's advanced technology research and education programs.

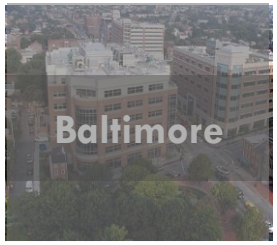
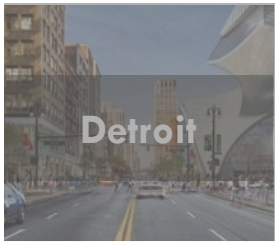
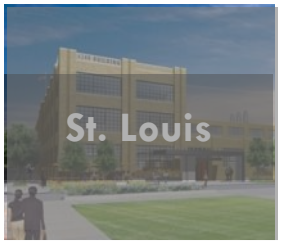
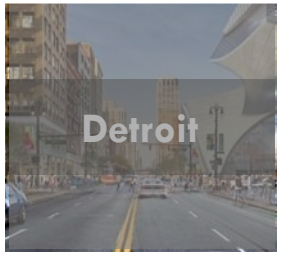
Winston-Salem: Relevant lessons to address Urban Realm and Brand.

1. Major private anchor institution leveraged a unique opportunity in Winston-Salem's downtown core to **repurpose vacant tobacco factories and warehouses, inspiring development of master plan for innovation district.**

2. Public-sector supported the **creation of infrastructure and removal of physical barriers** to prepare downtown land for redevelopment into innovation district.

3. Innovation district **developed distinct brand** in conjunction with **attracting prominent local and regional tenants** to innovation district.

The Kitchener-Waterloo Innovation District is a model for collaboration between universities, private companies, and innovation centers.

Partners	Ecosystem Collaboration	Urban Realm	Workforce Development	Financing	Brand
 St. Louis	 Kitchener-Waterloo	 St. Louis	 Baltimore	 Detroit	 St. Louis
 Detroit	 St. Louis	 Winston-Salem	 Kitchener-Waterloo	 Buffalo	 Winston-Salem

The Kitchener-Waterloo region has seen nearly 2,000 new tech startups form since 2010, raising more than C$650 million of investment.

Canada's Technology Triangle | Waterloo Region: Cambridge, Kitchener, Waterloo

OVERVIEW

Mid-sized city situated between Toronto and Detroit with nearly 500,000 people known for thriving technology and venture capital sector.

ANCHOR PARTNERS

- **Communitech:** 50,000 square foot innovation center offering comprehensive range of services to entrepreneurs
- **Large tech firms:** Google, Intel, Electronic Arts, SAP
- **University of Waterloo:** Offers Velocity incubation program with Communitech and co-op placements in local tech firms.

University of Waterloo Velocity Garage

Communitech and Google Offices

The Kitchener-Waterloo region has seen nearly 2,000 new tech startups form since 2010, raising more than C$650 million of investment.

CANADA'S TECHNOLOGY TRIANGLE | Waterloo Region: Cambridge, Kitchener, Waterloo

ECOSYSTEM COLLABORATION

- Communitech, Google, and University of Waterloo share new City-redeveloped innovation space in downtown. Serves as hub of city's entrepreneurial activity, with collaborative spaces for tenants to share ideas.

WORKFORCE DEVELOPMENT

- University of Waterloo offers Velocity program – a non-academic incubator and dormitory for its most entrepreneurial students. More than 100 companies launched from Velocity into the Kitchener-Waterloo region.
- University of Waterloo students also complete nearly 20,000 co-op placements per year, many in Kitchener-Waterloo's tech ecosystem.

University of Waterloo Velocity Garage

Communitech and Google Offices

Kitchener-Waterloo's success as a leading tech-innovation hub is attributed to its strong entrepreneurial climate built over the years.

Public-sector investments and programs have supported nearly all tech-related initiatives in Kitchener-Waterloo.

Public Infrastructure (City)

2004: City set up C$110 million fund for an economic development program financed through a 1.2% property tax increase over 10 years. This fund subsidized new development and retrofitting in downtown Kitchener-Waterloo to support the downtown's revitalization and attract new firms.

Ongoing Provincial and Federal Funding (Province and Federal)

Ongoing: Special allocations from the provincial government are funding the University of Waterloo's Velocity incubator program, while all three levels of government provide Communitech with C$15 million per year to support programming and workshops.

Transportation Investments (Local, State, and Federal)

2015: C$800 million light-rail transit line is being built between downtown Kitchener-Waterloo and the University of Waterloo, funded by all three levels of government.

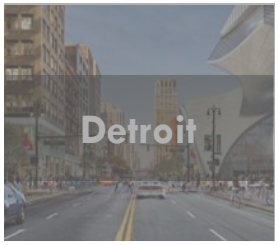
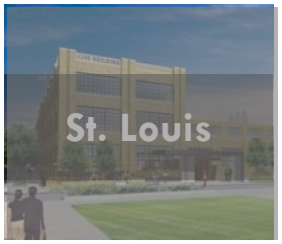
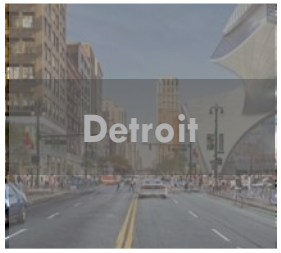
Kitchener-Waterloo: Relevant lessons to address Ecosystem Collaboration and Workforce Development.

1. Local academic institution provides robust **training, incubation, and internship programs in collaboration with local tech firms** to strengthen talent pipeline.

2. Public-support enabled local university, innovation hub, and major tech firms **to co-locate in 340,000 square-foot adaptive reuse facility with an emphasis on shared space.**

3. Local tech leaders committed to creating innovation hub, raising C$5 million from the provincial government, funding programming, and **raising the brand of regional tech ecosystem.**

Baltimore's University of Maryland BioPark integrates workforce development efforts into its state-of-the-art space program.

Partners	Ecosystem Collaboration	Urban Realm	Workforce Development	Financing	Brand
 St. Louis	 Kitchener-Waterloo	 St. Louis	 Baltimore	 Detroit	 St. Louis
 Detroit	 St. Louis	 Winston-Salem	 Kitchener-Waterloo	 Buffalo	 Winston-Salem

The 12-acre BioPark will include 1.8 million square feet of lab and office space in 12 buildings at final build-out in low-income West Baltimore.

UNIVERSITY of MARYLAND BioPark

OVERVIEW

University-associated research park that aims to accelerate biotechnology commercialization while supporting Baltimore's broader economic development goals through innovative programming.

ANCHOR PARTNERS

- The University of Maryland Baltimore
- The University of Maryland Medical System
- Wexford Science and Technology
- Advanced Particle Therapy (APT)

CURRENT COMPONENTS

- **470,000 SF** of new space
- **$340 million** in capital investment
- **34** companies
- **700** employees


University of Maryland BioPark

Six BioPark Facilities in West Baltimore

The 12-acre BioPark will include 1.8 million square feet of lab and office space in 12 buildings at final build-out in low-income West Baltimore.

UNIVERSITY of MARYLAND BioPark

WORKFORCE DEVELOPMENT

The BioPark is located in Poppleton, one of Baltimore's inner-city neighborhoods with an annual per capita income of $16,000 and high crime rate.

The BioPark has undertaken the following initiatives:

- Partnered with the **Baltimore City Community College** to offer a two-year associates degree program at BioPark facilities for local high school graduates.
- Created a dedicated fund from tenant rent payments to provide **tech-literacy grants for nearby high schools.**
- Improved connectivity and greened streets in Baltimore's Poppleton neighborhood, **improving services and increasing security.**
- Invested **$1M in community and workforce development programs** through RFP process.

New streetscapes and parks

JMEMS

JAMES MCHENRY ELEMENTARY / MIDDLE SCHOOL

VTMAA

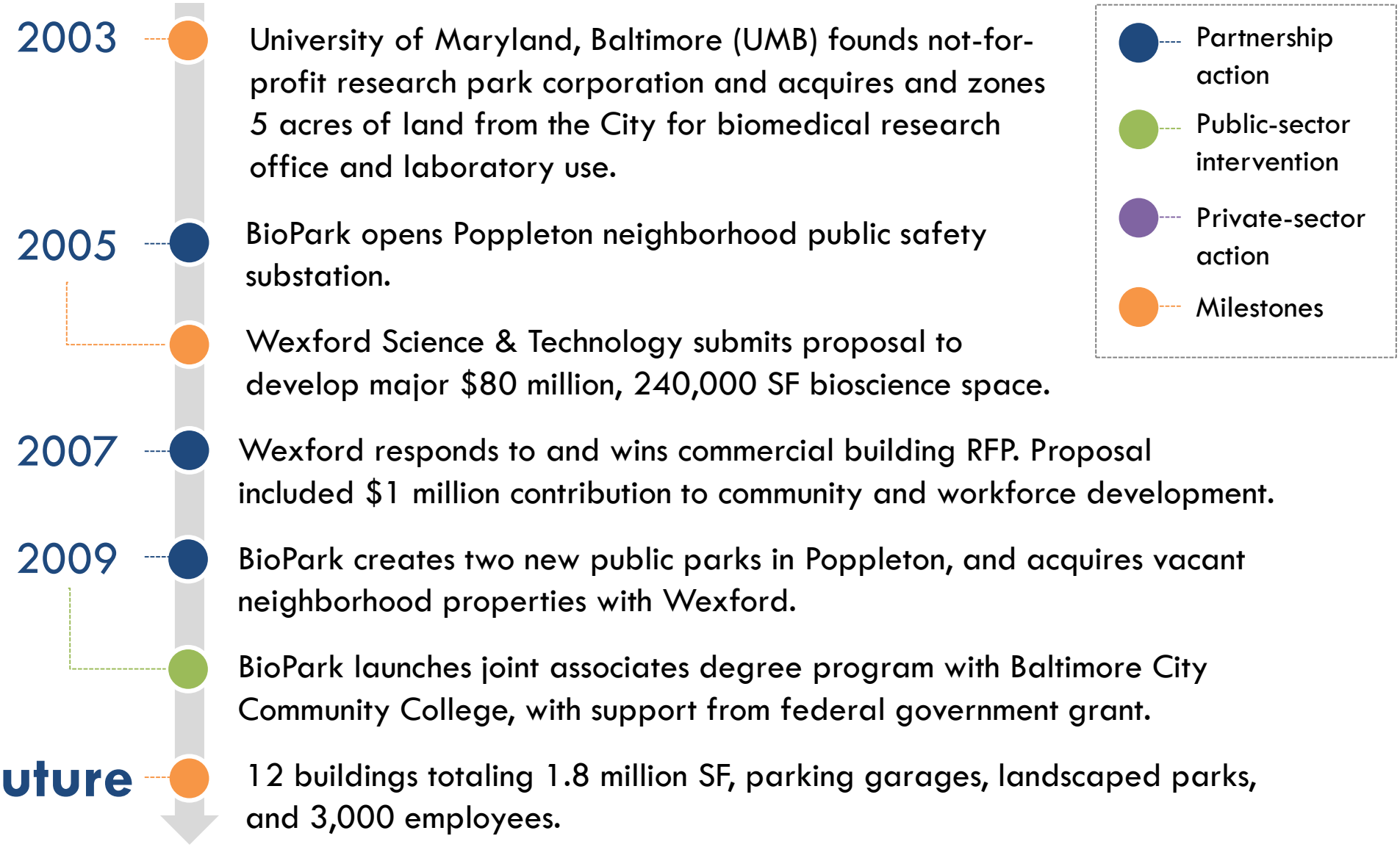
VIVIEN T. THOMAS MEDICAL ARTS ACADEMY

"Healing Ourselves, Our Community, and Our World"

BALTIMORE CITY COMMUNITY COLLEGE

CHANGING LIVES...BUILDING COMMUNITIES

The BioPark has built linkages with its surrounding neighborhood through a wide range of innovative programs.



Large grants from the public-sector have supported the BioPark's community and workforce development efforts.

Neighborhood Infrastructure Improvements (State)

2008: UMB received approximately $2 million from the Maryland Department of Transportation for traffic improvements along key thoroughfares in Poppleton.

Workforce Development Program Funds (Federal)

2008: UMB granted $600,000 and Baltimore City Community College granted $1.4 million to develop Life Sciences Initiative inside BioPark.

Federal and Local Development Funds (Local & Federal)

2005-2007: Wexford Science & Technology received $15 million in federal new market tax credits to support development efforts on 10 acres of unused land donated by the City.

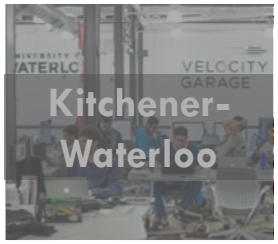
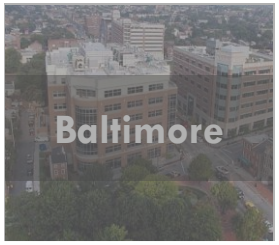
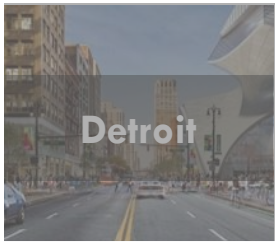
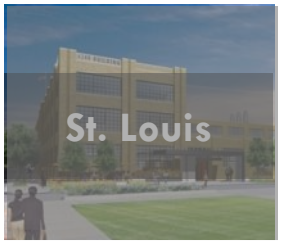
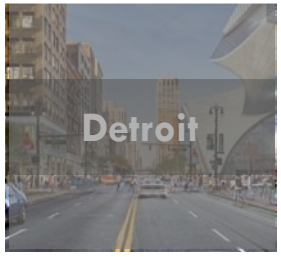
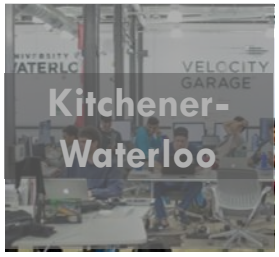
Baltimore: Relevant lessons to address Workforce Development.

1. The University of Maryland proposed to develop the BioPark in an unlikely low-income and troubled neighborhood, catalyzing **new real estate development, green spaces, safety initiatives, and workforce programs.**

2. Public-sector largely funded **$2 million life-sciences workforce development and educational program** in an innovative co-applicant grant awarded to the Baltimore City Community College and BioPark.

3. BioPark leveraged **development RFP's to ensure significant contributions to workforce development initiatives** from master developer Wexford.

Governor Cuomo's Buffalo Billion Investment Development Plan is an unprecedented catalyst for entrepreneurship, innovation, and growth.

Partners	Ecosystem Collaboration	Urban Realm	Workforce Development	Financing	Brand
 St. Louis	 Kitchener-Waterloo	 St. Louis	 Baltimore	 Detroit	 St. Louis
 Detroit	 St. Louis	 Winston-Salem	 Kitchener-Waterloo	 Buffalo	 Winston-Salem

The $1 billion investment in the Buffalo area economy funds over 15 projects that create thousands of jobs and spur new economic activity.

BUFFALO BILLION

OVERVIEW

- Developed at the request of Gov. Cuomo by the Western New York Regional Economic Development Council in 2013.
- $1 billion investment plan directs funding towards key enablers and high potential sectors, some of which include:

ADVANCED MANUFACTURING

- $225 million for Buffalo High-Tech Manufacturing Innovation Hub for clean energy businesses on former brownfield steel production site.

HEALTH & LIFE SCIENCES

- $50 million for Buffalo Medical Innovation and Commercialization Hub for biomedical research equipment and facilities designed to attract private firms.


Buffalo Niagara Medical Campus


High-Tech Manufacturing Innovation Hub

The $1 billion investment in the Buffalo area economy funds over 15 projects that create thousands of jobs and spur new economic activity.

BUFFALO BILLION

ENTREPRENEURSHIP

- Over $5 million for the 43North business idea competition to promote entrepreneurialism and start-up formation in Buffalo

TOURISM

- $20 million for Downtown Niagara Falls development challenge RFP to attract major investments from private sources to help revitalize tourism.

WORKFORCE DEVELOPMENT

- $10 million for Advance Buffalo development and training programs to develop talent to fill nearly 20,000 manufacturing jobs opening up by 2020.


Proposed private development in Niagara Falls

43North

Buffalo: Relevant lessons to address Financing.

1. Governor-led commitment to revitalize economically depressed city through **$1 billion of multi-faceted and targeted capital investment**.

2. Identified both **capital and program support needs**, ensuring adequate focus on innovation sector enablers such as **entrepreneurship, workforce development, and smart growth**.

3. Released **RFP's for redevelopment** to leverage private-sector input in long-term revitalization process.

Strategies should be built on the successes from other innovation districts.

Partners	Ecosystem Collaboration	Urban Realm	Workforce Development	Financing	Brand
 St. Louis	 Kitchener-Waterloo	 St. Louis	 Baltimore	 Detroit	 St. Louis
 Detroit	 St. Louis	 Winston-Salem	 Kitchener-Waterloo	 Buffalo	 Winston-Salem

Case Studies: Program

	St. Louis	Detroit	Winston-Salem	Baltimore	Kitchener-Waterloo
Phase I Completion	8 years	4 years	10 years	5 years	10 years
# of Partners	5	3	5	3	3
Innovation Hub	32,000 SF	20,000 SF	180,000 SF	18,000 SF	44,000 SF
Phase 1	370,000 SF	135,000 SF	1.24M SF	470,000 SF	380,000 SF
Full Program	4.5M SF	TBD	6M SF	1.8M SF	380,000 SF
District Size (Acres)	200	149	145	12	5
Employment (jobs)	3,600	1,190	20,000	700	1,500
Tenants	200	43	47	34	9

Case Studies: Funding

	St. Louis	Detroit	Winston-Salem	Baltimore	Kitchener-Waterloo
City	$191M	$6M	$50M	10 Acres	C$1.5M
State	$28M	$3M	$150M	$7M	C$31.5M
Federal	$10M	$2M	$59M	$17M	C$16M
Total Public Sector	$229M	$11M	$259M	$24M	C$49M
Initial Partner Funding	$29M	$2M	$2M	$5M	C$5M
Total Anchor/ Partner	$90M	$38M	$33M	$5M	C$30M

Case Studies: Key Lessons

Partners	Establish private and institutional commitments to vision and financial participation for development and implementation.
Ecosystem Collaboration	Create a hub for innovation activity, with shared offices and collaborative programing.
Urban Realm	Engage a master developer who is committed to mixed-use development.
Workforce Development	Encourage academic institutions to strengthen the talent pipeline.
Financing	Provide significant public financing to support capital and programing activities.
Brand	Incorporate regional sectoral strengths into the tenant attraction and marketing.

Providence Innovation and Design District

DRAFT – FOR DISCUSSION & CONSIDERATION

HR&A Analyze. Advise. Act.

January 2016