

ABSTRACT

Title of Thesis: [CREATIVES] Housing

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Globally, the technology revolution is still expanding, coupled by a rise in entrepreneurship in many parts of the world. With the growing interest in technology, innovation, and entrepreneurship, housing must advance to meet the demands of these creative individuals and families in order to enable them to succeed in their professional endeavours as well as support their future families at the same time.

Maximizing one's time requires housing that enables living and working in close proximity. There are opportunities to create diverse, mixed-use communities for both living and working in derelict or abandoned areas of cities. Cities, such as Baltimore, historically enabled people to live in close proximity to work, but due to zoning laws and flight to the suburbs, many workers spend too much time commuting and away from their families.

This thesis will explore master planning, creating a place and housing types that allow for innovation and entrepreneurship within a city. By re-creating the work-life balance historically present in cities, derelict areas can have a chance at a second life. The emergence of innovation districts in many parts of the country is a precedent that shows how compact areas with various amenities and services can be established to benefit start-ups, entrepreneurs, and the whole community. Thus, mimicking cities of old.

[CREATIVES] Housing
Design for Innovation and Entrepreneurship

By

Nicole Akpedeye

Thesis submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
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Dedication

This is dedicated to my late mom, your unique gentle character and compassion for people inspires me to always seek to do good in this world. And to my dad, family and friends, for believing in me and encouraging me to never give up.
To all my loved ones. Thank you for everything.

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Chapter 1: Culture of Living and Working

Isolated Company Silos

Cities existed for the exchange of ideas and chance encounters. Knowledge-spillover was very common due to the fact that businesses in various industries located themselves in close proximity to one another. These enabled workers in these businesses to have unplanned encounters with other workers from competing businesses. As such, ideas were exchanged whether to the benefit of one business or the detriment of the other, but mostly for the benefit of business. Competition can inspire companies to improve and create better products for customers. With the growth of information technology and other technology companies, the school of thought emerged that ideas must be protected and kept secret. This led to some of these companies moving to suburban sectors to protect their ideas and innovative technology. The lower cost of land in these suburban areas created the opportunity to expand as the business deemed fit. This expansion usually took place horizontally rather than vertically.

Amongst other catalysts that existed for departure from the city was the idea that innovation occurs in isolation of the city. For one to be creative or invent something creative they must be working in a lab, whether a science lab or an IT lab. Familiarity with the cartoon depiction of a 'mad scientist' that works alone in his lab to create something that would change the world, it is no surprise that many technology companies found the need to settle in a suburban sector such as Silicon Valley in California.

Recently, many companies have been moving back to cities. The benefits cities of old had to offer is starting to be embraced once again. Different districts are emerging to

take advantage of being in compact geographical areas with all the amenities that are offered from being in close proximity to other businesses. These districts are called Innovation Districts. The districts are identified as being different than the likes of Silicon Valley. Silicon Valley which is in a suburban sector is somewhat isolated and without the benefits a city provides such as greater access to mixed-use housing, diverse retail, and other work environs.¹ Most research silos tend to have numerous amenities or services that benefit the employees in the area, but usually lack housing within the boundaries of the silo to accommodate these employees (Figure1).

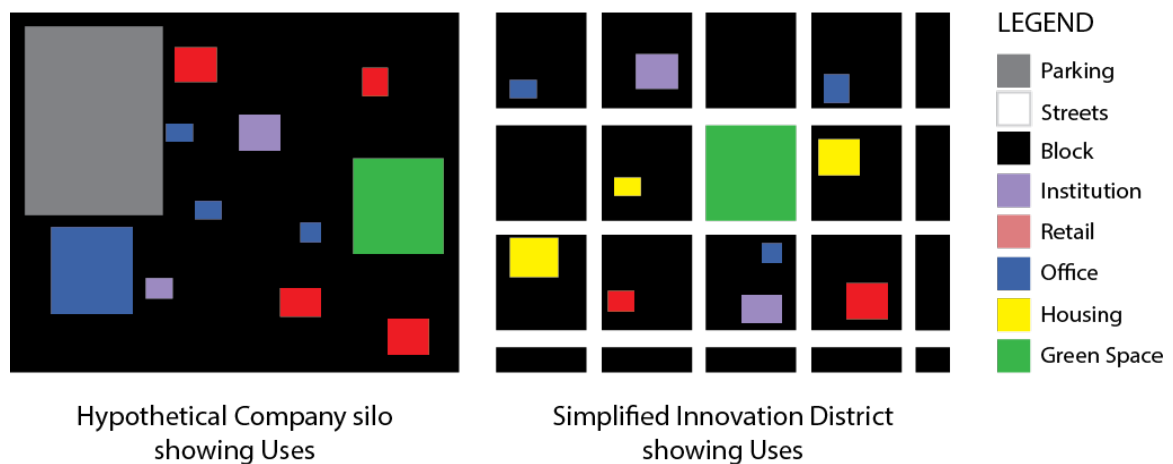


Figure 1, Diagram comparing Hypothetical Company Silo and a Simplified Innovation District (Source: Author)

One of such research silos would be Google's Headquarters in Mountain View, California (Figure 2). By analyzing the campus, some interesting insights in the working life of employees was revealed. Google has provided its employees with numerous amenities which keeps them at the headquarters for long hours. They created many social

¹ Rawlings-Blake, Stephanie. "Innovation Districts." Web log post. City of Baltimore. N.p., 10 Feb. 2016. Accessed. 23 Oct. 2016. <http://mayor.baltimorecity.gov/news/blog/2016-02-10-innovation-districts>

spaces within the building that gives an illusion of not being at work. Some of the services and amenities that Google provides to its employees include:

1. Free food with numerous varieties mostly locally grown
2. Access to gym equipment within the building
3. Sleeping pods
4. Free medical services at a doctor's office on site
5. Free laundry service at laundromats on site
6. Free cars mostly electric cars



Figure 2, Diagram showing Googleplex in Mountain View, California
(Image Source: Google Earth, Aerial View, diagram by author)

Google understands that monotony can create boredom so they hired a psychologist who discovered that creating a change of scenery in the working environment could help in keeping the minds of 'googlers' focused. They created a lounge that houses aquarium fish, a Victorian lounge, fire poles for easy access to the

floor below, and igloo pods for more relaxation.² Facebook, although a younger company, has very similar perks for its employees as well (Figure 3).



Figure 3, Diagram showing Facebook Headquarters in Menlo Park, California (Image Source: Google Earth, Aerial View, diagram by author)

These companies have discovered that by providing daily amenities and services for free, employees are able to keep their minds focused on getting work done. “Fun” and “cool” have been words used by employees to describe their time at these firms.

Although all these perks and amenities are provided, employees have to go home at the end of the day. Once they are no longer working at these firms, they no longer have access to these amenities. These working environments are starkly different from other firms which are void of the amenities that companies like Google and Facebook provides.

To give cities a second life and to ensure that the live-work companies function, it is important that basic amenities and services are provided within walkable distances so individuals and startups can focus on working (Table 1).

² Working at Google (Tour of Google). Dir. CG Ramp. YouTube. YouTube, 06 July 2012. Accessed 26 Oct. 2016. https://www.youtube.com/watch?v=dQO3xK9g_CE

	City	Research Silo	Innovation districts
Context	Urban	Suburban	Urban
Public Amenities	Accessible by all	Accessible only by workers	Accessible by all
Housing	Within City	Outside of District	Within District
Services	Individual Payment	Free	Individual Payment
Car-dependent	No	Yes	No
Walkable	Yes	No	Yes
Access to Public Space	Yes	No	Yes
Chance Encounters	Expected	Unusual	Expected
Knowledge Spillover	Usual Occurrence	Rarely	Usual Occurrence

Table 1: Compares characteristics of a City, Research Silo and Innovation District
(Source: Author)

History of Living and Working

Before WWI, many people lived in cities. The urban context provided people with the ability to work in close proximity to their homes. With the advancement in technology, people were able to move from one place to another much faster. Once the car was invented and Euclidean zoning took the limelight, many people moved out of cities to suburban communities. Cities still provided jobs, good accessibility and numerous amenities, people would drive to work in the city and come back home to their suburban life. Why do we leave our houses empty all day and our offices empty all night?³ (Figure 4 and 5)

³ Dolan, Thomas. *Live-work Planning and Design: Zero-commute Housing*. Hoboken, NJ: John Wiley & Sons, 2012. Print, xi.

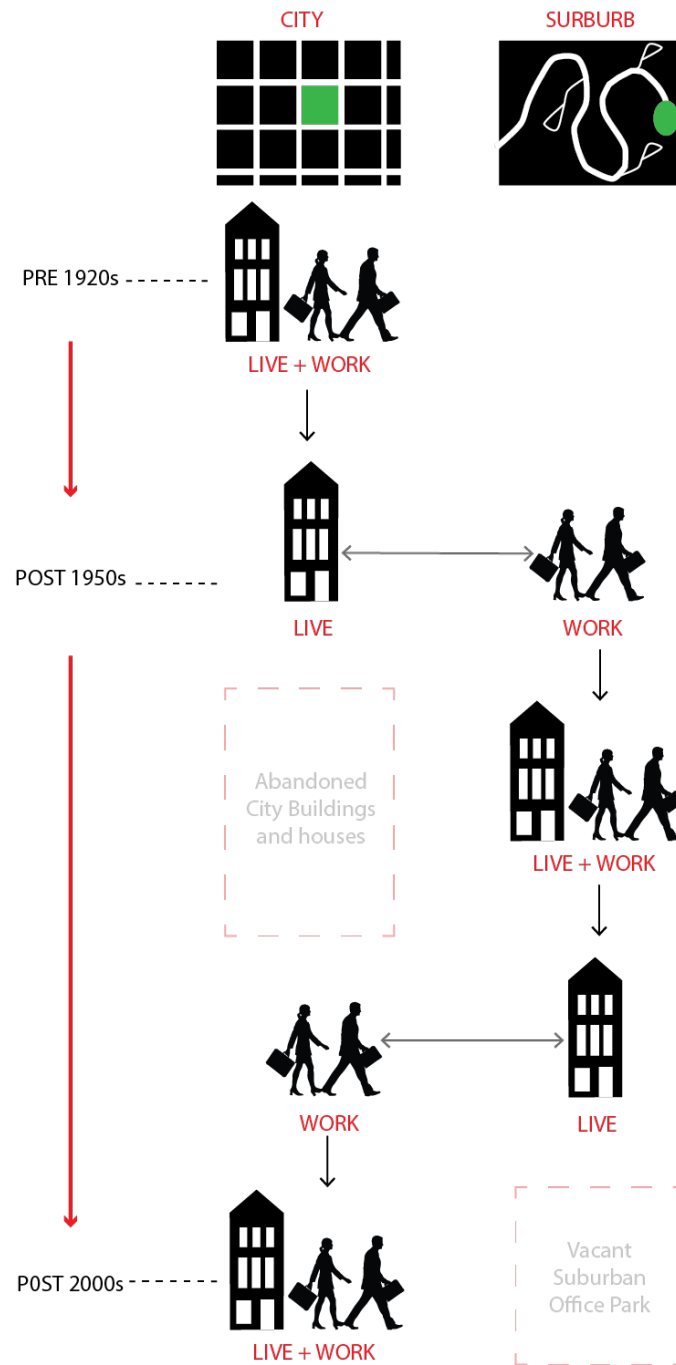


Figure 4: Diagram summarizing the trends of workplaces and houses over time (Source: Author)⁴

⁴ Inspired by Figure 2-6 in Kim, Minjee, "SPATIAL QUALITIES OF INNOVATION DISTRICTS: How Third Places are Changing the Innovation Ecosystem of Kendall Square" Master in City Planning thesis, Massachusetts Institute of Technology, 2013.

Can we afford this kind of duplicative waste?⁵ The most economical thing to do is to work and live in the same place. At the onset of this car phenomenon, it was heralded as the next leap in technological advancement. Today, many people are frustrated by long commutes to work and the time as well as the money wasted driving. One's time and money could be better spent on more productive ventures. Many of these buildings became dilapidated due to lack of maintenance and abandonment after the flight from cities (Figure 2 and Figure 3). The forms of some of these old buildings still exist, but they are in unlivable states.

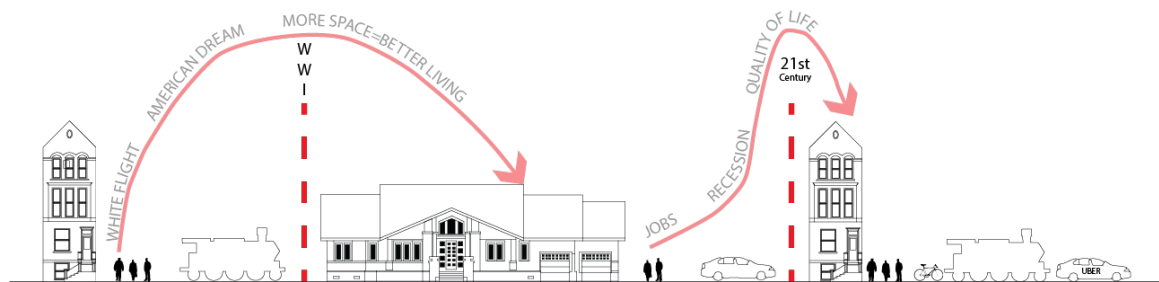


Figure 5, Diagram summarizing History of Travel to work in the United States (Source: Author)

Current Trend favors Cities and Urban areas

Many companies and businesses are moving back to cities. The trend is to return to these downtown areas or abandoned neighborhoods to revitalize them. The cheaper housing stock in these derelict areas makes them a viable choice for Millennials, low-income and middle-income families. They are more financially accessible to the public than suburban areas with research silos and big businesses in suburban office parks (Figure 6).

⁵ Dolan, Thomas. Live-work Planning and Design: Zero-commute Housing. Hoboken, NJ: John Wiley & Sons, 2012. Print, xi.

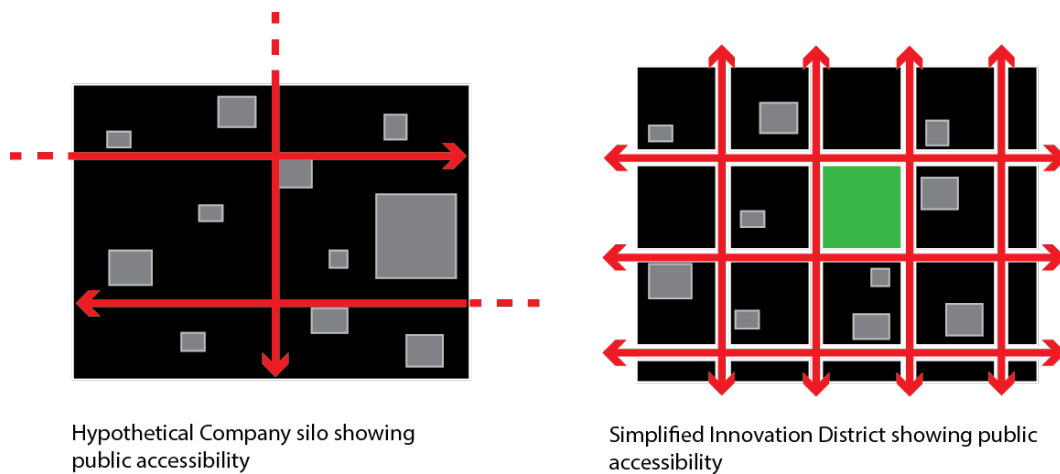


Figure 6, Public accessibility to Company Silo and Innovation Districts (Source: Author)

Millennials have seen the invention of numerous computer web applications and mobile phone applications that provide many opportunities for individuals. One good example is UBER, this is a company that allows you to schedule for a ride to your destination right from your phone and the best part is that you pay in advance so once you arrive at your destination you are free to just leave the car. This allows young people in this generation to not worry about owning a car, but it also ensures that you have a car available once you need one. Another mode of transportation that also thrives in these rejuvenated areas is bicycles. Cyclists who live within a reasonable destination from their workplace can take their bikes to work. With this understanding, many firms provide showers for their employees so that they can freshen up before they start the work day. 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, bikeable and connected by transit and technology.⁶

With companies like UBER, the growth of cycling, and the existing transit systems within cities, people have more options of getting to work than they did in the past. In addition, living in the city makes walking to the various resources that the city has to offer a viable option. Researchers have found that the emergence of innovation districts in cities is not just a trend in the United States. Globally, there is a rise in the number of startups and firms that are situating themselves within the urban context of cities and most of them are choosing Innovation districts.

What are Innovation Districts?

In many parts of the world, the term is becoming used in different ways.

Generally, it refers to an urban neighborhood that could be defined as a district with some consistent attire with high concentration of high-tech firms and entrepreneurial activities. Innovation Districts are geographic areas where leading-edge anchor institutions and companies clusters connect with start-ups, business incubators and accelerators.⁷ These districts are emerging all over the world.

They are composed of a close clustering of anchor institutions, companies and startups. With the close connection that these organizations have with one another, the common phenomenon of knowledge-spillover that existed in cities in the past starts to

⁶ Katz, Bruce, and Wagner, Julie. *The Rise of Innovation Districts: A New Geography of Innovation in America*. May 2014. Accessed September 22, 2016.
<https://www.brookings.edu/essay/rise-of-innovation-districts/>

⁷ Bruce and Julie, *The Rise of Innovation Districts*

occur in these districts. Instead of the isolated nature of the research silos that hordes it's resources and amenities from the community (Figure 6), innovation districts allow for the free flow of ideas from one organization to another. They promote open innovation, innovation that is formed as a result of collaboration rather than isolation.

Although innovation districts (Figure 7) show promise for reclaiming deteriorated urban areas in cities, creating advanced housing should be amongst its most prominent priority. Housing the individuals that would continue to create innovative solutions to the world's problems would create less worry about this basic human right and allow these creative individuals to focus on solving problems and developing new ideas/objects.

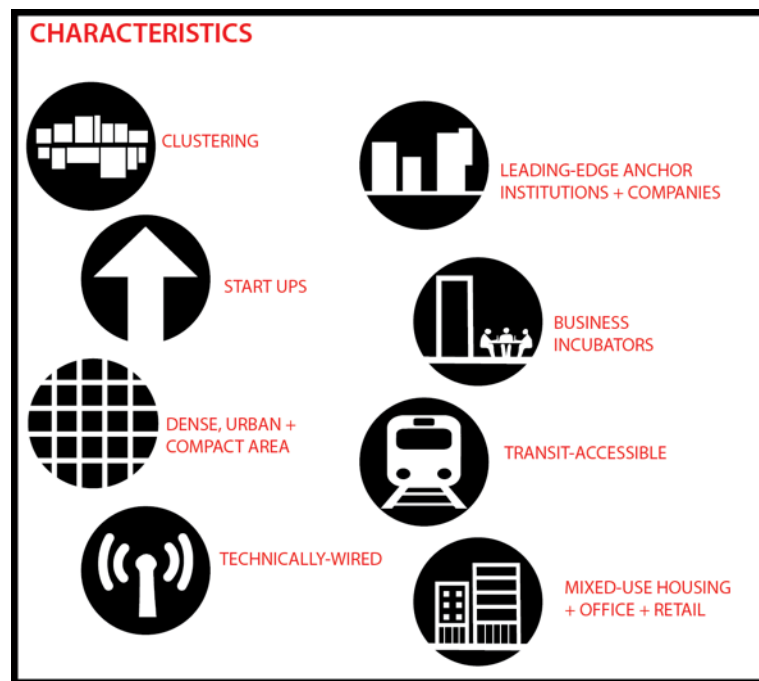


Figure 7, Diagram illustrates summarized characteristics of Innovation Districts (Source: Author)⁸

Globally, Barcelona, Berlin, London, Medellin, Montreal, Seoul, Stockholm and Toronto contain examples of evolving districts. In

⁸Inspired by Definition of Innovation District in Bruce and Julie, *The Rise of Innovation Districts*

the United States, districts are emerging near anchor institutions in the downtowns 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.⁹

Some specific examples of Innovation districts are 22@Barcelona, South Lake Union, Seaport Boston's Innovation District, and Syracuse's Connective Corridor. In all of these innovation districts, there is a desire to provide quality public spaces, mix of production spaces, housing, schools, community centers and advanced infrastructure. Housing is an essential component of these districts. For example, in 22@Barcelona, 1,800 subsidized housing units have been completed to date.



Figure 8, @22Barcelona Innovation District showing housing (Source: Bing Maps)

⁹Bruce and Julie, *The Rise of Innovation Districts*

Chapter 2: Precedent Analysis

Analysis of Innovation Districts

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.¹⁰ This is leading to the growing interests in urban areas with rich amenities. Instead of inventing on their own in real or metaphorical garages, an array of entrepreneurs are starting their companies in collaborative spaces (Figure 9), where they can mingle with other entrepreneurs and have efficient access to everything from legal advice to sophisticated lab equipment.¹¹

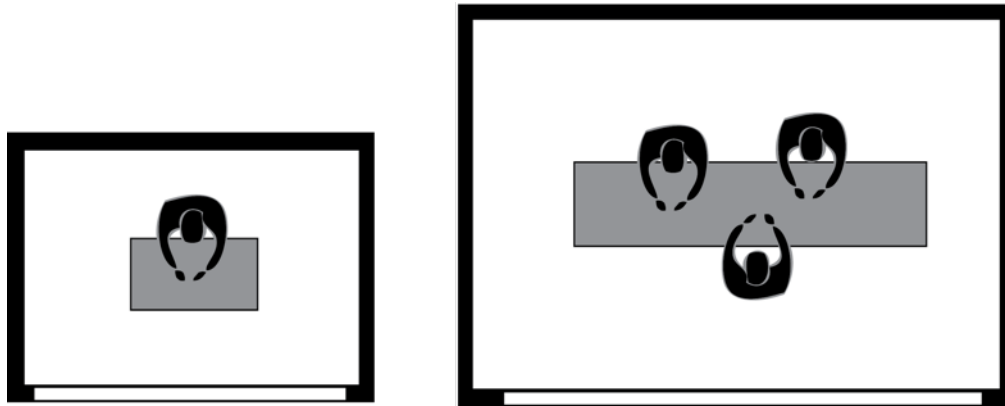


Figure 9, Diagram illustrating 'Garage Startup' vs. 'Collaborative startup'
(Source: Author)

By working in collaborative environments, these companies have access to other minds that aids in sharpening ideas and ultimately the creation of products.

¹⁰ The Metropolitan Revolution: How Cities and Metros are Fixing our Broken Politics and Economy, Innovation Districts Chapter, co-authored by Bruce Katz and Jennifer Bradley (as cited in Bruce and Julie, *The Rise of Innovation Districts*)

¹¹ Bruce and Julie, *The Rise of Innovation Districts*

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. Innovation districts achieve this 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.¹²

This strategy is especially beneficial to low-income, disadvantaged and uneducated populations in cities where there are so many abandoned buildings and houses. Provided measures are taken to prevent displacement of these low-income residents, the advantages of better education and services can be experienced in these areas with the establishment of innovation districts.

Types of Innovation District

Most innovation districts adhere to one of the three models¹³:

1. Anchor Plus
2. Re-imagined urban areas
3. Urbanized Science Park

¹² Bruce and Julie, *The Rise of Innovation Districts*

¹³ Bruce and Julie, *The Rise of Innovation Districts*

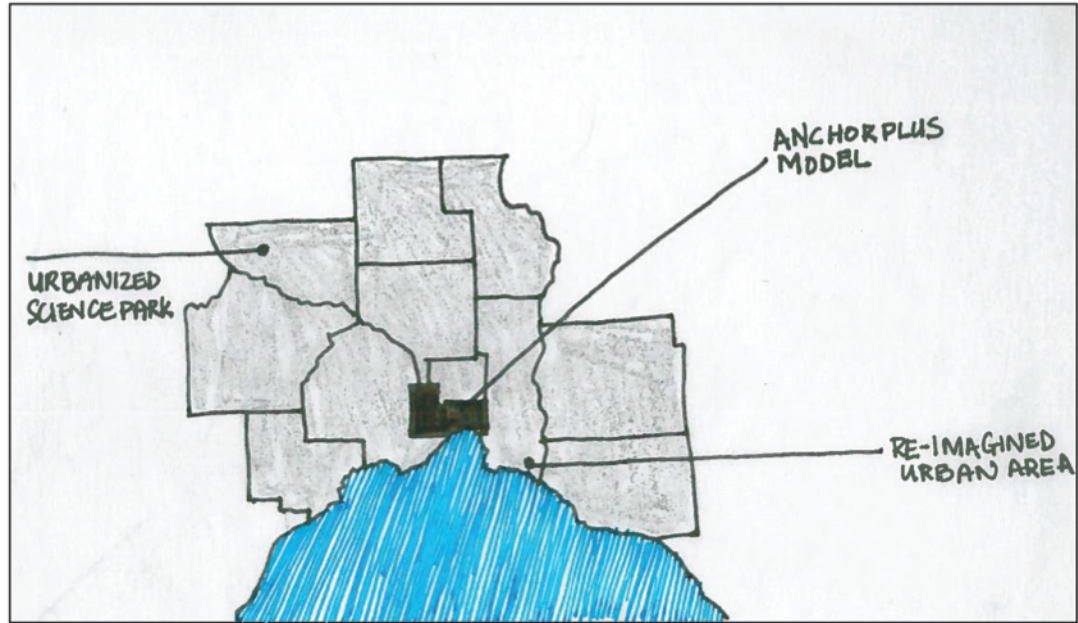


Figure 10, Diagram illustrating the 3 models of Innovation Districts (Source: Author, adapted from *The Rise of Innovation Districts: A New Geography of Innovation in America*. May 2014)

Model type	Anchor Plus	Re-imagined urban areas	Urbanized Science park
Description	Mostly found in 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.	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.	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.

Examples	<ol style="list-style-type: none"> 1. Kendall Square in Cambridge with the explosion of growth around MIT and other nearby institutions like Mass General Hospital) 2. Philadelphia's University City (anchored by The University of Pennsylvania, Drexel University and the University City Science Center) 3. St. Louis (flanked by Washington University, Saint Louis University, and Barnes Jewish Hospital). <p>Other emerging districts can be found in the:</p> <ol style="list-style-type: none"> 1. Greater Oakland neighborhood of Pittsburgh (around Carnegie Mellon University and the University of Pittsburgh Medical Center) 2. Midtown Atlanta (around Georgia Tech University), 3. Downtown and Midtown Detroit (around Quicken Loans, the Henry Ford Health System and Wayne State University) 4. the Texas Medical Center in Houston, Texas. 	<ol style="list-style-type: none"> 1. Boston's South Waterfront, 2. San Francisco's Mission Bay 3. Seattle's South Lake Union area 4. Brooklyn Navy Yard. 5. The ambitious plans for the Cornell-Technion Campus on Roosevelt Island in New York City 6. Hunters Point in San Francisco 7. 22@Barcelona , a self-proclaimed innovation district that involved the complete re-make of an older industrial area in the city core. 	<ol style="list-style-type: none"> 1. 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. 2. University Research Park at the University of Wisconsin-Madison 3. The University of Virginia Research Park in Charlottesville and 4. The University of Arizona Tech Park in Tucson.
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Table 2: Illustrates the 3 models of Innovation districts with examples (Source: Katz, Bruce, and Wagner, Julie. *The Rise of Innovation Districts: A New Geography of Innovation in America*. May 2014. Accessed September 22, 2016)

These districts vary in land sizes and also differ in their avenues for growth. There are districts with new fields like “tech/information” (including the “app economy”), others leading with life sciences (niches in fields as Nano-technology, imaging, and robotics), and others leading with highly creative industries, such as industrial design, media, and architecture. The nature of innovation can also be adapted to industries outside these industries currently identified under most innovation districts. Some of these districts have grown by market forces while others are branded and planned.¹⁴

Examples of Innovation district

This section will focus on 3 examples of innovation districts to identify their similarities and unique features in terms of their land sizes, land uses mix, streetscape, block size, central hub, and lastly, housing options. The following Innovation Districts would be analyzed:

1. 22@Barcelona Innovation District in Barcelona, Spain
2. Seaport Innovation District in South Boston, Massachusetts
3. South Lake Union in Seattle, Washington

¹⁴ Bruce and Julie, *The Rise of Innovation Districts*

22@Barcelona Innovation District

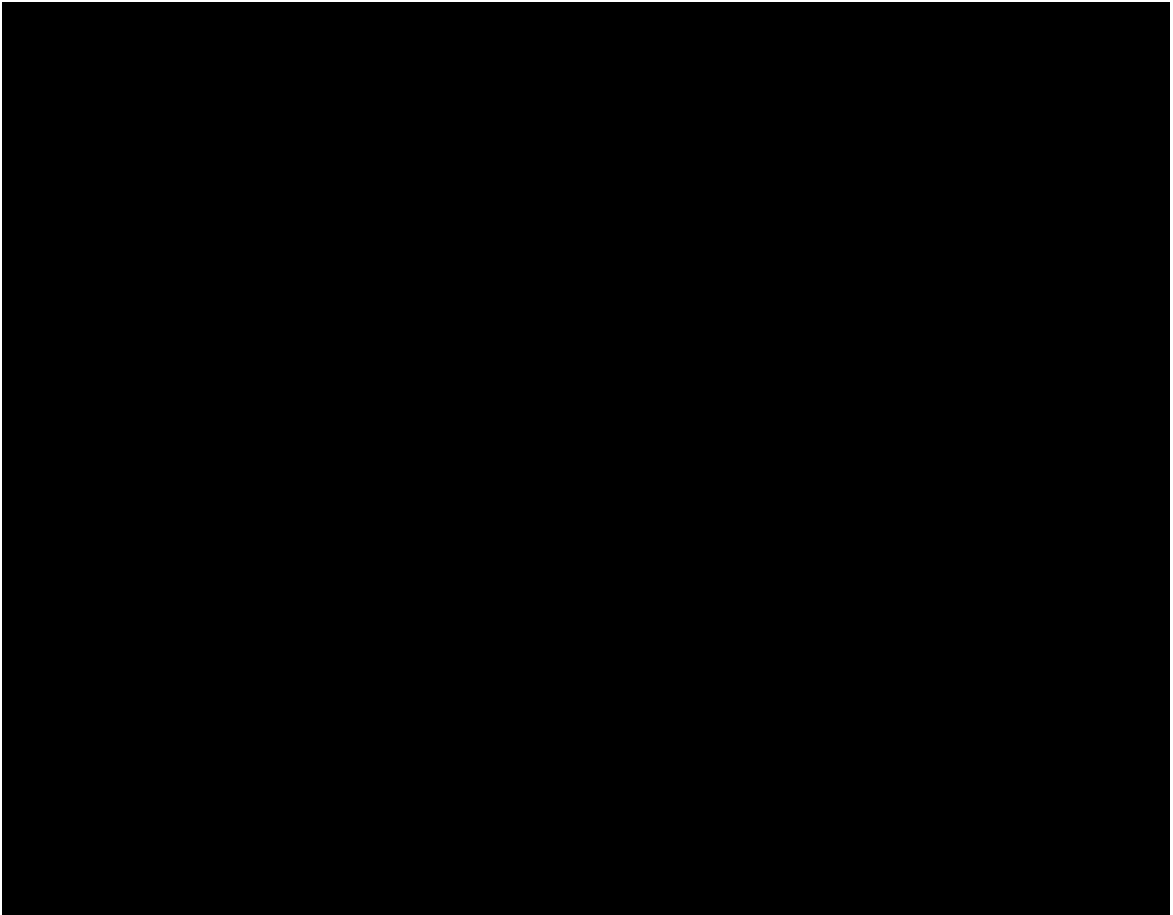


Figure 11, Aerial perspective photograph of 22@Barcelona (Source: Eurcecat. 22@Barcelona. Digital Image. Flickr. May 31, 2006. Accessed December 12, 2016. <https://www.flickr.com/photos/barcelonadigital/5450119631>)

22@Barcelona Innovation District is an area in Barcelona, Spain that regenerated about 65% of the industrial area in Poblenou. The Poblenou neighborhood is situated in the Sant Martí district. This project mixes economic activities (companies and offices) with training (university campuses) and residential areas (re-urbanizing streets and building housing).¹⁵

¹⁵ Ajuntament de Barcelona. Economic promotion: *10 years of 22@: the innovation district*, http://www.22barcelona.com/documentacio/informe_10anys_eng.pdf

The Diagonal Avenue to the Forum zone was extended, and the Glòries square was reconstructed (Figure 12).

The project ensures that productive activities exist side-by-side with research, learning and technology transfer centers, housing and retail establishments with open spaces and facilities. Through urban planning, the 22@ Barcelona project offers an incentive system to favor the presence of companies that carry out designated @ activities, which are those that use talent as their main productive resource. The industries that make up these activities are Media, Information Communication Technologies (ICT), Design, Biotech, and Energy. The first phase of 22@Barcelona was urban regeneration. The next phase was intense economic and cultural regeneration. 22@Barcelona has been organized in clusters - this concentrates companies, public bodies and benchmark science and technology centers from strategic areas of knowledge. Clusters bring together different stakeholders (universities, technology and research centers, enterprise, administration, and private and public financial resources) to collaborate to find synergies in a specific economic sector.¹⁶

¹⁶ Ajuntament de Barcelona. Economic promotion: *10 years of 22@: the innovation district*, http://www.22barcelona.com/documentacio/informe_10anys_eng.pdf

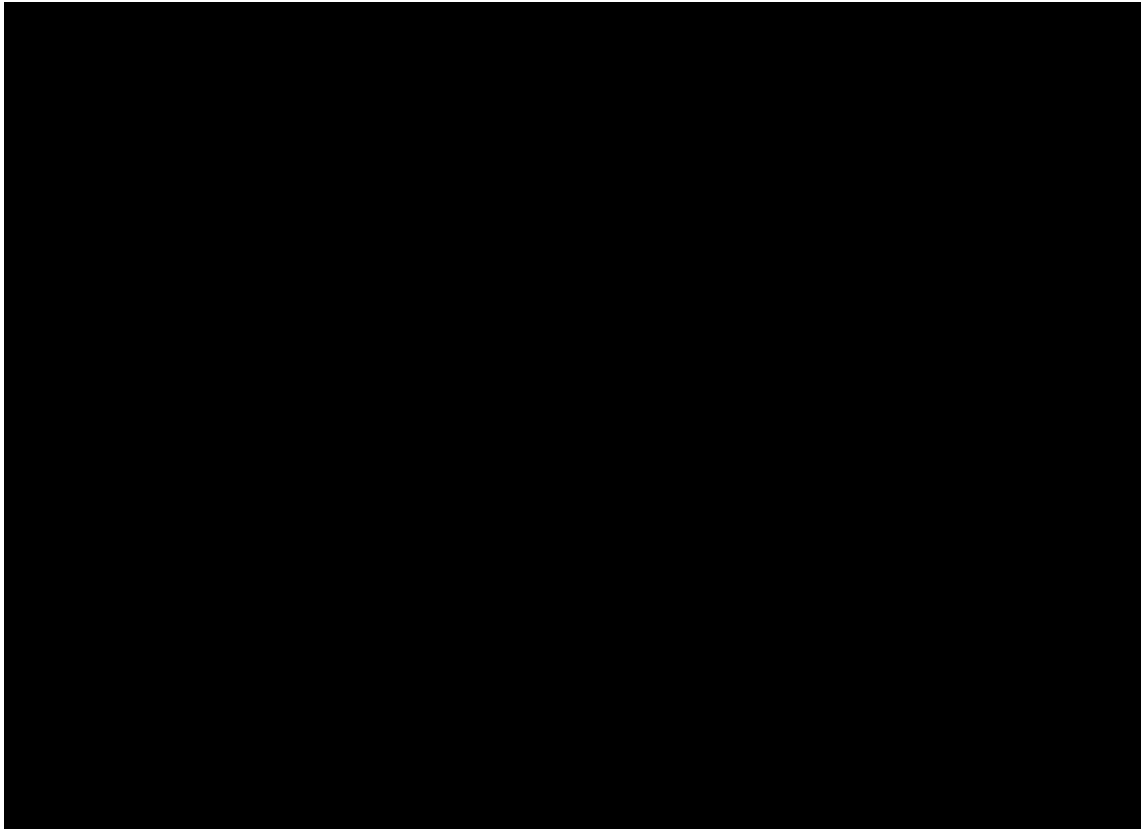


Figure 12, 22@Barcelona Aerial Plan (Source: Peng. Magnitudes of the project. Digital Image. Plataforma Urbana. April 18, 2006. Accessed December 12, 2016. <http://www.plataformaurbana.cl/archive/2006/04/18/estrategias-de-renovacion-urbana-22barcelona/>)

22@Barcelona, Barcelona, Spain Summary



Figure 13, Plan of Barcelona illustrating anchor institutions (Source: Google Maps)

Economic Assets:

10 Universities | 12 R&D and technology transfer centers | 1,502 companies in the fields of Design, Medtech, Energy, ICT and Media (@ activities)

Physical Assets:

Transportation: La Ronda del Litoral (Coastal Ring road), Metro (L1, L4 and future L9), the tram (Trambesos) and bus network link, Metropolitan railway station connects Placa de les Glories Intermodal transport Centre with El Prat International Airport, Future High Speed Railway Station, Bicing Bicycle service

Obligations: 30% of every plot must be used for the PUBLIC - to create green areas (parks and plazas), amenities (coffee shops, etc) and subsidized housing

Advanced Infrastructure: WiFi, Power grid, Centralised Climate Control System (energy efficiency by over 40%, New Fibre Optic grid)

Buildings: Reuse of industrial buildings, non-conventional housing

Streets: New street hierarchy - primary streets are pedestrian-focused

Networking Assets:

22@PLUS, 2010 | 22@Update Breakfasts | 22@Network¹⁷

¹⁷ Ajuntament de Barcelona. Economic promotion

Seaport Innovation District, South Boston, Massachusetts

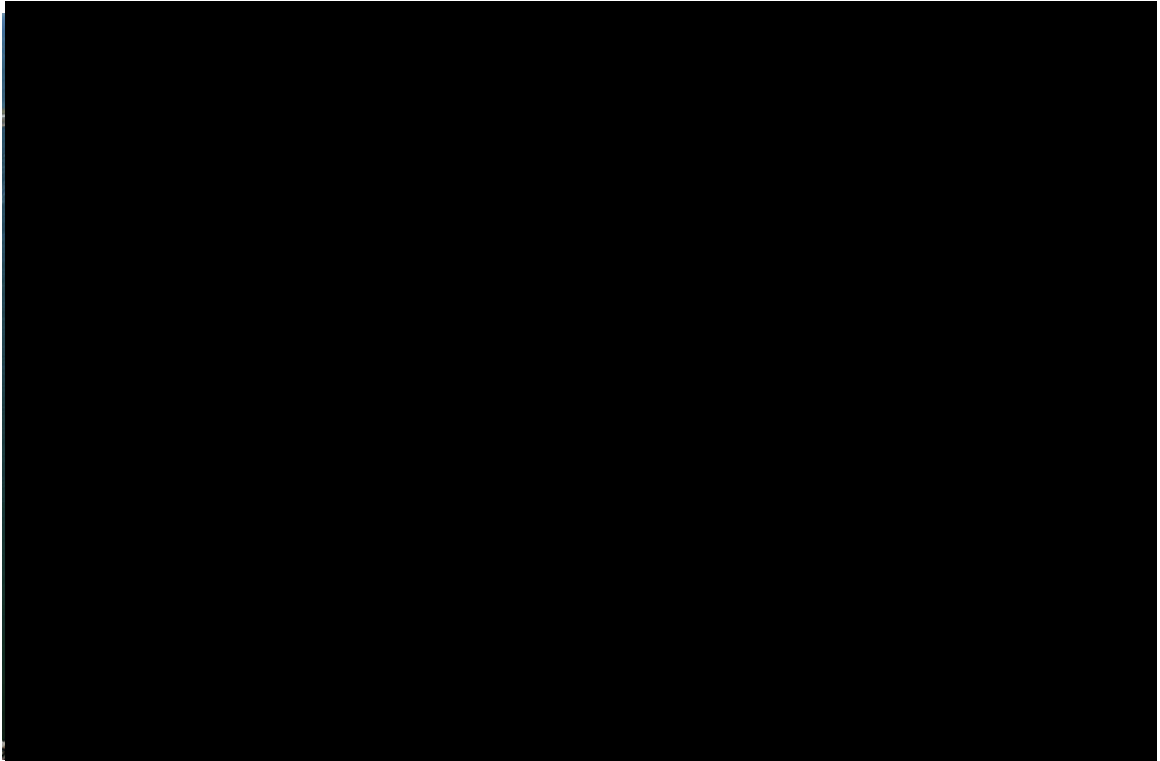


Figure 14, Aerial Perspective looking at Seaport in South Boston showing firms (Source: Digital Image. NAI Hunneman Commercial Real Estate Services Blog. Accessed December 12, 2016. <https://naihunnemanblog.com/2016/02/24/what-does-general-electrics-move-to-the-seaport-district-mean-for-boston/>)

The Seaport Innovation district is planned from the a former industrial area in South Boston. In January 2010, the Mayor of Boston, Thomas M. Menino launched the approach to spur economic development along the city's waterfront. The plan for this area in South Boston was designed to foster collaboration among firms to drive productivity, especially among start-ups and research-based companies.¹⁸ The Boston Convention & Exhibition Center at the heart of the Innovation District was the location used to present the plan to city leaders. The aim is to attract entrepreneurs to the district.

¹⁸ " ~Boston's Innovation District News, Technology & Special Events~." *Seaport Innovation District*. N.p., n.d. Web. 11 Dec. 2016.

The major draw is the many networking, accelerator and support opportunities located in one place. For example, MassChallenge, a global start-up accelerator and competition offers 125 finalists access to three months of free office space in the Innovation District, mentors, workshops and cash prizes totaling \$1 million. This Innovation District also offers a number of other accelerators, incubators and co-working spaces to provide working areas and support systems to a variety of fledgling start-ups – from non-profits to clean-tech to a microbrewery.¹⁹ This variety of embraces many different industries which leads us to understand that any industry can exist within an innovation district.

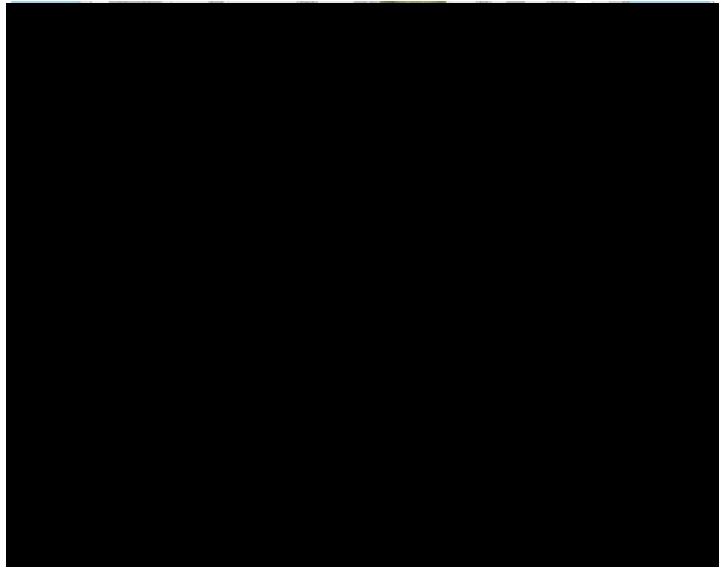


Figure 15, Master Plan of Seaport Square, South Boston MA (Source: Seaport Square. Digital Image. Hacin + Associates [Architecture + Design}. Accessed December 12, 2016.<http://www.hacin.com/portfolio/seaport-square-master-plan/>)

¹⁹ ~Boston's Innovation District News, Technology & Special Events~." *Seaport Innovation District*. N.p., n.d. Web. 11 Dec. 2016.

Seaport Innovation District in Boston, MA Summary

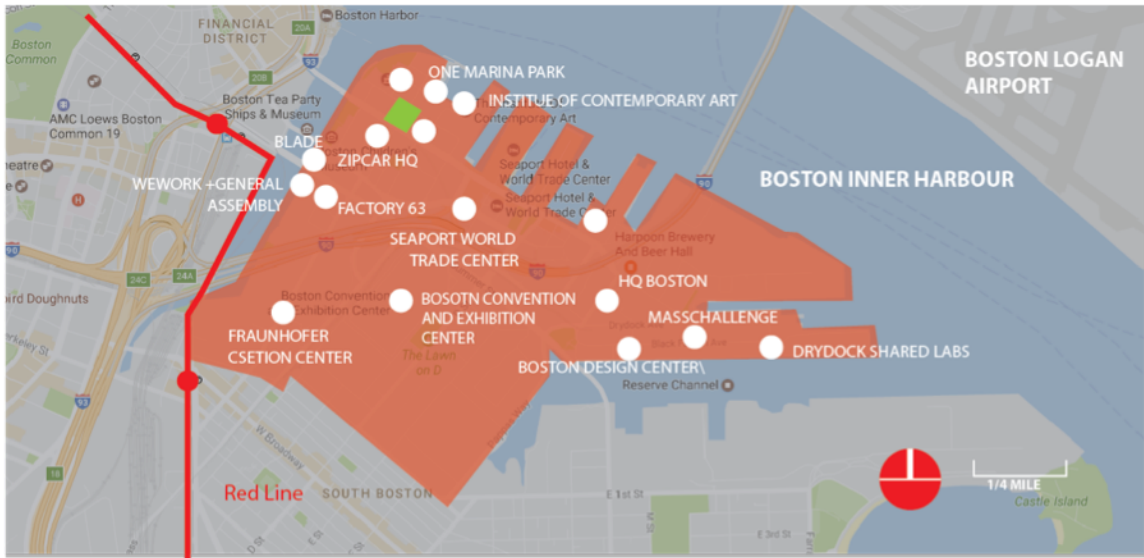


Figure 16, Map of Seaport South Boston illustrating anchor institution (Source: Google Maps)

Economic Assets:

200 technology, life science and other companies over 6,000 jobs

Access to Local talents due to the proximity to University of Massachusetts to the South, Harvard University to the North West and Boston's Downtown

Proximity to Boston Inner Harbour

Physical Assets:

Transportation: Red line, Proximity to Boston Logan airport

Gathering Spaces: District Hall

Green Spaces: Seaport Square

Expected mixed-Use Projects that provide a wide-range of housing choices, office space and retail

Networking Assets:

MassChallenge

Events that hold at the Boston Convention & Exhibition Center

Events that hold at the District Hall

South Lake Union in Seattle, Washington

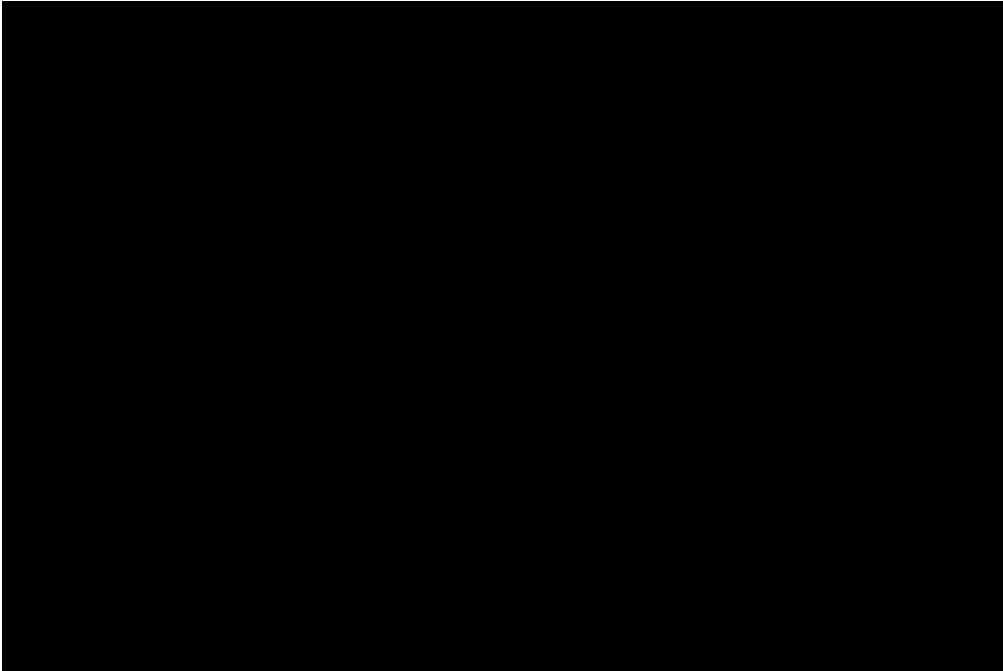


Figure 17, Rendered Aerial Perspective of South Lake Union, Seattle WA (Source: Digital Image. Studio/216 for NBBJ. Accessed December 12, 2016 as cited on Lake Union Seattle website. <http://lakeunioninseattle.com/business-directory/>)

South Lake Union is a neighborhood in Seattle, Washington. This area was originally used for a manufacturing industries. Due to recent development plans by Microsoft co-founder Paul Allen's Vulcan Inc., as well as other prominent developers, South Lake Union is becoming a hub for innovation economy.²⁰ The aim of the developer, Vulcan Inc., is to develop an urban neighborhood where knowledge workers not only work, but live and play in the area as well, which is very consistent with the

²⁰ Kim, Minjee SPATIAL QUALITIES OF INNOVATION DISTRICTS: How Third Places are Changing the Innovation Ecosystem of Kendall Square

concept of innovation districts.²¹ There is a new Street-Car in the South Lake Union area that runs along a 2.3 mile route and connect to Downtown Seattle.

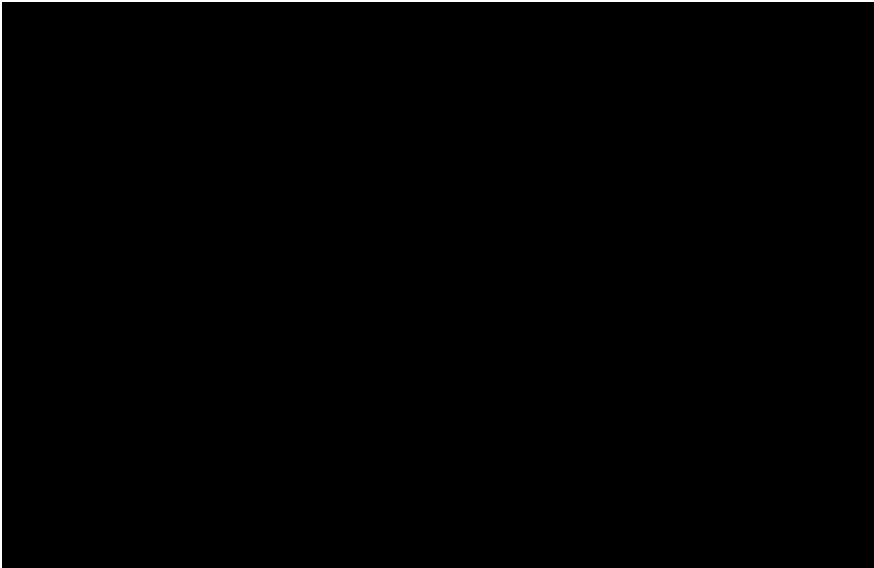
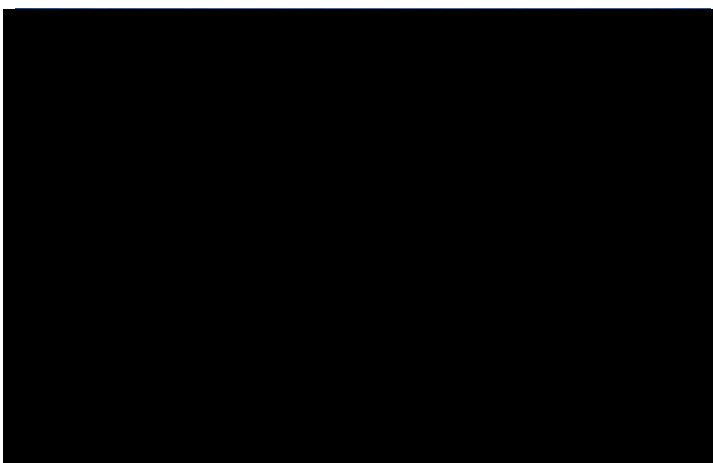


Figure 18, Image showing new street car in South Lake Union, Seattle, WA (Source: Digital Image. Urban Design Associates. Accessed December 12, 2016. <http://www.urbandesignassociates.com/innovation-districts/>)



²¹Kim, Minjee, “SPATIAL QUALITIES OF INNOVATION DISTRICTS: How Third Places are Changing the Innovation Ecosystem of Kendall Square” Master in City Planning thesis, Massachusetts Institute of Technology, 2013.

Figure 19, Image showing Block Party near South Lake Union Discovery Building
(Source: Digital Image. Urban Design Associates. Accessed December 12, 2016.
<http://www.urbandesignassociates.com/innovation-districts/>)

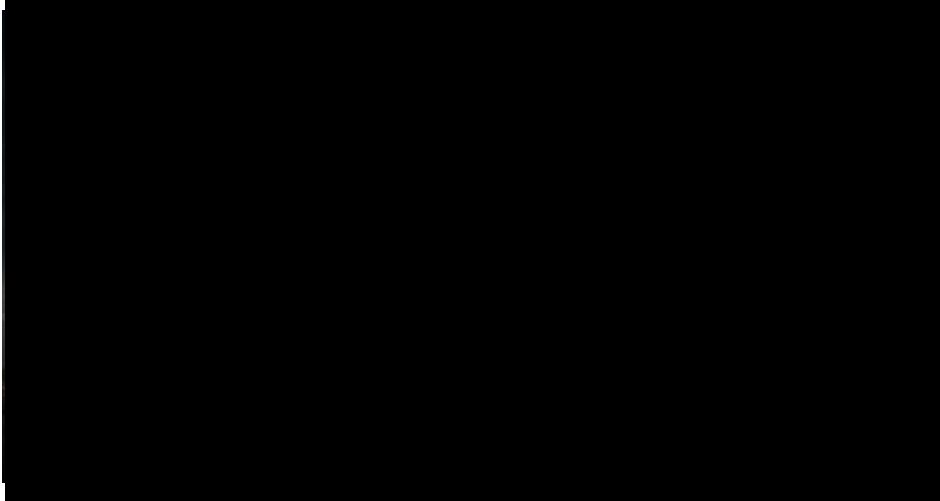


Figure 20, Rendered Image showing the new Google building in South Lake Union, Seattle, WA. (Source: Credit:Graphite Design Group. Digital Image. Geekwire. Accessed December 12, 2016. <http://www.geekwire.com/2016/paul-allens-vulcan-develop-huge-complex-google-amazons-backyard/>)

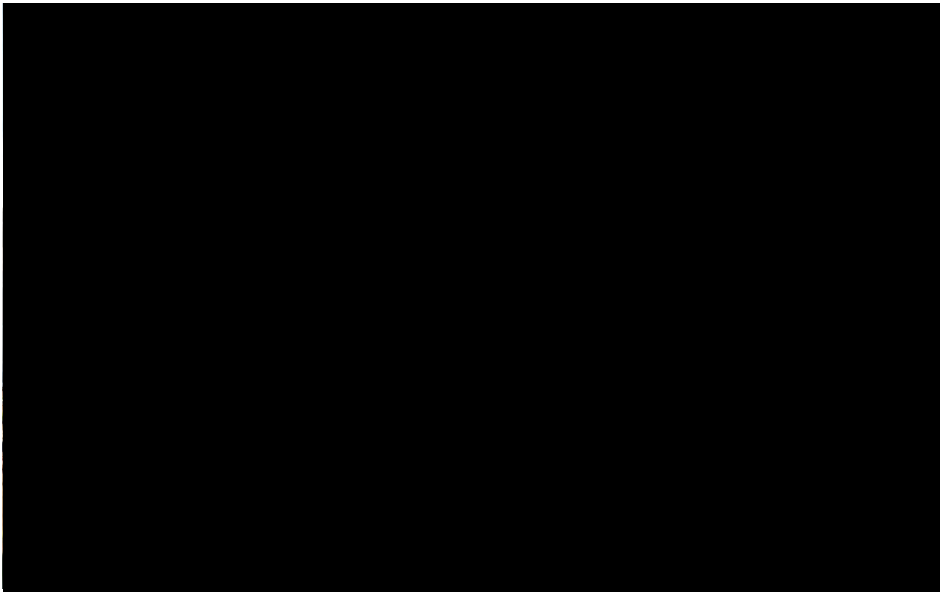


Figure 21, Rendered Image showing the new Google development in South Lake Union, Seattle, WA. (Source: *A view from Lake Union of the new development that will include offices for Google. (Graphite Design Group). The Seattle Times. Accessed December 12, 2016* <http://www.seattletimes.com/business/technology/google-plans-big-expansion-to-south-lake-union/>)

South Lake Union in Seattle, Washington Summary

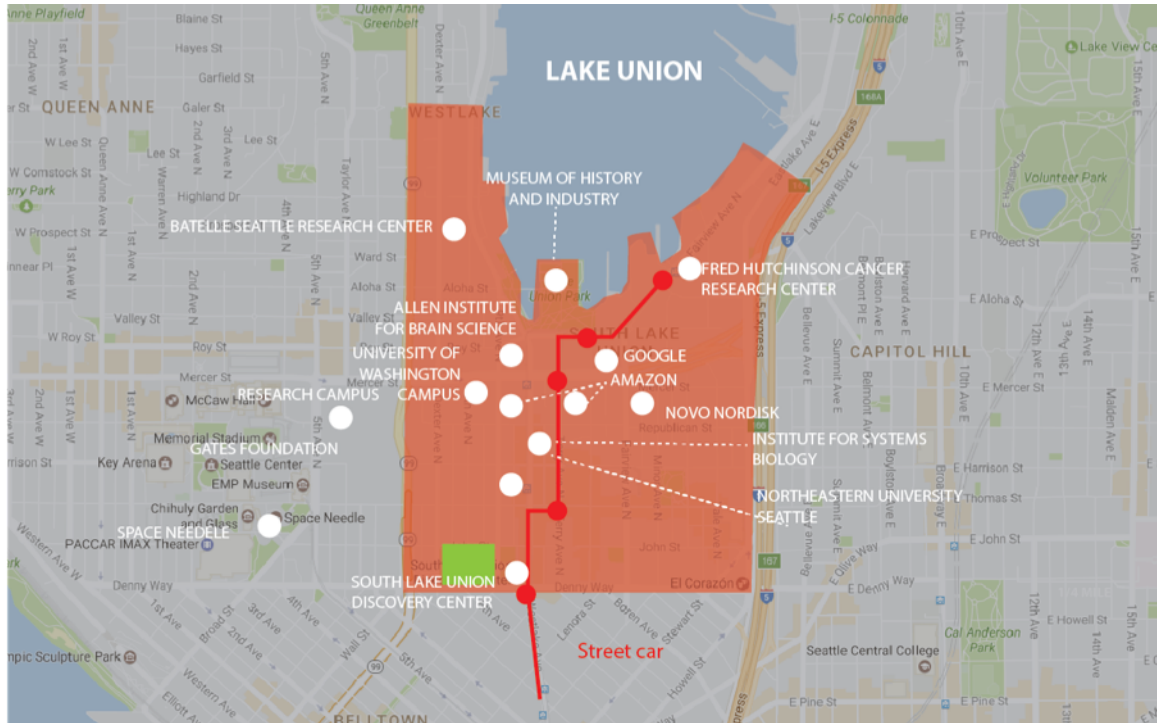


Figure 22, Map of South Lake Union Seattle, illustrating anchor institutions

Economic Assets:

University of Washington Campus
Fred Hutchinson Cancer Research Center
Amazon
Google
Gates Foundation
Northeastern University Seattle
Close proximity to Downtown Seattle

Physical Assets:

Transportation: Streetcar, buses

Networking Assets:

South Lake Union Discovery Center
Block Party Events at the Park near South Lake Union Discovery Center

Summary Findings

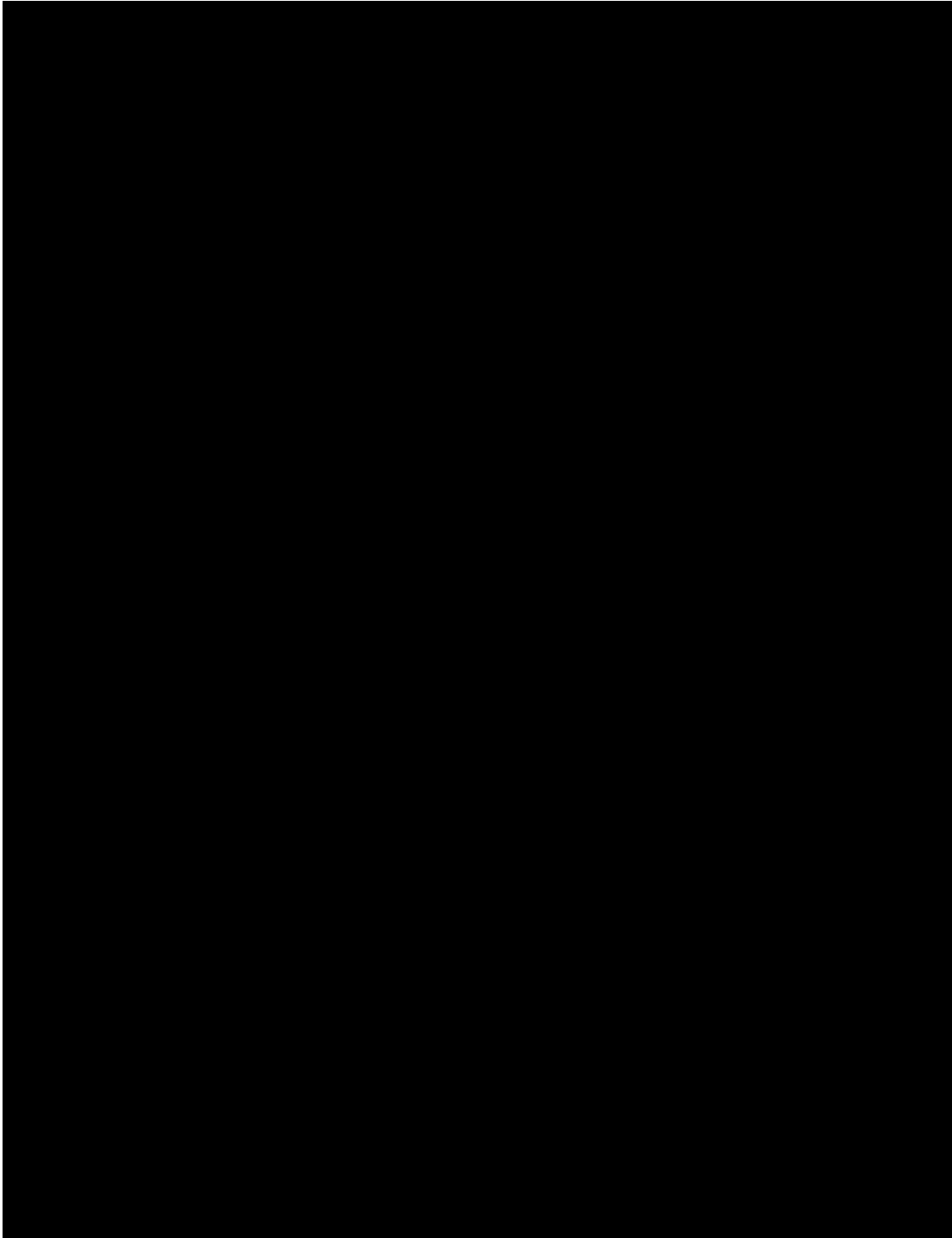


Figure 23, Analysis of 4 Innovation Districts (Source: Google maps)

Each of the innovation district had the following kind of assets in their ecosystem:

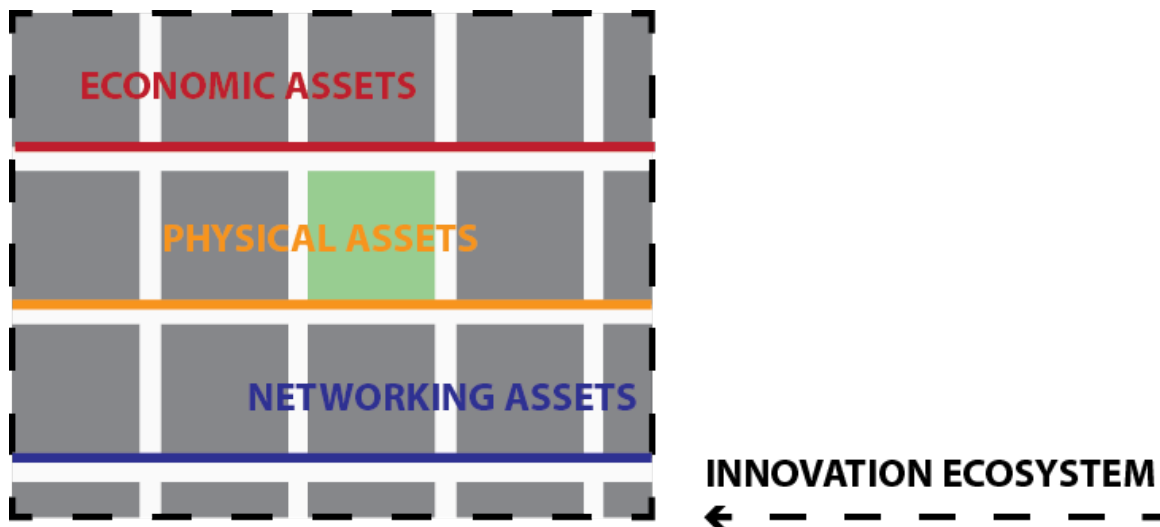


Figure 24, Diagram illustrating the Assets of Innovation Districts (Source: Author, adapted from The Rise of Innovation Districts - Presentation by Bruce Katz)

1. Physical Assets: Public and privately owned spaces that stimulate innovation.

Public physical assets include plazas, parks and streets. Privately-owned physical assets include shared lab spaces for inventors and gathering spaces. Lastly, large-scale transit infrastructure like the streetcar built in South Lake Union Seattle (Figure 16 & Figure 21).
2. Economic Assets: The Anchors - Universities and/or businesses that exist within the district that end up attracting a diverse mix of innovative firms.
3. Networking Assets: This involves the interaction between weak and strong ties within the district. Strong ties appear between firms that have a common working history. Weak ties occur between firms and people that do not have a history of contact, but due to their presence in the district, they are able to connect. The proper placement of gathering spaces aids these strong and weak ties.

All these assets work together to sustain the district.

The 22@Barcelona district is the most established and has been able to provide a substantial amount of subsidized housing and housing in general working with the clustering plan. The idea behind clustering is to ensure a good mix of businesses within a specific block or group of blocks in the district.

The Seaport South Boston District is still fairly young. The most impactful building that exists now is the District Hall that provides gathering spaces and rentable spaces for companies, startups and entrepreneurs. It is a place for the residents of this community to engage and interact with one another thus strengthen the networking assets. There is an ongoing master plan that requires the development of 23 acres of land which would include residential, retail, offices, hotels and green spaces to make the district a place for living, working and recreation.

The South Lake Union district in Seattle Washington makes up about 340 acres of land and is currently being developed by Paul Allen of Vulcan Inc. Interestingly, Google plans a move to a new 4 building complex on a site within the area. This strongly backs the trend that workers are demanding better places to live than what was seen with research silos or silo companies in the past 50 years. These tech companies are responding to this demand in order to attract and retain a talent pool of high-tech workers.

Mixed-Use Buildings and Housing in Innovation Districts

In all of these districts, there is a push for micro-housing, workers housing and live/work apartments within mixed-use residential developments. This solution should be taken with a little bit more contention. Most workers are accepting these space because of high rents. It becomes cost-efficient to rent these housing types in order to benefit from the amenities and quality of life these districts have to offer. In the long-run, would we still see workers accepting to live in these micro-housing units or live/work apartments? They would certainly start demanding more from the district when they start having families and raising children.

It would be in the best interest of the Innovation districts in to cater to families as well as innovative workers so everyone could benefit from the surge of innovation that is taking place in each district. A broader range for housing typology such as including live/work townhomes or simply townhomes should be provided and developers should be required to provide a substantial percentage of affordable housing in the development to cater to all-income brackets so a mixed-income community could be created. As these areas begin to gentrify, massive displacement of low-income residents should be avoided by making provision for them within the planning of innovation districts. Service workers will still be needed in most retail and commercial businesses within the district. Inclusive growth would ensure they have a better opportunity for upward economic mobility.

Here are some of the mixed-use and housing projects built or planned within each of the 3 analyzed Innovation Districts:

1. 22@ Barcelona



Figure 25, Images of a Social Housing Building 22@Barcelona (Source: Dwellings in Almogavers Street. BIS Structures. Accessed December 12, 2016)

ARCHITECT: F451

LOCATION: 22@, BARCELONA

AREA: 17.700 m²

CONSTRUCTION: 2008 – 2010

Multifamily building with parking. The building above ground is formed by two strip-shaped elements of varying height, separated by about 20 feet. The building has three underground floor parking, commercial on ground floor, and housing above. Structure was solved with solid slabs in the underground floors, and waffle slabs in the rest of the floors, supported by concrete pillars. The protruding elements of the façade are supported by a metal structure attached to the deck edge.²²

²² Bis Structures. Accessed December 12, 2016. <http://www.bisstructures.com/en/portfolio-posts/viviendas-en-la-calle-almogavers/>

2. Seaport South Boston



Figure 26, Section perspective of a proposed mixed-use development in Seaport South Boston (Source: <http://www.hacin.com/portfolio/seaport-square-master-plan/>)

Similar to the Social housing built in 22@Barcelona, this mixed-use development has three levels of underground parking, retail at the ground floor level, and housing on the upper levels. The only difference is that it has added a conference/ coworking spaces to support new businesses on the third floor and a garden on the roof level of the building. It should be noted that the units provided on the housing levels are live/work spaces.

3. South Lake Union, Seattle WA

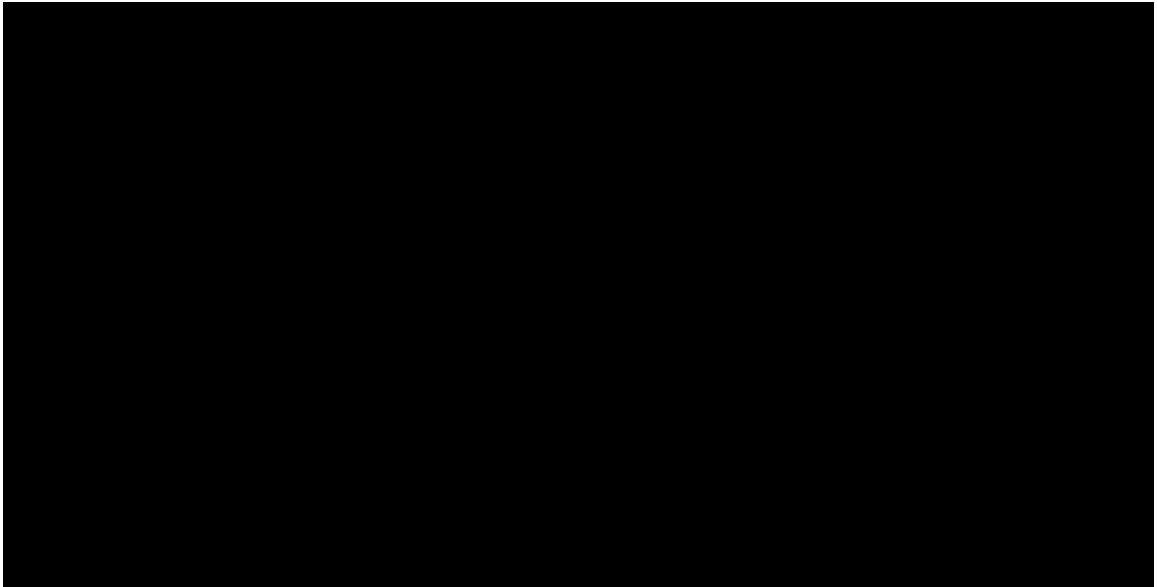


Figure 27, Google's proposed development in South Lake Union (Source: <http://www.geekwire.com/2016/google-architects-take-inspiration-new-seattle-building-well-made-suit/>)

Google's mixed-use development includes:

1. 14-story building: six stories for Google's office space totaling 145,600 SQ FT and 69 apartments on the upper floors
2. Another Six-story office building for Google
3. A third mixed-use building on Terry Ave N. and Boren Ave. N.: 290,000 square feet of office space and about 80 apartments.

The entire campus in the neighborhood will have more than 600,000 square feet of office space. Construction will take place in phases starting in 2017. The combined office-apartment towers could open in the fourth quarter of 2018.²³

²³ Nat Levy, "Google architects take inspiration for new Seattle building from well-made suit" GeekWire (September 2016), accessed December 14, 2016,

Gathering Spaces within Innovation Districts

Two gathering spaces were analyzed as precedents:

1. Seaport South Boston's District Hall

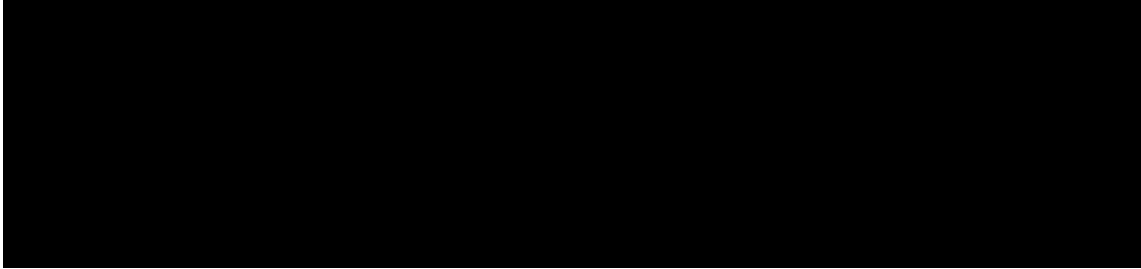


Figure 28, Images of Boston's Innovation District (Source: <http://www.hacin.com/portfolio/district-hall/>)

Location: Boston, MA

Completed: 2013

Size: 12,000 SQ FT

Architects: Hacin + Associates [architecture + design]

Partnership: City of Boston, Boston Global Investors, and the Cambridge Innovation Center

This facility provides a place for companies and executives to meet, exchange ideas and host business and social events. It also has a restaurant and café [Gather and Brew], a flexible assembly space with a capacity of 250 seats, a gathering space with lounge seating and worktables, and a series of flex spaces or pods, to support a variety of uses including meetings, classes, and exhibitions. The architecture is inspired by the area's industrial past. The building has two basic volumes—a long low bar that references box cars that once populated the site, and an angular shell that recalls the materials and forms of the shipping industry's boats and waterfront warehouses. Gesturing to the water's

<http://www.geekwire.com/2016/google-architects-take-inspiration-new-seattle-building-well-made-suit/>

edge, the building defines one edge of an adjacent park.²⁴

2. South lake Union Discovery Center

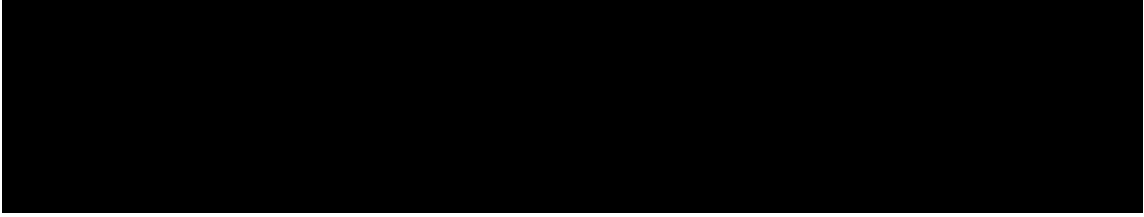


Figure 29, Images of South Lake Union Discovery Center (Source: <http://millerhull.com/project/slu-discovery-center/>)

Location: Seattle, WA

Completed: 2005

Size: 11,000 SQ FT

Architects: Miller Hull Partnership

This building is used as a sales and information center with a focus on education that generates awareness and demand for a sustainable urban lifestyle. The public reception of the Discovery Center has been overwhelmingly positive. Since it opened, the Center has hosted 55,000 guests, over 75 international tours and been host to 200+ presentations and event gatherings reaching a diverse audience including commercial, retail and residential tenants, community stakeholders and elected officials through engaging visuals and interactive media.²⁵

An Information center of this nature would also be useful in an area seeking

²⁴ “District Hall”, Hack + Associates [architecture + design], Accessed December 14, 2016. <http://www.hacin.com/portfolio/district-hall/>

²⁵ “South Lake Union Discovery Center, Seattle, Washington”, Miller Hull, Accessed December 14, 2016. <http://millerhull.com/project/slu-discovery-center/>

revitalization.

Public spaces and Green Spaces within the Innovation District

In both Seaport South Boston and South Lake Union's public gathering spaces, a park sits on the same block as these public buildings. In the Discovery Center in South Lake Union, the green space is mostly used for hosting parties or movie night events for the community. It would be important to incorporate a similar green space in any innovation district that would provide housing for creative professionals.

1. Seaport square, South Boston, MA

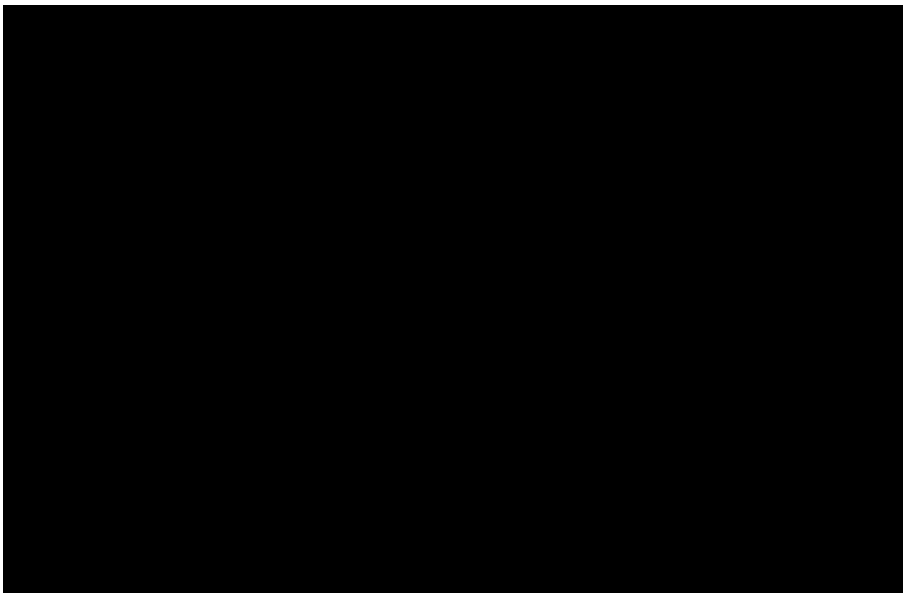


Figure 30, Seaport Square (Source: <http://www.hacin.com/portfolio/seaport-square/>)

This public space, dining pavilion, and a war memorial - Fallen Heroes Memorial provides a dramatic and powerful focal point for the area and a beacon that will be seen from Boston Harbor.²⁶

²⁶ "Seaport Pavilion", Hack + Associates [architecture + design], Accessed December 14, 2016. <http://www.hacin.com/portfolio/seaport-square>

Chapter 3: Program

Program Objectives (1. Design objectives)

Visioning Statement

*The Mount Royal Community Development Corporation is dedicated to reviving its community through innovation by establishing Baltimore's first Innovation District called Innovation Village. Innovation Village will reflect an Innovation District's core values of collaboration, intentional clustering of businesses and people, diversification of economies, and job creation. The Village will promote interaction and productivity amongst all members of its coalition: academic anchor institutions, local residents, entrepreneurs, community organizers, private venture and equity capital, companies, activists, developers and City/State agencies.²⁷ In order to achieve these goals, housing within the area must be mixed-income, sustainable, innovative and accessible. **

²⁷ Robinson, Andre. Email message to author: "MRCDC/Innovation Village: Overview" 19 Oct 2016.

*This visioning statement was developed by author based on ideas from Robinson, Andre. Email message to author: "MRCDC/Innovation Village: Overview" 19 Oct 2016.

Guiding Principles for Innovation Village²⁸

1. Collaboration: The Village must communicate collaboration as one of the core values of an Innovation District, utilizing many layers of collaboration spaces within the Village on a macro scale and within the housing for residents on a micro scale.
2. Intentional Clustering of Businesses and people: The Village must create spaces for housing within walking distance from business clusters to ensure the exchange of ideas and promote innovation within the area.
3. Diversification of Economies: All business types and services should be provided within walking distance of each mix-use housing development and group of townhouses to promote the continuous wealth generation within the area.
4. Creating Jobs: With the provision of live-work housing both in the form of mixed-use development and townhomes, the village will allow residents to create job for other residents and potential graduates from students in the universities.

²⁸ These guiding principles was developed by author by on ideas from Robinson, Andre. Email message to author: "MRCDC/Innovation Village: Overview" 19 Oct 2016.

Guiding Principles for Housing²⁹

1. Mixed-Income: The housing must provide units that are affordable for a wide income range.
2. Sustainable: The building must adhere to sustainable requirements of energy generation, water-conservation and efficient-use of material.
3. Innovation: Housing must incorporate new technology in order to spur ideas and new ways of thinking within the community
4. Accessible: The housing must be located close to a business cluster and all day-to-day services required by a resident in the area. It must also have good transit access.

²⁹ This Guiding Principles for Housing was developed by author based on ideas from Robinson, Andre. Email message to author: “MRCDC/Innovation Village: Overview” 19 Oct 2016.

Program Special Problems and Issues (2. *Special problems and issues*)

An issue that is unique to live-work buildings is the dichotomy between the need for public access to parking for commercial uses and the need for residents to have secure - usually gated or fenced - parking. In most situations, this problem is resolved by accommodating the residents in the building's garage and the customers with on-street parking.³⁰ Access to outdoor spaces, especially for families with children becomes very crucial. Building codes differ for residential and commercial properties so looking at the specific codes that apply to live-work housing is very important. The nature of the live-work makes an individual create an attachment to and pride in the place that they dwell all the time and thus there is a demand for a more well-considered environment.³¹

³⁰ Dolan, Thomas. *Live-work Planning and Design: Zero-commute Housing*. Hoboken, NJ: John Wiley & Sons, 2012. Print, 42.

³¹ Dolan, Thomas. *Live-work Planning and Design: Zero-commute Housing*. Hoboken, NJ: John Wiley & Sons, 2012. Print, xii.

Who are the Creatives?

In order to cater to the needs of the community, analyzing the socio demographics, education level and institutions surrounding the site would support a good summary of the users of the designed live-work community with the two housing typologies.

Creatives could be any person involved in a computer, technology, artistic, design, innovative and production profession for example artists, computer programmers, application developers, architects, graphic designers and inventors.

What type of housing fits their needs?

Based on the summarized professions, housing that fits each specific user would be designed in the townhouse typology in order to fit the needs of the specific profession.

Program Summary

Master Plan of Innovation Village

Phase 1: Place-making

Gathering Space Building (Possible name: West Baltimore Innovation Center) **12,000 SF**
Public Square & Park (Possible name: West Baltimore Square)

- A place for startups to meet, exchange ideas and host business and social events.
- Restaurant and café
- A flexible assembly space with a capacity of 250 seats
- A gathering space with lounge seating and worktables
- A series of flex spaces or pods to support a variety of uses including meetings, classes, and exhibitions
- A space for displaying Information and History of important innovators

Phase 2: Building an Innovative Community

Mixed-use Building 150,000 SF

- 5-story with 1 level of Office space at the lower level and 3 levels of Apartments above
- Housing types: Micro-units, live/work units and 1 bedroom, 2 bedrooms, and 3 bedroom units

Live/work townhouses 3,000 SF each

- Flexible live/work townhouses for all types of creative professionals

Phase 3: In-fill Development - 10 Year Master Plan

- Places for more incubators and co-working spaces
- Pocket parks

- Renovating existing townhouses
- Infill of new live/work housing

Phase 4: Enhancing Services - 20 Year Master Plan

- Streetcar along Major street
- iSchool for Food and Technology
- Day care and other support services for the community

Phase 5: Building Out the District - 50 Year Master Plan

- Filling in missing links to enhance the overall area
- Building more housing
- Enhancing the edge of North-Ave by creating building that line the edge

Phase 1: Place-making

Space #	Space/Description	Quantity	ASF	Total ASF
Program Concept	Innovation and Information Center			12,000 SF
100	Gathering Spaces			3,000 SF
101	Exchange of ideas Space	1		
102	Restaurant and Cafe	1		
103	Historical Information Space	1		
104	Assembly Space	1		
105	Flex Space for meetings	7		
106	Community Kitchen	1		
107	Maker Space	1		
108	Co-working space	1		
200	Public plaza and park			15,000 SF

Phase 2: Program Square footage for the Innovative community

Space #	Space/Description	Quantity	ASF	Total ASF
Program Concept	Mixed-Use Building			112,884
100	Apartments/Residential			74,000
101	1 Bedroom Apt	20	800	16000
102	2 Bedroom Apt	20	1,250	25000
103	3 Bedroom Apt	20	1,650	33000
200	Community Spaces			6,680
201	Cyber lounge	1	1,000	1000
202	Fitness Center	1	1,200	1200
203	Swimming Pool	1	700	700
204	Roof Lounge	1	800	800
205	Roof garden	1	500	500
206	Aquarium Room	1	1,000	1000
207	Mailbox Room	1	200	200
208	Lobby/Desk/Waiting	1	200	200
209	Public Toilets	2	120	240
210	Storage	3	200	600
211	Resource Room	1	120	120
212	Rental Office	1	120	120
300	Office Spaces			15,254
301	Open Large Office	4	180	720
302	Open Small Office	15	120	1800
303	Open Workstations	100	80	8000
304	Reception Desk	1	120	120
305	Reception Seating	1	120	120
306	Conference Large	1	600	600
307	Conference Small	5	150	750

308	Informal Breakout Centers	12	80	960
309	Printer/Copier/Fax Center	3	80	240
310	Break Room Service Unit	1	340	340
311	Information Reference Centers	3	180	540
312	Supply Center	4	40	160
313	Work Center	1	200	200
314	File Area	2	144	288
315	Documents Room	1	240	240
316	Server Room	1	176	176
400	Building Support space			16,950
401	Trash/Recycle	1	200	200
402	Housekeeping Closet	7	50	350
403	Telecommunications Closet	7	100	700
404	Electrical Closet	7	100	700
405	Basement Parking	2	7,500	15000

Program Concept TOWNHOUSES (A, B, C & D) 40 Units				3,000
<p>Type A – Loner House</p> <p>Type B - Family House</p> <p>Type C – Creatives House</p> <p>Type D – Starter House</p>				
500	Living Spaces			1,800
501	Bedrooms	3	150	450
502	Kitchen	1	400	400
503	Dining Area	1	250	250
504	Living Room	1	300	300
505	Bathroom	2	120	240

506	Closet	2	80	160
600	Work Area			1,200
601	Desk Area	1	200	200
602	Flex Space	1	800	800
603	Storage	2	100	200
COMMUNITY SPACES				8,800
700	Public Spaces			8,800
701	Community Garden	1	3,000	3000
702	Public Plaza	1	4,000	4000
Buildings/Services for the Village				
800	Services			
801	School			
802	Daycare			
803	Laundromat			
804	Doctor's Office			
805	Gym			
806	Pharmacy			
807	Free Wi-Fi			
808	Bike Share			
809	Car share			
TOTAL AREA				232,884
TOTAL GROSS AREA				322,500

Program Graphic Depictions

MIXED-USE LIVE-WORK PROGRAM ANALYSIS

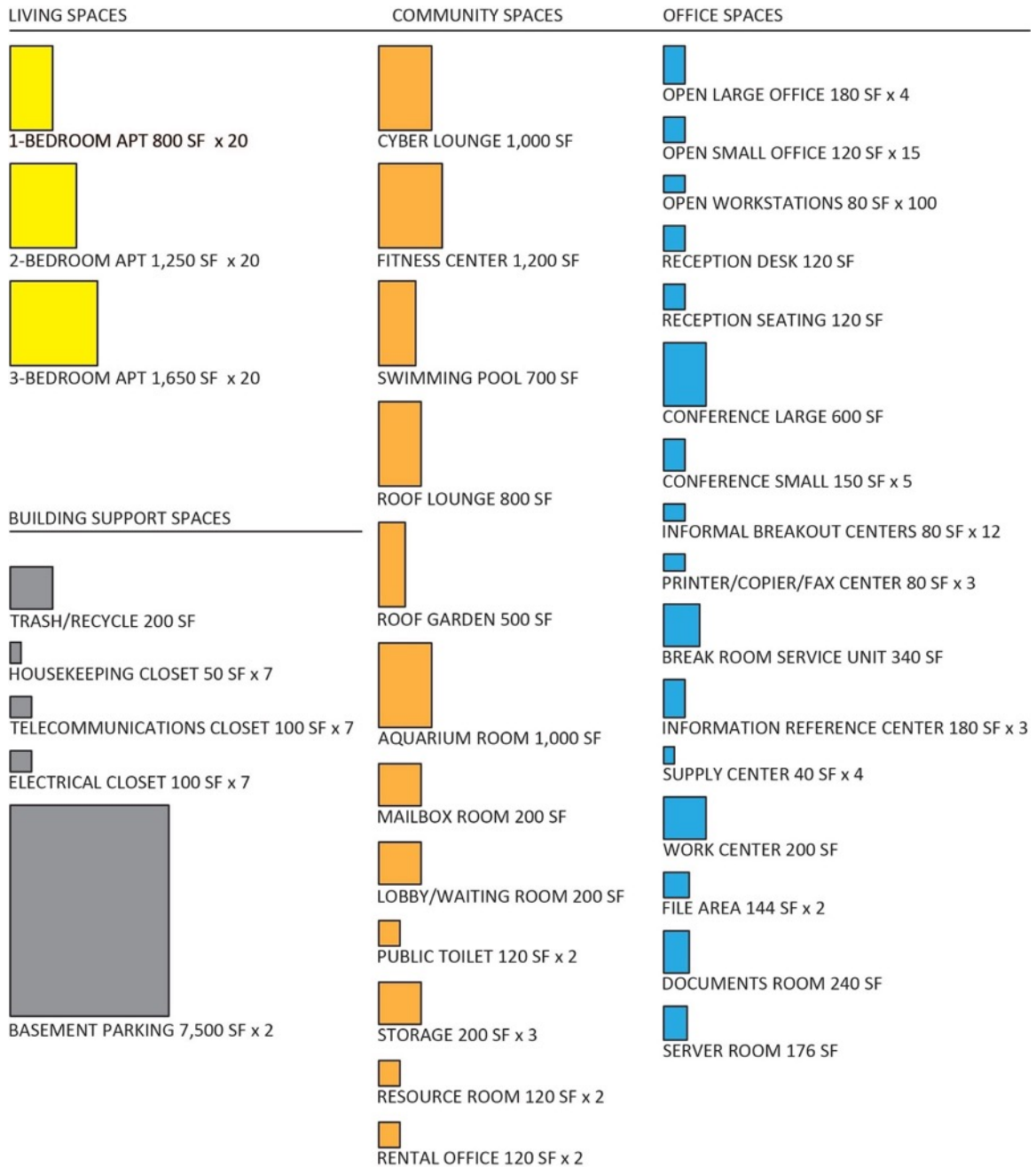


Figure 31: Diagram of space allocations for Mixed-Use Live-work program (Source: Author)

TOWNHOUSE COMMUNITY PROGRAM ANALYSIS

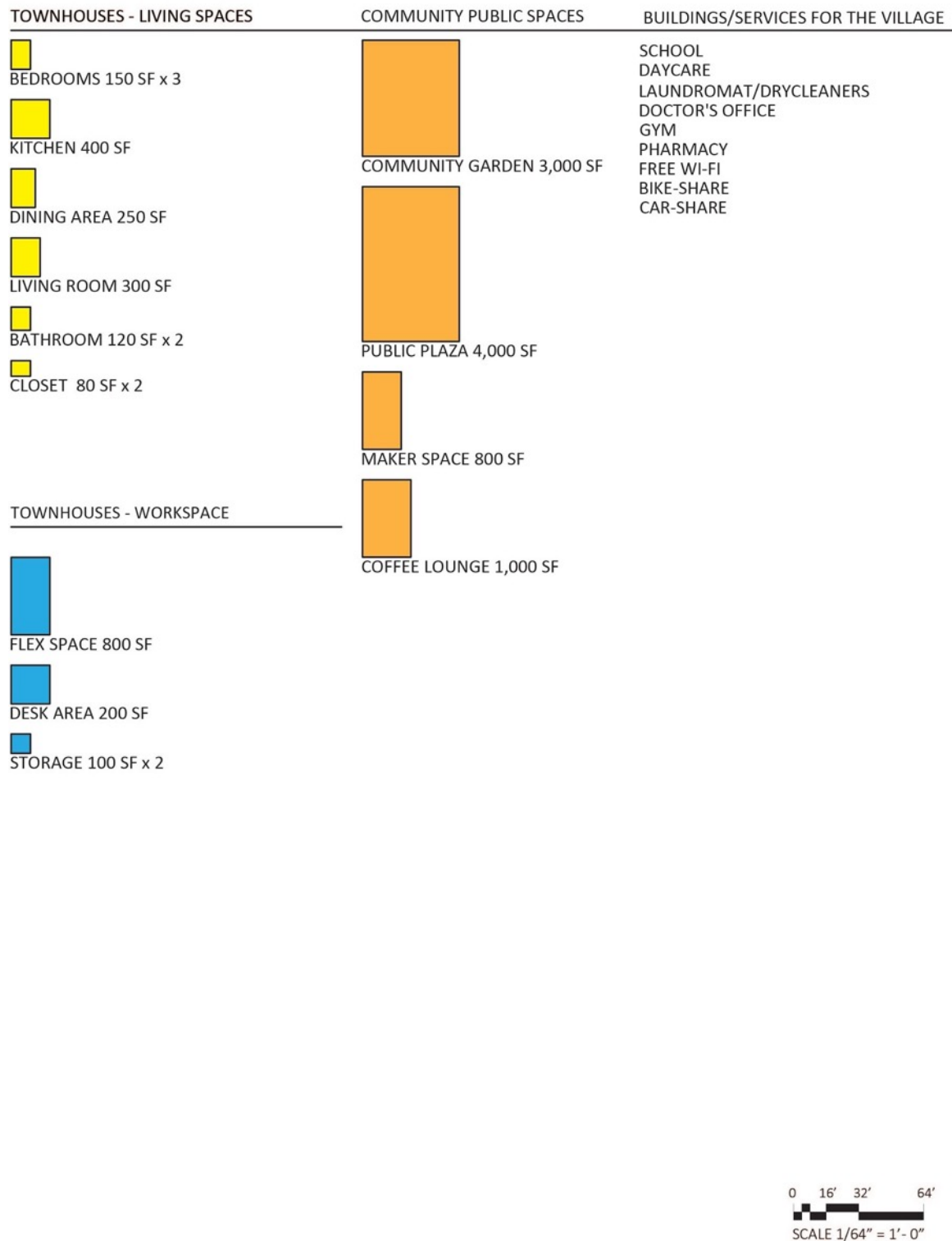


Figure 32: Diagram of space allocations for Live-work Townhomes program (Source: Author)

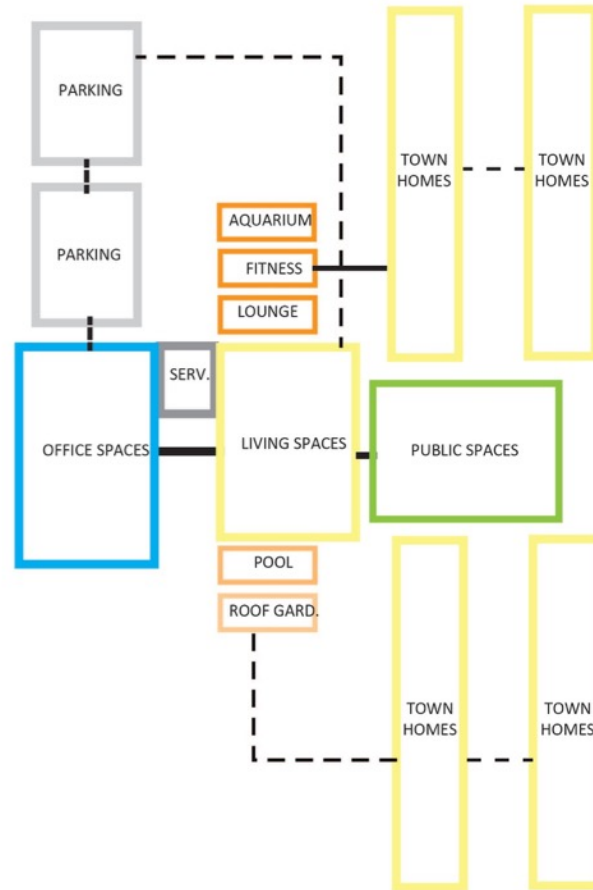


Figure 33: Plan Diagram of Program adjacencies (Source: Author)

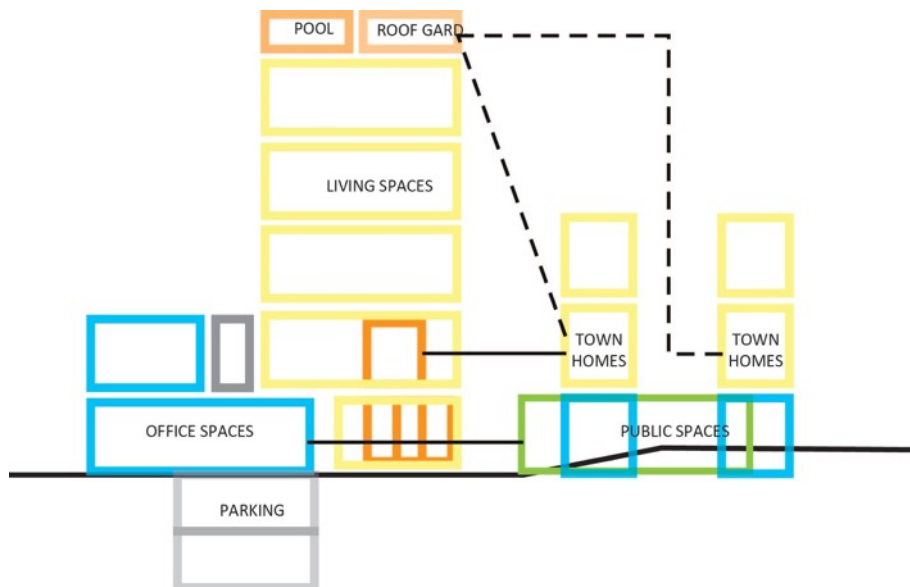
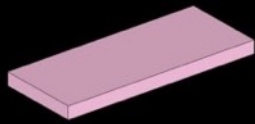


Figure 34: Section Diagram of Program adjacencies (Source: Author)

PROGRAM: PHASE 1



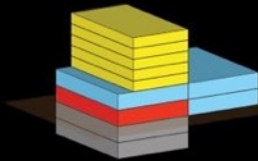
GATHERING SPACE:
11,900 SF
170' X 70'



GREEN SPACE:
20,000 SF
100' X 200'



LIVE / WORK TOWNHOMES:
1,200 SF + 600 SF | 1,800 SF



MIXED-USE BUILDING:
OFFICE: 7,000 SF (X 3)
RETAIL: 7,000 SF | 70' X 100'
RESIDENTIAL: 5,500 (X5) | 55' X 100'
UNDERGROUND PARKING: 2 FLOORS

Figure 35: Program: Phase 1 Diagram (Source: Author)

Program Description:

MIXED-USE LIVE-WORK BUILDING

100 LIVING SPACES:

SUB TOTAL: 74,000 SF

A. General Description:

This portion of the program will house all the workers of the office in the live-work mixed-use building. These spaces would generally be private in nature. Residents quality of life will be affected by the design of these spaces since they would spend long hours within their apartments. These spaces should be designed with the utmost attention to detail. 50% of all living spaces should be affordable. 20% for low-income, 10% for moderate income, 10% for middle-income, and 10% for seniors. These apartments could either be owned or rented.

B. General Relationships:

It is advised to keep the similar unit types together so that similar family structure would be on the same floors.

101 1 Bedroom Apt

16,000 SF

There will be 20 of this apartment type. The spaces within this apartment includes a single sleeping/living space, a shared bathroom, and two large closets. A small service kitchen area provides for minimal food preparation.

102 2 Bedroom Apt

25,000 SF

There will be 20 of this apartment type. The spaces within this apartment includes two separate sleeping rooms with private closets, coat closet, a shared bathroom, and a small service kitchenette.

103 3 Bedroom Apt

33, 000 SF

There will be 20 of this apartment type. The spaces within this apartment includes three separate sleeping rooms with private closets, coat closet, a shared bathroom, and a kitchen area.

200 COMMUNITY SPACES:

SUB TOTAL: 6,680 SF

A. General Description:

This portion of the program will house all of the community activities of the live-work mixed-use building and also the townhouse community. The general public will be able to visit these spaces once they pay the fee required by each of the program. These building spaces should be secure after closing hours. Special attention should be given to the character of these spaces and keep in mind that they are meant to provide an escape from resident's homes and workers' offices.

B. General Relationships:

The Roof lounge, swimming pool, and garden would be mostly private amenities for the to the office workers and residents of the apartment and townhomes. Access would be granted with the use of an I.D card or fingerprint technology whichever is more economically feasible. They would be located either on the roof of the office building space or the residential building space. The aquarium room, cyber lounge and fitness center would be accessible by the public so it would be located on the ground level of the building. The Lobby/Desk/Waiting area should be the first space encountered by the public when entering the building. The mail-box room should be adjacent to the lobby.

201 Cyber lounge 1,000 SF

This space will be located close to the lobby area and would house about 12 computers for internet browsing and general research by residents and the general public. There should be a table for studying located at the back of the lounge.

202 Fitness Center 1,200 SF

This building space will house Cardiovascular equipment, free and plate-loaded weights, cable-operated weight machines, stretching/warm-up/cool-down spaces and an open space for group exercise classes. This building would be accessible by the public so it should be located close to the lobby. Special attention should be given to providing natural light inside the building.

203 Swimming Pool 700 SF

The pool will be located on the roof of the building. Special access would be required in order to access the pool. Special attention should be given to the structure of the roof especially due to the weight of the pool. Two changing rooms should be located close to the pool area.

204 Roof Lounge 800 SF

The roof lounge is a private lounge for the residents of the mixed-use building and the townhouses. This lounge would contain a pool table, two televisions, a balcony, a bathroom and two large seating areas.

205 Roof garden 500 SF

The roof garden is for the residents of the mixed-use development to grow fresh food for cooking healthy meals in their apartments. The green roof would require special attention in its design and construction.

206 Aquarium Room 1,000 SF

This building space should be located close to the cyber lounge. It will house about 7 Deep Blue Professional 2.3-Gallon 5-Way aquariums. This room would be in a dark setting so special attention should be given so that the aquarium room is located far away from natural light and cool artificial light should be used to provide light for people to view the fishes.

207 Mail-Box Room 200 SF

The mail-box room would house the letters and package for residents. This room should be located very close to the lobby for easy access by the residents.

208 Lobby/Desk/Waiting 200 SF

Visitors will encounter the lobby area upon entry to the residential part of the building. The security/receptionist should have a clear view of the entry and be able to control access to the building. Consideration shall be given for the seating arrangement as visitors would be waiting here so the character of the space should be welcoming. The Lobby will house the telephone, desk, and video monitor screen.

209 Public Toilets 240 SF

There will be two public toilets – one for males and one for females located on the ground level close to the lobby area/ entrance of the building.

210 Storage 600 SF

There will be 3 storage closets for the storing furniture or any old items that would no longer be in use.

211 Resource Room 120 SF

This is a specific storage room for keeping information packets about the building for visitors and also keeping physical files or records of residents in the apartments. There should be shelves that would hold the private files of residents. This room does not need direct sunlight.

212 Rental Office 120 SF

This office will house 2 employees who will give newcomers/visitors information on the cost of renting an apartment. There should two desks and a small waiting of area with about 3 chairs for visitors.

300 OFFICE SPACES: SUBTOTAL: 15,254 SF

A. General Description:

This area of the program will house all the office activities on the workers of the company. This part of the building should be the most accessible to the general public. Staff morale is impacted by the standard of these spaces so they should be design with the utmost attention to detail. Natural light and good ventilation should be provided for these spaces.

B. General Relationships:

This office will be an open plan. The reception should be easily accessible by the public once they gain entry in the building. The core area should be centered and connect to the residential part of the building. The Printer/Fax/Copier, Informal Breakout center, break

rooms, supply centers, work center and file area spaces should be placed evenly on either side of the office spaces so it is accessible by all workers. The open workstations should be located close to the core of the building.

301 Open Large Office

720 SF

There will be 4 open large offices 180 SF each. Each office should have a desk and chair and should be designed to accommodate telecommunication and electrical wires to connect computer monitors, central processing units and other computer accessories.

302 Open Small Office

1,800 SF

There will be 15 open small offices 120 SF each. Each office should have a desk and chair and should be designed to accommodate telecommunication and electrical wires computer monitors, central processing units and other computer accessories.

303 Open Workstations

8,000 SF

There will be 80 open workstations 80 SF each. These workstations would be divided by cubicles and would have desk and chairs for each cubicle. Special attention should be given to the layout of these cubicles to ensure the even distribution of telecommunication and electrical wires to connect computer monitors, central processing units and other computer accessories.

304 Reception Desk

120 SF

A desk should be provided for the receptionist which would enable the ease of answering calls and attending to visitors/clients of the business. The Desk should be situated close to the entry of the building

305 Reception Seating

120 SF

The reception seating area is for visitors/ clients waiting to be attended to by the receptionist or any worker at the office. This area is should be welcoming and relaxing for these guests.

306 Conference Large

600 SF

The large conference room should be located close to the reception area in the center of the building. The large conference room would house a large conference table and a large screen monitor for video conferencing and video calls to clients. This room should be conducive for conducting large staff meetings and other office events.

307 Conference Small

750 SF

There will be 5 Small Conference 150 SF each. This room should be conducive for conducting small staff meetings and brief meetings with clients.

308 Informal Breakout Centers

960 SF

There will be 12 Informal breakout centers 80 SF each. These centers would be used for informal meetings with workers within the company. They should be located at the end of the office.

309 Printer/Copier/Fax Center 240 SF

There should be 3 Printer/Copier/Fax Center 80 SF each. There should be a counter for these equipment.

310 Break Room Service Unit 340 SF

This should contain a small fridge, sink, counter and coffee maker. This room should be centrally located and easily accessible by workers.

311 Information Reference Centers 540 SF

There would be 3 Information Reference Centers 180 SF. These should be located behind the printer/copier/fax center. There should be a counter that would allow workers to post information relating to various group projects.

312 Supply Center 160 SF

There would be 4 Supply Centers 40 SF each. The supply center would house office supplies so it should be designed with shelves to accommodate supplies.

313 Work Center 200 SF

This is a separate area provided for workers would need more space than their cubicles can accommodate. It housed a large table to enable large print-outs to be worked on within the space.

314 File Area 288 SF

There will be 2 File areas 144 SF each. General files of the company are to be stored here. It is a restricted area so it should not be easily accessible.

315 Documents Room 240 SF

This is a restricted room for storing very private documents of clients and the company. It should be very secure.

316 Server Room 176 SF

The server room houses the continuous operation of computer servers. It should be air-conditioned to prevent the computers from overheating. This room should also be in a secure location.

400 BUILDING SUPPORT SPACE: SUB TOTAL: 16,950 SF

A. General Description:

The building support areas of the building should support the proper functioning of the entire office and the residential living area.

B. General Relationships:

These rooms should not obstruct views to the outside or central corridors.

401 Trash/Recycle 200 SF

Provide a room for the disposing of trash and recyclable items.

402 Housekeeping Closet 350 SF

There would be 7 Housekeeping Closets in the building of 50 SF. One of each closet per floor. These would each have a sink and storage space for cleaning equipment.

403 Telecommunications Closet 700 SF

There would be 7 Telecommunications Closets in the building of 100 SF. One of each closet per floor. This closet would house telecommunication network systems and devices.

404 Electrical Closet 700 SF

There would be 7 Electrical Closets in the building of 100 SF. One of each closet per floor. This would house all electrical equipment in the building.

405 Basement Parking 15,000 SF

There would be 2 underground levels of parking of 7,500 SF each to accommodate about 40 cars. These basement parking is private and is to be used by the residents and workers in the live-work community. This would free up on-street parking for customers visiting the office space and home offices/studios.

TOWNHOUSES BUILDINGS AND COMMUNITY

LONER, FAMILY, STARTER AND CREATIVES HOUSE 3,000 SF

500 LIVING SPACES: SUB TOTAL: 1,800 SF

A. General Description:

Each townhouse would have similar design for the living areas. The work areas would be different in form based on the profession being designed for. For example, the Artist House would pay special attention to lighting into the artist studio to prevent direct light from obstructing the work of the artist. These houses are to be designed to separate work and living spaces. The living spaces are to be designed to accommodate a family of 2-4 so it should be conducive for allowing the family to grow. There should be separate entry to both the work area and the living area for the houses. The living spaces should be designed with an open floor plan.

B. General Relationships:

Generally, the more private rooms such as the bedrooms should be located on second and third floor of the house whereas the gathering space such as the kitchen, living room and dining area should be located on a lower level in close proximity to one another.

501 Bedrooms 450 SF

There would be 3 bedrooms in each of the townhouse which should be about 150 SF each. The design should maximize light and air into each bedroom as much as possible. The bedroom would house a bed, two night stands, a closet and a dresser.

502 Kitchen 400 SF

In order to maximize the space within the house. The Kitchen should be designed close to the living space and dining room. There should be a clear view from the kitchen to the living room. The Kitchen would accommodate a fridge, oven, microwave, cooker, sink, counter space and a pantry.

503 Dining Area 250 SF

The dining area should be easily accessible from the kitchen. The dining room would house a table to sit 4-6 people.

504 Living Room 300 SF

The living room would house two medium-sized sofas and a coffee table.

505 Bathroom 240 SF

There would be 2 bathrooms in each townhouse which would be 120 SF each. One of the bathrooms would be more accessible by guests and the other one would be connected to the master bedroom (the largest room in the townhouse).

506 Closet 160 SF

There would be 2 closets in each townhome 80 SF each. One for the storage of cleaning equipment and the other one close the entrance of the house for coats and shoes.

600 WORK AREA: SUB TOTAL: 1,200 SF

A. General Description:

The work areas would be different in form based on the profession being designed for. Each work area would contain space for a desk and chair. The Flex space would be designed based on the need of that particular house. For example: A computer programmer's flex space might require a large T.V Screen to connect his computer to in order to display website design to a client.

B. General Relationships:

601	Desk Area	200 SF
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602 Flex Space 800 SF

603 Storage 200 SF

COMMUNITY SPACES **8,800 SF**

A. General Description:

B. General Relationships:

701	Community Garden	3,000 SF
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702	Public Plaza	4,000 SF
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703 Maker Space 800 SF

704	Café/Coffee Lounge	1,000 SF
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This space would house a small coffee lounge that would provide residents would beverages and pastries. This coffee lounge should sit about 20 people. Different types of chair and seat arrangement should be used by the designer. Keep in mind that the ambiance of this space should be cozy and well-designed to create a relaxing atmosphere for guests and residents alike.

BUILDINGS/SERVICES FOR THE DISTRICT

800 SERVICES:

A. General Description: These services should be provided for the proper functioning of a live-work community. They would ensure the self-sufficiency of the community by provided amenities or services that residents need. These services should be located in close proximity to the live-work community. These services should not be placed more than ½ mile radius from the community to promote walking and cycling to and from these services. The Free Wi-Fi should be placed within the central green public space to promote socializing amongst residents and those living within the community.

B. General Relationships:

In general, these services should be within a block of each other. This would promote the goal of creating a diversified economy and wealth generation within the area. Residents of the live-work community that pay the co-operative fee would have free access to all these services. This would encourage residents to support these businesses in close range of their community. Visitors would have to pay the actual cost of the service being offered by each business.

- 801 School
- 802 Daycare
- 803 Laundromat
- 804 Doctor's Office
- 805 Gym
- 806 Pharmacy
- 807 Free Wi-Fi
- 808 Bike Share
- 809 Car share

Program (5. Structural and mechanical implications)

For a mixed-use building with residential above and office/retail below, the normative primary structure used is a steel frame with a shallow floor system such as a light steel floor joist or an open web steel joist. Walls are braced using light steel C sections or X-bracing using flat strips. H.V.A.C systems would need to run through floors so an open web steel joist would be a good option.

Building Code Analysis (6. Applicable building codes)

For Live-work Townhomes, the applicable building codes is located in section 419 of the International Building Code and it states the following:

Section 419 Live/work units³²

419.1 General. A live/work unit is a dwelling unit or sleeping unit in which a significant portion of the space includes a nonresidential use that is operated by the tenant and shall comply with Sections **419.1** through **419.8**.

Exception: Dwelling or sleeping units that include an office that is less than 10 percent of the area of the dwelling unit shall not be classified as a live/work unit.

419.1.1 Limitations. The following shall apply to all live/work areas:

1. The live/work unit is permitted to be a maximum of 3,000 square feet (279 m²);
2. The nonresidential area is permitted to be a maximum 50 percent of the area of each live/work unit;
3. The nonresidential area function shall be limited to the first or main floor only of the live/work unit; and
4. A maximum of five nonresidential workers or employees are allowed to occupy the nonresidential area at any one time.

³² International Building Code section 419.1

Chapter 4: Site Analysis



Site Description: Background of Site



Figure 36, Aerial Perspective of Innovation Village, West Baltimore, MD (Source: Author using Google Maps as a base)

The site area was selected by the Mount Royal Community Development Corporation (MRCDC) to promote economic development in their community by designating this area as an innovation district. In general, this area has seen a lot of dis-investment over the years with the loss of residents. It is characterized by high vacancy rates, low income residents and low educational attainment (Figure 35). It is located in Central West Baltimore with Baltimore's best concentration of multimodal public transit, richest and most architecturally significant housing stock, surrounded by 4 universities and main commercial corridors spanning from State Center and Baltimore Penn Station (Amtrak / MARC) to Druid Hill Park and Mondawmin Mall.³³

³³ Robinson, Andre. Email message to author: "MRCDC/Innovation Village: Overview" 19 Oct 2016.

Site Demographics

Educational Attainment:

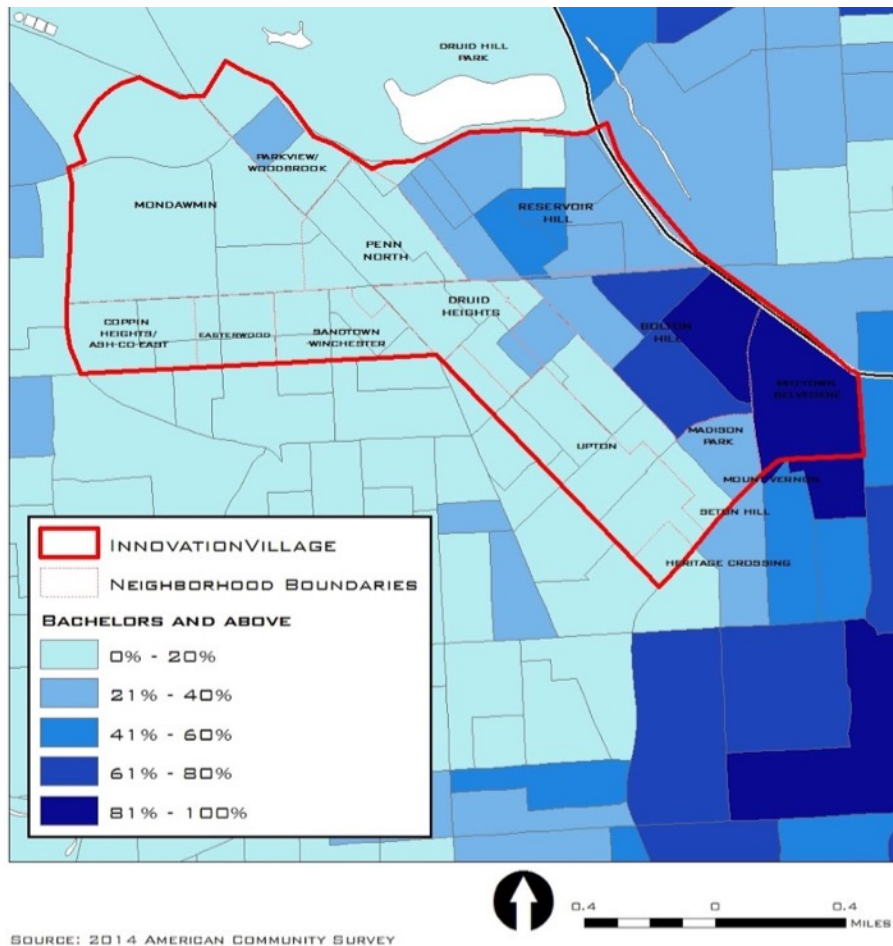


Figure 37, Map of Innovation Village's 2014 Percentage of population with a Bachelor's degree or higher (Source: Author using GIS. Data Source: 2014 American Community Survey)

Although West Baltimore has these and many other distinctions, this nearly 5,000 acre district is also fixed in the public's consciousness as a center of crime, drug sales and addiction, derelict housing, uprising and despair.³⁴

Occupied housing:

³⁴ Robinson, Andre. Email message to author: "MRCDC/Innovation Village: Overview" 19 Oct 2016.

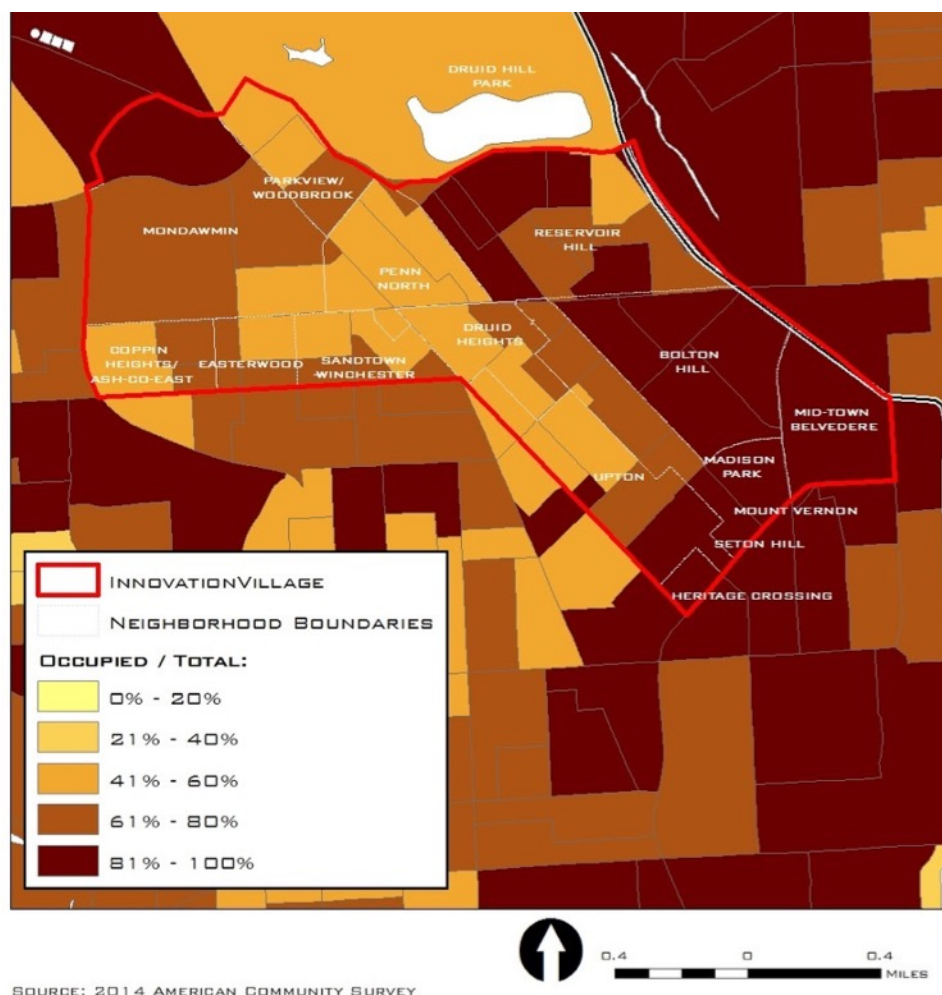


Figure 38, Map of Innovation Village's 2014 Percentage of occupied housing (Source: Author using GIS. Data Source: 2014 American Community Survey)

MRCDC has developed and facilitated a network of relationships and partnerships that seek to revive its immediate and surrounding community by focusing on revitalization through Innovation.³⁵ Innovation Village impacts the rise of its community by engaging powerful leadership in a number of diverse sectors that have been grouped into Learning Teams, Organizing Teams, Governance Teams, and Building Teams.³⁶

³⁵ Robinson, Andre. Email message to author: "MRCDC/Innovation Village: Overview" 19 Oct 2016.

³⁶ Robinson, Andre. Email message to author: "MRCDC/Innovation Village"

The Innovation Village has a lot of old housing stock. Since many of these buildings are vacant (Figure 36), it provides various opportunities for re-investment. Either through master planning and infill development in areas that are still successful.

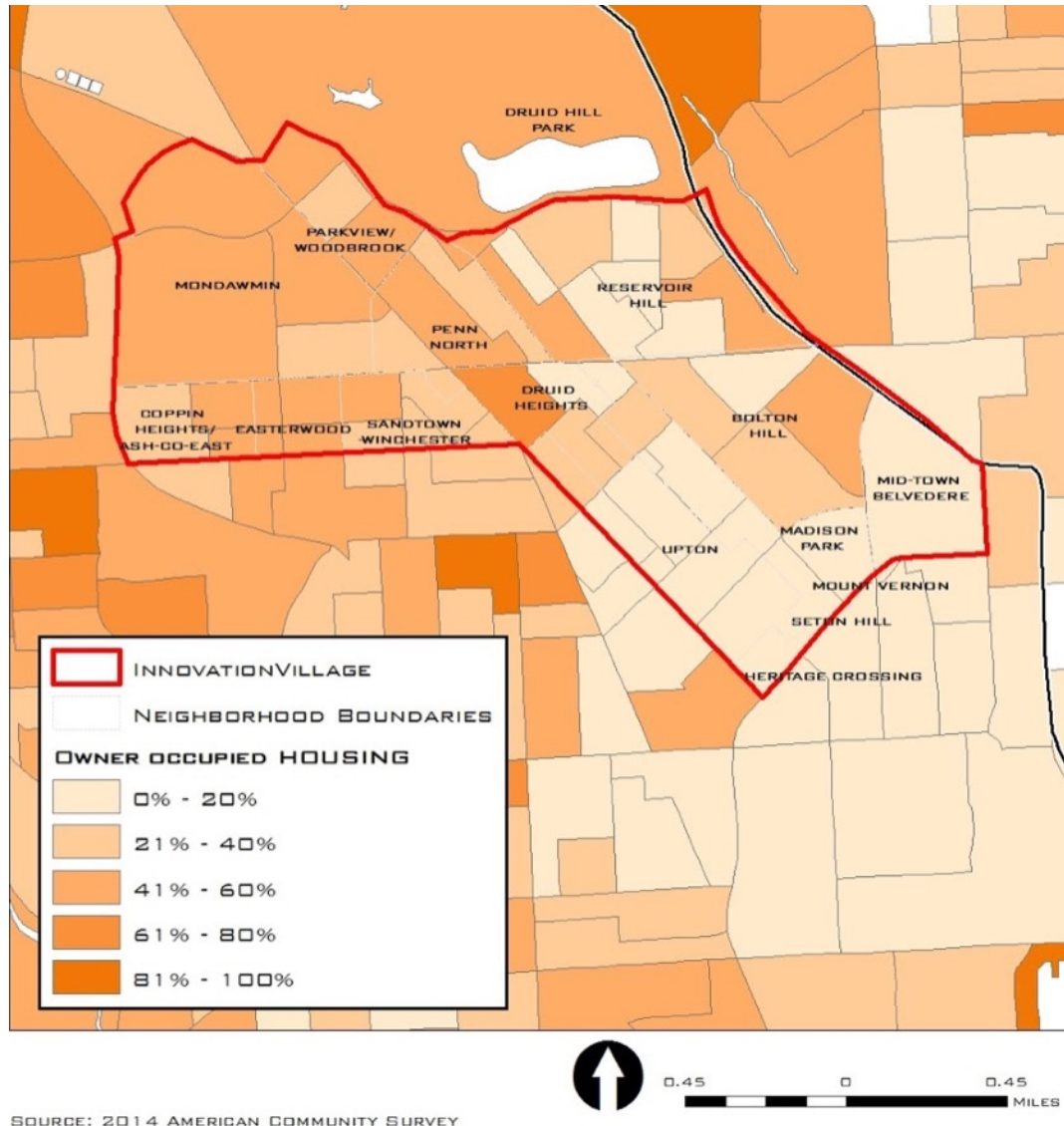


Figure 39, Map of Innovation Village's 2014 Percentage of Owner occupied housing (Source: Author using GIS. Data Source: 2014 American Community Survey)

Site History

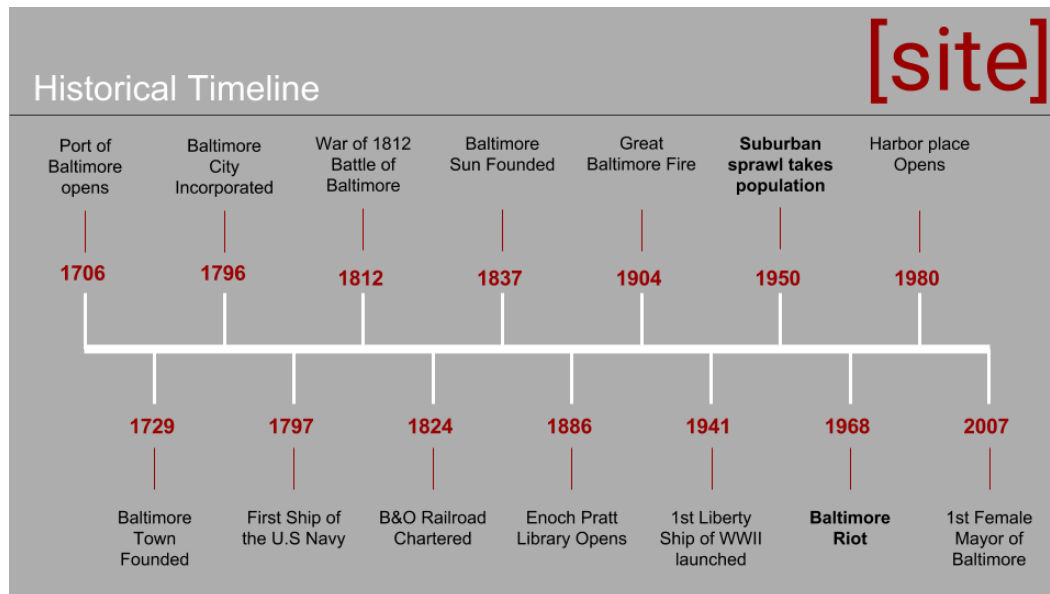


Figure 40, Brief Timeline of Baltimore's history (Source: Author, Information: <http://www.baltimore-maryland.org/history/baltimore-history.html>)

In the 1950, Baltimore as a whole lost most of its population to suburban sprawl and due to the national trend of flight from cities. In 1968 after the assassination of Martin Luther King Jr. in Memphis, Tennessee, there were riots in Baltimore that wiped out much of the downtown district. In Baltimore's most recent history, there were riots in following the police brutality and murder of Freddie Gray, an unarmed black male who appeared to be pulled down from his bicycle and dragged by police.

With the similarities from the civil rights movement and the rise in police brutality against the Black population, the City of Baltimore would benefit from a healing space and a memorial place to recognize those who have fallen and lost their lives as a result of the fight for civil rights for minority populations especially the Black Population. Most importantly, a place to reflect, remember and be inspired by the great Black inventors of the past and their contributions to the growth of America.



Figure 41, Baltimore Riots of April 1968
(Source: <https://genesisbe.com/2015/04/28/april-of-1968-the-baltimore-riots-how-far-has-our-nation-come/>)

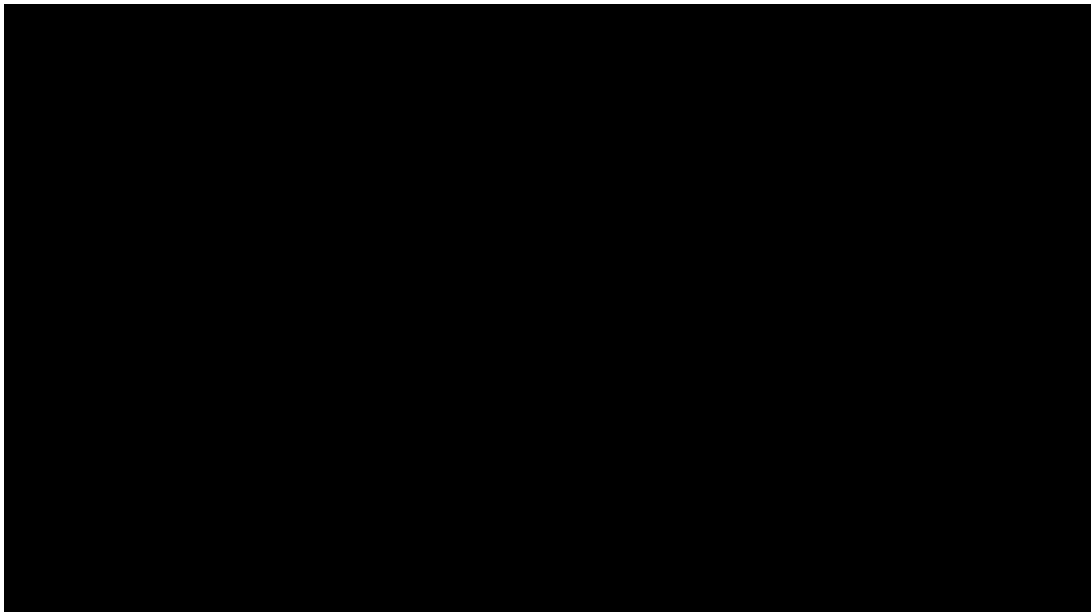


Figure 42, Baltimore Riots of April 2015
(Source: <http://www.cnn.com/2015/04/27/us/baltimore-riots-timeline/>)

Site Selection

In order to select a site to begin the intervention within Innovation Village, analysis was pulled from the characteristics derived from Innovation district. The characteristics analyzed include the following:

1. Clustering of companies
2. A large number of start-ups
3. Presence of business incubators
4. Transit accessibility
5. The presence of leading edge anchor institutions and companies
6. Mixed-use housing, office and retail
7. Technically wired
8. Dense, urban and compact area

With this in mind, the following site selection criteria were used:

1. A location that emphasizes connection between two anchor institutions
2. Along North Avenue main street
3. Close proximity to a park
4. Near a metro stop
5. 4 blocks of land



Figure 43, Site selection diagram showing Site options (Source: Author using Google Maps Image as a base)

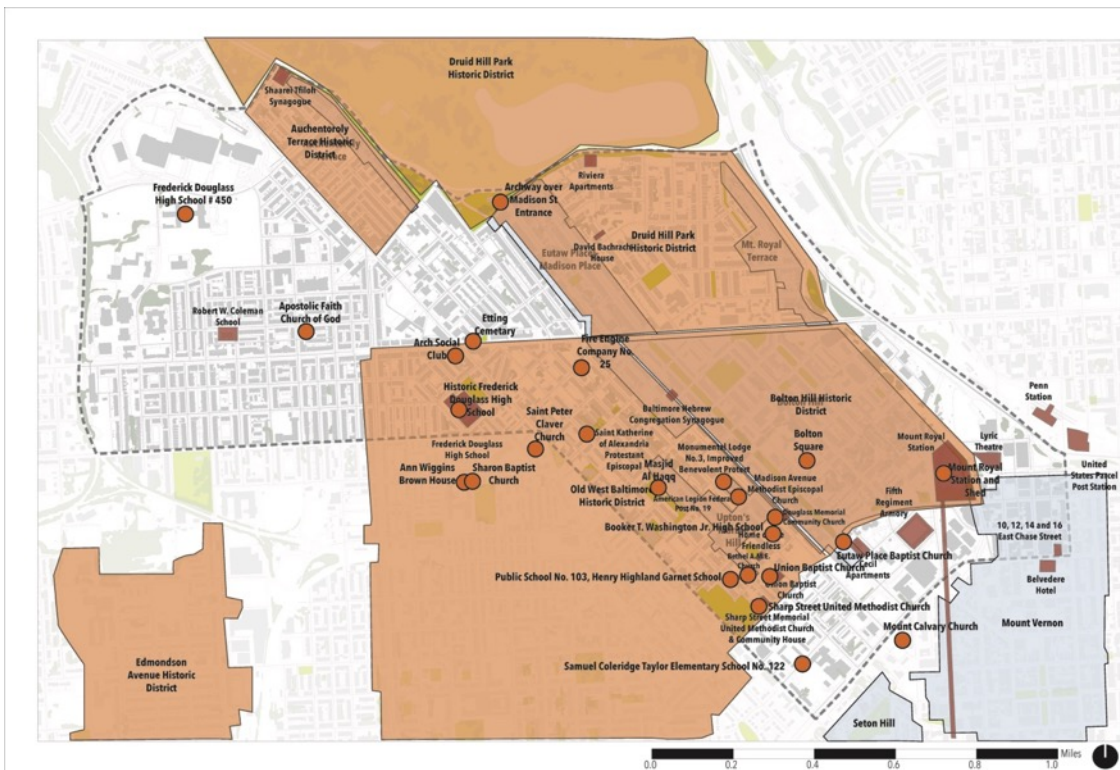


Figure 44, Site Analysis: CHAP and National Register Historic District and Historic Landmarks (Source: Author using information from <http://cityview.baltimorecity.gov/>)

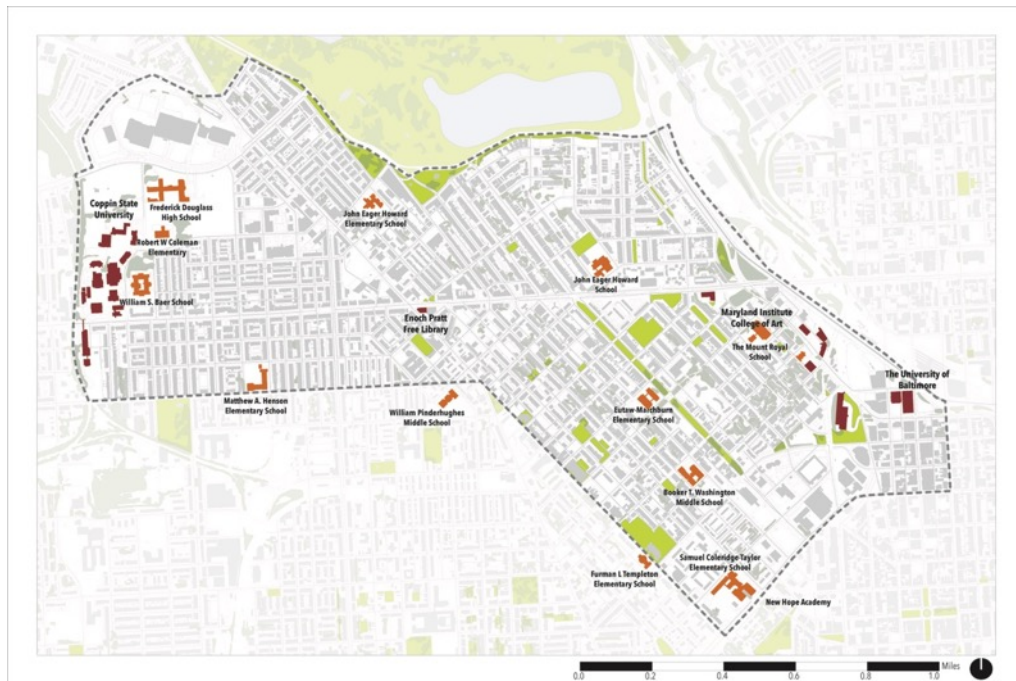


Figure 45, Site Analysis: Educational Institutions and Library (Source: Author using information from <http://cityview.baltimorecity.gov/>)



Figure 46, Site Analysis: Transit Systems (Source: Author using information from <http://cityview.baltimorecity.gov/>)



Figure 47, Site Analysis: Parks and Recreational Facilities (Source: Author using information from <http://cityview.baltimorecity.gov/>)



Figure 48, Aerial perspective of Site (Source: Author using Google Maps Image as a base)

The site analysis of Innovation Village highlighted opportunities to create a technical school in the central part of Innovation Village to strengthen the center (Figure 45). The site chosen had the following built form around it (Figure 48): The Etting cemetery, the Penn north metro stop building, a one-story CVS building, 6-story apartment building and a building used for parking deliver trucks. During a site visit to this area on a Saturday afternoon, the plaza in front of the CVS building and also the plaza in front of the Penn North Metro Stop building (Figure 49) had many people waiting and hanging around the area. People interacted while waiting for the bus and many people were seen waiting in front of Etting Cemetery (Figure 50) and close to the North and Woodbrook Park (Figure 47 & Figure 48). The Site had two historic landmarks: the Etting Cemetery, and the Arch Social Club Building. The Façade of the Arch Social Club Building (Figure 51) was recently restored to its original design making it an attraction around this site area.



Figure 49, Site Image of Penn North Center Metro station building and 6-story apartment building (Source: Google Maps Image)



Figure 50, Site Image of Etting Cemetery and 6-story apartment building (Source: Google Maps Image)



Figure 51, Site Image of Arch Social Club and Enoch Pratt Free Library - Pennsylvania Branch (Source: Google Maps Image)



Figure 52, Site Image of Historic Building (Source: Google Maps Image)



Figure 53, Site Image of CVS Building, 6-story apartment building and Penn North Metro Station building (Source: Google Maps Image)



Figure 54, Site Image of CVS Building, Enoch Pratt Free Library - Pennsylvania Branch
(Source: Google Maps Image)



Figure 55, Existing Site Plan of Innovation Village (Source: Author)

Chapter 5: Design Strategies

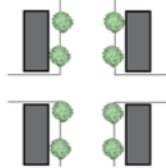
In order to promote and revitalize the Innovation Village area, the following strategies were employed:

- Creating public green spaces such as pocket parks and plazas
- Enhancing the street edge along North Avenue
- Using Infill development to promote growth and increase housing
- Developing a Central Gateway that will activate the central part of Innovation Village

1. Public Parks & Plaza



2. Good Street Edge



3. Infill Development



4. Central Gateway

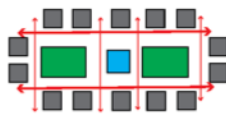


Figure 56, Strategies diagram (Source: Author)

Chapter 6: Master Planning

These strategies were phased in the master planning of Innovation Village.

Phase 1: Place-making



Figure 57, Phase 1 Site Plan (Source: Author)

Phase 2: Building an Innovative Community



Figure 58, Phase 2 Site Plan (Source: Author)

Phase 3: In-fill Development



Figure 59, Phase 3 Site Plan (Source: Author)

Phase 4: Building iSchool for Food and Technology

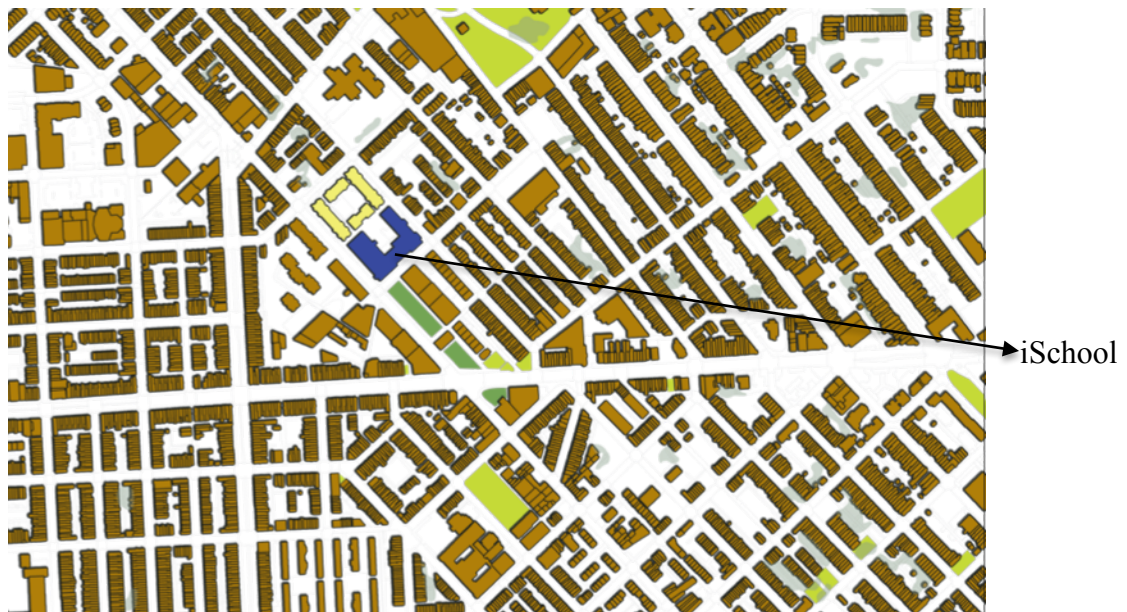


Figure 60, Phase 4 Site Plan (Source: Author)

Phase 5: Filling in Missing links using with Housing and pocket parks



Figure 61, Phase 5 Site Plan (Source: Author)

Overall Master Plan of Innovation Village



Figure 62, Overall Master Plan of Innovation Village (Source: Author)

Chapter 7: Penn Central

Phase 1 and 2 were explored in more detail with the design of the Penn Central Area.

Several schemes were explored in the Penn Central area

Scheme 1: Central Green

This scheme looked at creating a green space as the center of the new development to great space that people could gather and engage.

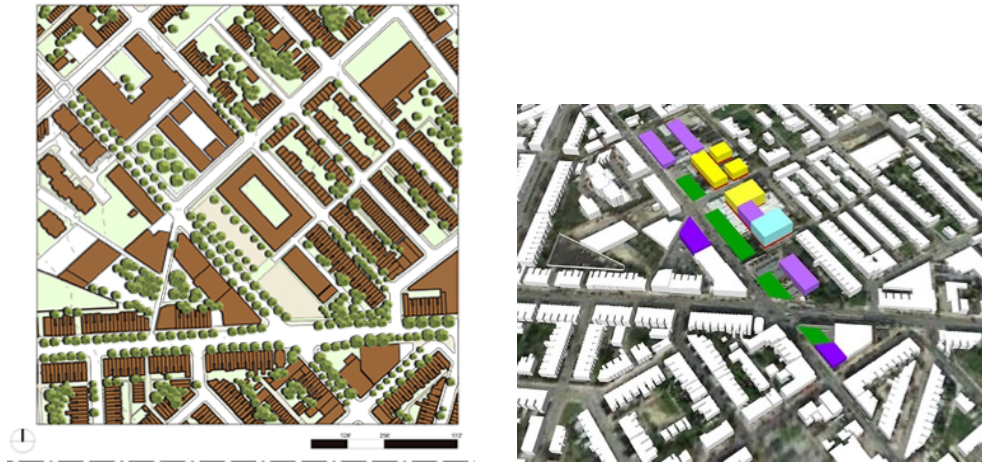


Figure 63, Site Plan and Perspective of Scheme 1: Central Green (Source: Author)

Scheme 2: Central Square

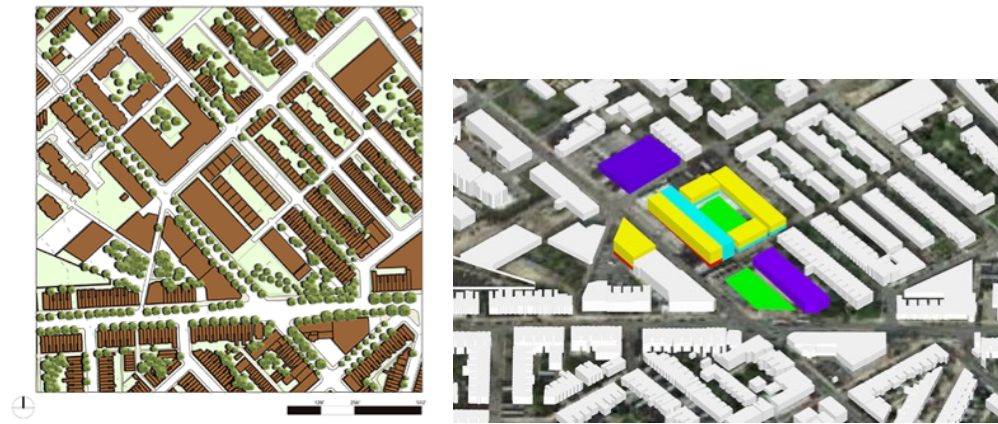


Figure 64, Site Plan and Perspective of Scheme 2: Central Square (Source: Author)

Scheme 3: Central Axis

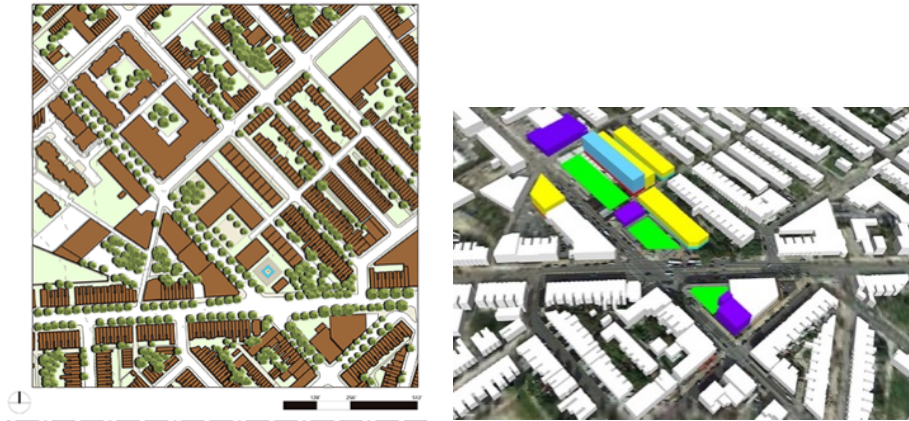


Figure 65, Site Plan and Perspective of Scheme 3: Central Axis (Source: Author)

The Penn central Scheme 3: Central Axis was explored in more detail with the emphasis on the axial visually connection between the Innovation center, the new library and the iSchool. The Plazas in front of the Innovation Center and the plaza behind it was programmed with activities that provided opportunities for a person to exercise their body, engage their mind and socialize with members of the community. The overall Penn central scheme provides a promising vision for the central part of Innovation Village to allow chance encounters to occur and people to share ideas within the Innovation Center. The Innovation Center was designed to create a flexible assembly space where ideas could be presented and shared within the community.

Chapter 8: Plaza Design

The Plazas within these schemes were designed to engaged the whole person; body, mind and spirit.

The Northern part of the plaza in front of the iSchool contains space for exercising and thus engaging the physical body. In this part of the plaza, there are climbing stumps created from recycled trees stumps. The 2 circle spaces are the water circle and the sandbox for younger kids to play in. There is a small running track around the two circle spaces (Figure 66).

The inner plaza would house the collaboration cubes and the innovation stoop. The collaboration cubes are small pavilions powered by solar-powers, have charging plugs and seats inside. This space would allow people to engage their mind by using the collaboration cubes to surf the web or charge their laptops or phones. It becomes another space for people to seat and work outside of the office environment. The Innovation stoop mimics the historic stoops in front of Baltimore row houses. These stoops allow the community to gather and interact with one another. In front of the collaboration cubes are the food trucks and bike boxes. The food trucks would allow residents that are growing food and learning more about healthy eating to share their culinary dishes with the community using the food trucks. The bikes boxes are ways for the younger member of the community to become entrepreneurs and sell food items grown or cooked within the community kitchen in the innovation center to members of their community.

The front plaza has the outdoor dining chairs to connect to the innovation center's café, the outdoor gathering free Wi-Fi space to create an extension of the flexible assembly space within the innovation center and the innovator's memorial to connect to

the historical information gallery within the Innovation center. The Memorial part of the plaza known as Innovator's Memorial would be a place to recognize and remember African American Innovators. Marble pavers with name of discovered innovators would we placed in the Innovator's memorial. At night, it would glow to give light to the plaza. This memorial would inspire the community to persevere in their goals and dreams saying to them that just as those before you were able to achieve such great fates despite extreme circumstances and discrimination, you can also achieve greatness. This part of the plaza would engage one's spirit by allowing them to connect to the past.

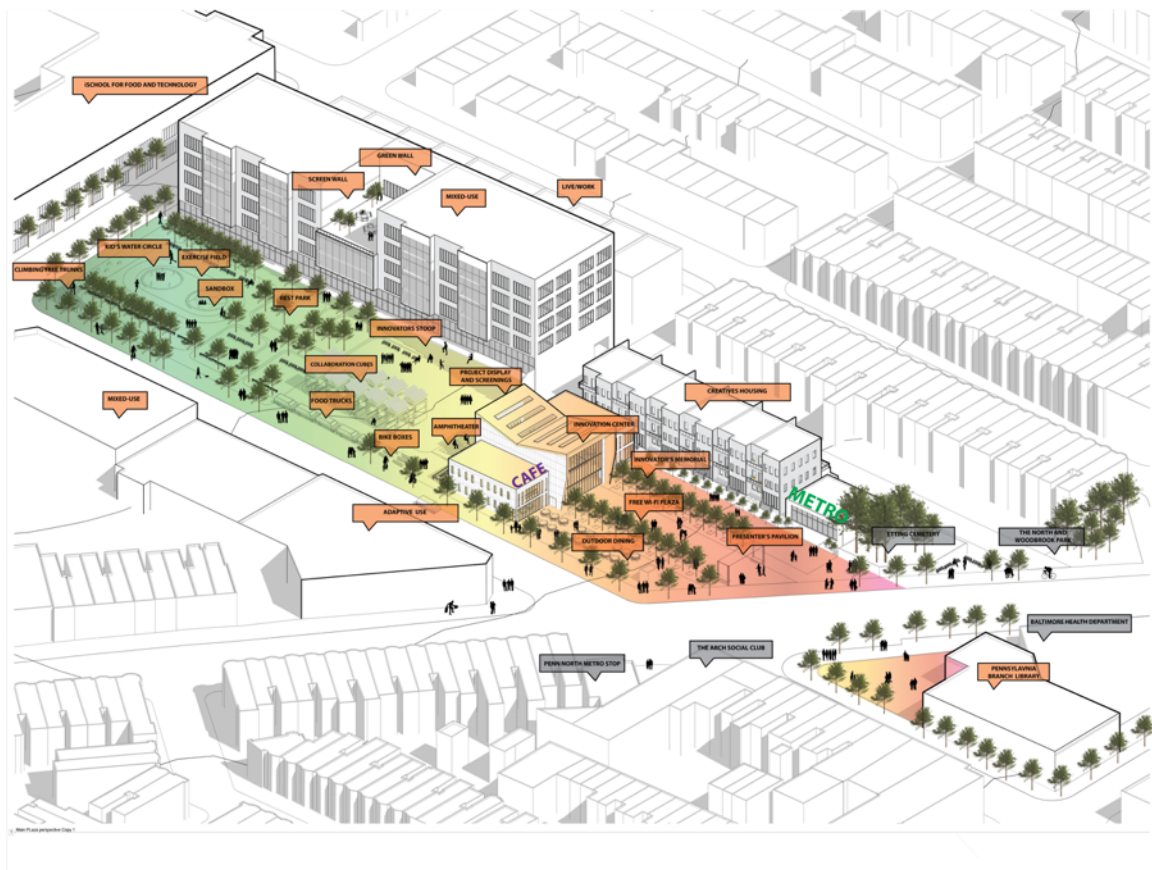


Figure 66, Perspective of Penn Central shows the Innovation Center, plazas, mixed-use building and creatives housing (Source: Author)

Chapter 9: Innovation Center

The Innovation Center is the gathering space for people to exchange ideas and share their ideas. A co-working company such as Conscious Ventures lab could be housed within this building to help as many start-ups launch their businesses through their 4-month accelerator program. This building would be a beacon of hope in the community. The axial visual connection with the library and school would emphasize the idea that as you learn and gain knowledge about your passion in the school and library, come to the innovation center to explore those passions and bring it to reality.

The spaces within the innovation center respond to the exterior spaces on the plazas. The flexible assembly space (Figure 68) extends to the exterior in the front plaza with trees defining that space. The trees have been placed on the same line as the columns on the inside of the innovation center. Thus, creating an extension of the inner flexible assembly space (Figure 70). The Café extends to the exterior with the outdoor dining chairs in front of the café (Figure 69)



Figure 67, Perspective of Innovator's Memorial (Source: Author)



Figure 68, Perspective of Flexible Assembly Space (Source: Author)



Figure 69, Perspective of Innovator Center looking at outdoor dining (Source: Author)



Figure 70, Perspective of Innovator Center's Front Plaza (Source: Author)

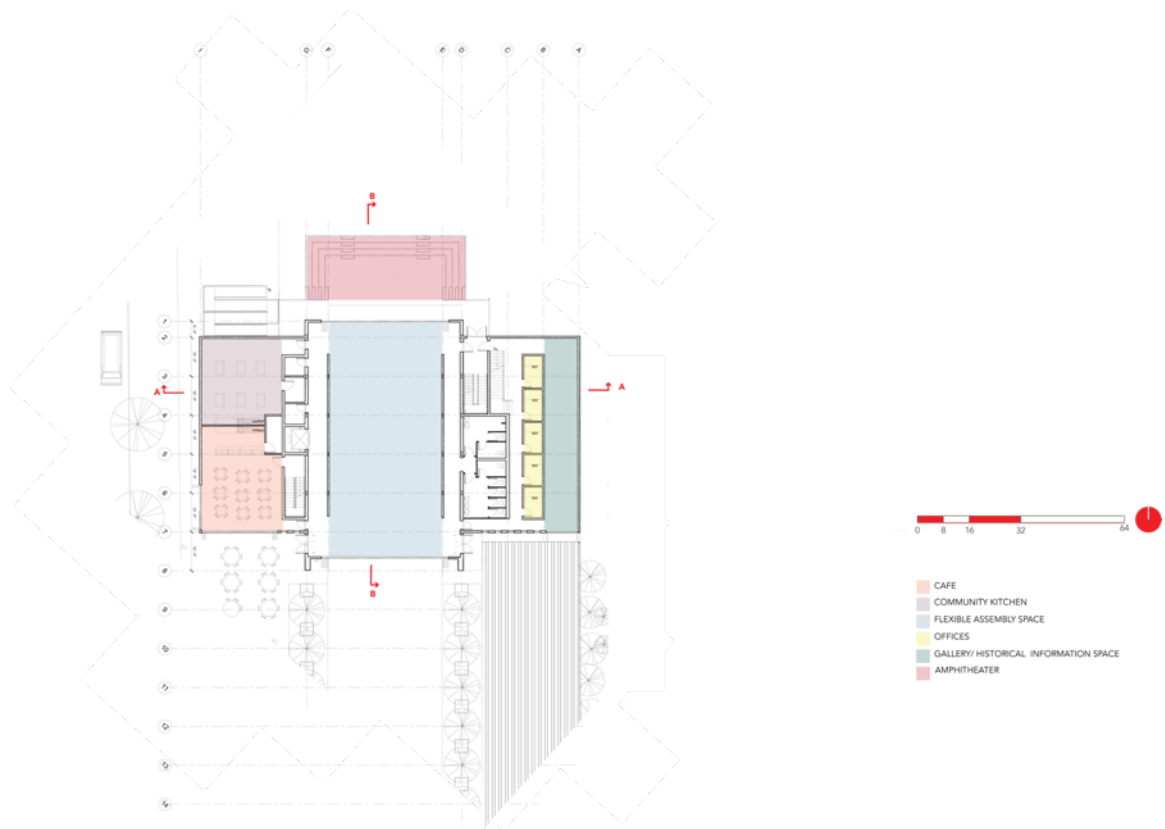


Figure 71, Ground Floor Plan of Innovation Center (Source: Author)

Chapter 10: Conclusion



Figure 72, Thesis Defense Boards

In conclusion, this thesis examined the triality between innovation, living and working, and the history of black people in America. By designing spaces that allow inclusion into innovation district and diversity in the technology fields, opportunities for more people often excluded from these industries to take part and become leaders in these industries would emerge. These places that inspires and create connections just by chance would be the catalyst for change in improvised urban areas.

The design strategies used would be more effective in urban areas that encourage the use of many forms of transportation especially areas that promote a walking and biking. The public plazas would help to foster a strong sense of community and promote community engagement with ideas being generated within one's neighborhood.

These ideas that create community will strengthen the inner cities and would encourage businesses to no longer create silo parks, but rather inclusive, collaborative and engaging communities where everyone can take part in the growth and development of their neighborhood. Innovation is not only developed in silos, but in cities and ideas can be better improved when many minds can give feedback and engage in the design process.

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