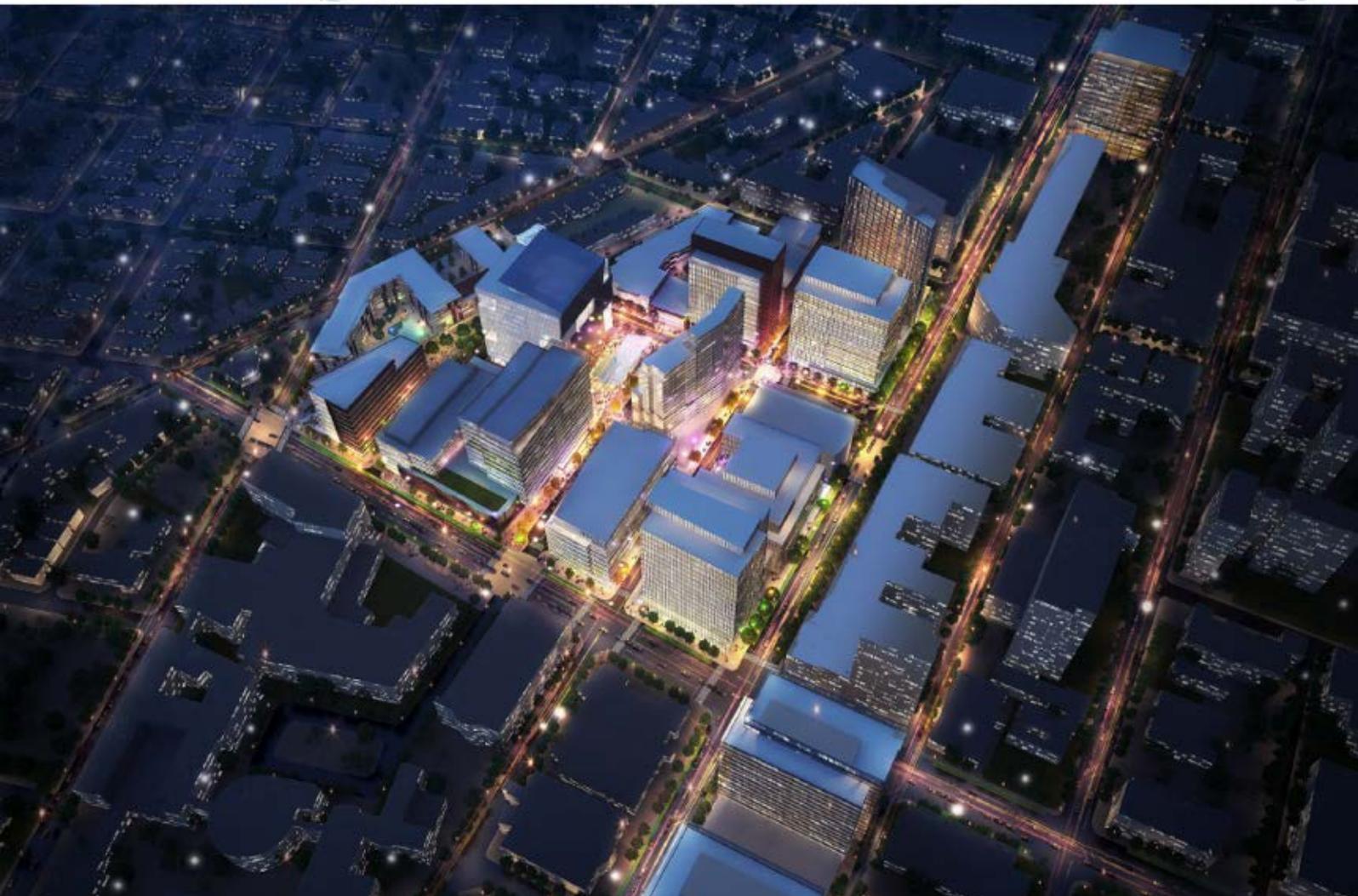


University City Science Center

A unique business incubation model to enhance technology-based economic development

Philadelphia, USA





General Information

Title	University City Science Center										
Pitch	A unique business incubation model to enhance technology-based economic development										
Organisation	Science Center										
Country	United States										
Authors	Hacer Tercanli and Arno Meerman (University Industry Innovation Network)										
Nature of interaction	<table><tr><td><input checked="" type="checkbox"/> Collaboration in R&D</td><td><input type="checkbox"/> Lifelong learning</td></tr><tr><td><input checked="" type="checkbox"/> Commercialisation of R&D results</td><td><input type="checkbox"/> Joint curriculum design and delivery</td></tr><tr><td><input type="checkbox"/> Mobility of staff</td><td><input type="checkbox"/> Mobility of students</td></tr><tr><td><input checked="" type="checkbox"/> Academic entrepreneurship</td><td><input type="checkbox"/> Student entrepreneurship</td></tr><tr><td><input type="checkbox"/> Governance</td><td><input checked="" type="checkbox"/> Shared resources</td></tr></table>	<input checked="" type="checkbox"/> Collaboration in R&D	<input type="checkbox"/> Lifelong learning	<input checked="" type="checkbox"/> Commercialisation of R&D results	<input type="checkbox"/> Joint curriculum design and delivery	<input type="checkbox"/> Mobility of staff	<input type="checkbox"/> Mobility of students	<input checked="" type="checkbox"/> Academic entrepreneurship	<input type="checkbox"/> Student entrepreneurship	<input type="checkbox"/> Governance	<input checked="" type="checkbox"/> Shared resources
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Summary	<p>The Science Center, established in 1963, is the oldest urban research park and one of the pioneers of the business incubation model. The core aim of the Science Center is to facilitate technology-based economic development in the region through helping entrepreneurs, amplifying the commercialisation of research and enriching the innovation ecosystem. The Science Center is supported by more than 30 stakeholders, amongst which some of the leading universities, industry and government stakeholders, which provides a strong regional support for its activities. Through its business incubation services, the Quorum (the entrepreneur's clubhouse) and its connections to capital it has brought forward more than 500 companies which account for €12b in economic output per annum which is 2.2% of the region's total.</p>										



Introduction & Overview

1. BACKGROUND

Established in 1963 and headquartered in West Philadelphia, PA, the University City Science Center (Science Center) is not only considered to be the first and the oldest urban research park in the United States, but is also presented as one of the pioneers of the business incubator model. The non-profit organisation is located adjacent to the campuses of University of Pennsylvania¹ and Drexel University² as part of an urban renewal zone assigned in the 1950s. Since then, the Science Center has grown considerably to include fifteen buildings on a 70,000m² campus, evolving from the **urban transformation project into an innovation intermediary to fuel the region's innovation-based economy**. The Science Center is in the midst of an expansion, adding nearly 400,000m² of office, lab, residential and retail over the next 10-15 years. Together the Science Center's legacy campus and the expansion site are now known as uCity Square³. The Science Center name refers to the non-profit's work as a tech-based economic development organisation.

Over the past 54 years, **the organisation has catalysed innovation, entrepreneurship, and research commercialisation from the idea stage to the IPO, and beyond**. Since its inception, 442 companies mainly in the life sciences, health IT, and emerging technologies have benefited from the Science Center's business incubation services, with 214 of them still active. The impact of the 155 businesses based in Philadelphia that have 'graduated' from the Science Center was reported to have reached nearly \$13b (€12b) in annual economic activity in the Greater Philadelphia in the year of 2015, an amount that accounts for 2.2% of the region's total economic output. To add, these businesses directly employ 12,000 people in the high-skilled and high-wage category, with an average salary of \$103,000 (€95,000) which is nearly double the region's median annual wage of \$52,000 (€48,000).



The regional stakeholder approach is one of the elements that makes the Science Center unique, with its 31 shareholders from colleges, universities, hospitals, and research institutions across Pennsylvania, New Jersey, and Delaware. There are currently approximately 60 business incubator companies operating at the Science Center from a range of fields, from healthcare to green tech.

The Science Center has also recently partnered with Microsoft, SeventySix Capital and Wexford Science + Technology to open a Microsoft Reactor at uCity Square⁴. This is the third Microsoft Reactor in the U.S. and it offers the community access to programmes and tools such as Microsoft CityNext, Microsoft Surface Pro, and Microsoft's mixed reality system, the HoloLens. The Science Center and Microsoft have also formed a Strategic Digital Alliance to collaboratively focus on digital literacy, small business and entrepreneurship, health and wellness, and youth engagement with STEM subjects.

2. OBJECTIVES AND MOTIVATIONS

Built around the core mission of the Science Center, to facilitate 'technology-based economic development' in the region, the strategic plan of the institution is identified under the following three categories:

- ▶ **helping entrepreneurs, start-ups and growing and established companies** throughout Greater Philadelphia as they move technology into the marketplace, where it can benefit the region and the world;
- ▶ **amplifying and accelerating the commercialisation** of some of the
- ▶ nation's most important research;
- ▶ **providing a platform for cultivating and enriching the innovation ecosystem** in Greater Philadelphia through its dynamic portfolio of support services and office and lab space for scientists, entrepreneurs and start-ups.

3. STAKEHOLDERS

The Science Center brings together 31 shareholders⁵ from colleges, universities, and research institutions across the three states of Pennsylvania, New Jersey, and Delaware. The range of stakeholders that expand further beyond the Greater Philadelphia Region allows the impact of Science Center activities to reach a much wider community.

With regards to the development of this interregional stakeholder group, there were five educational and medical organisations – the University of Pennsylvania, Drexel University, the Philadelphia College of Pharmacy and Science, Presbyterian Hospital, and Temple University – that joined forces to file articles of incorporation for the Science Center in 1963. The following year, six additional hospitals and universities joined the community.

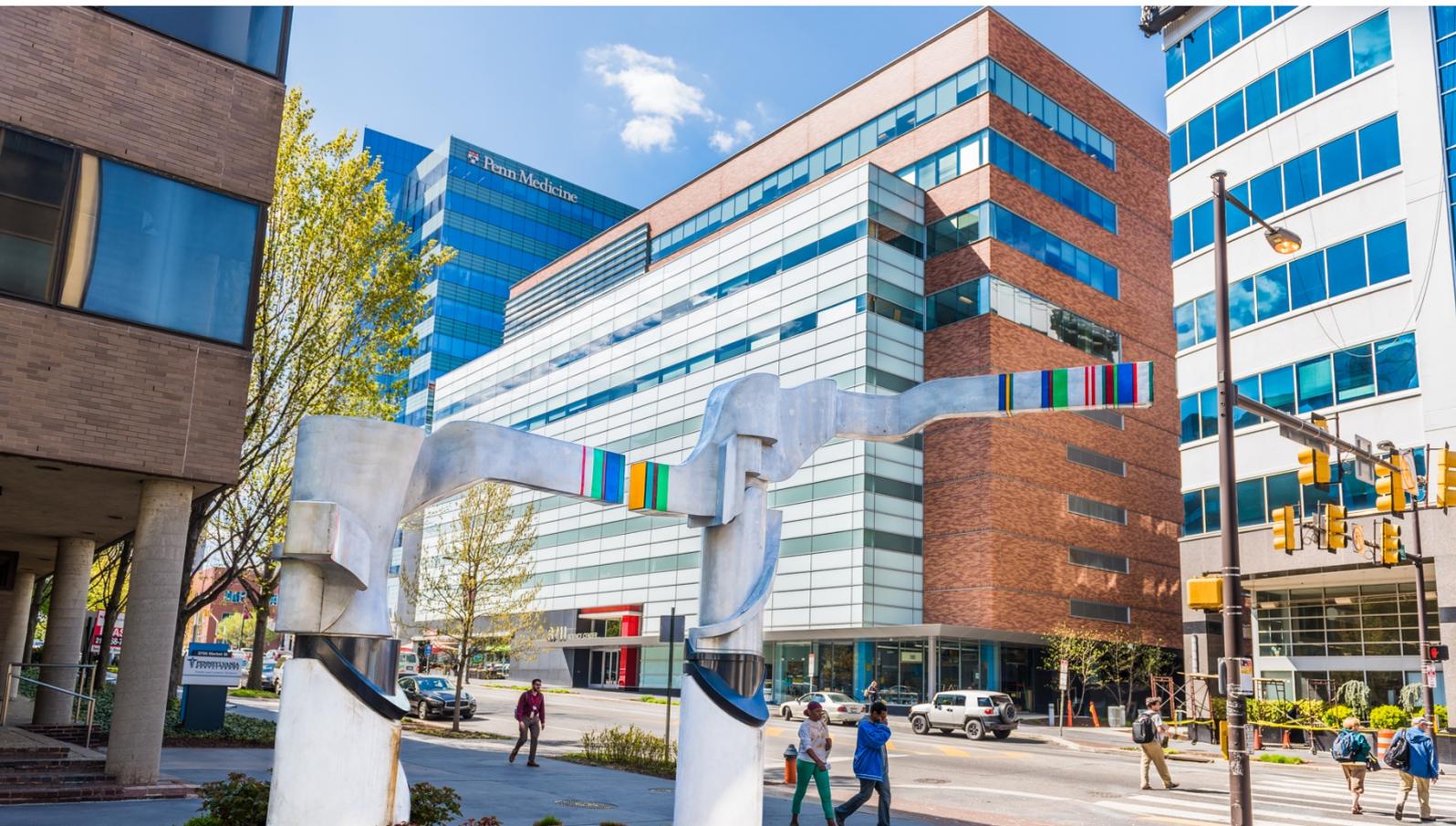
In addition to the diverse range of shareholders, the Science Center works with a wide network of non-profit partners, community groups, and donors which together contribute to the dynamic synergy that surrounds the Science Center ecosystem⁶.

Regional Economic Development Partners are the non-profit partners sharing the Science Center mission of technology-based economic development in the region. Some of the partner institutes include The Chamber of Commerce for Greater Philadelphia, New Jersey Technology Council, Philly Start-up Leaders, Life Sciences Pennsylvania, and University City District.

Participants in the Science Center's Commercialisation and Incubation Programmes include the hundreds of scientists, entrepreneurs, start-ups and established companies that are participating in the QED Proof of Concept Programme⁷, Phase 1 Ventures⁸, the Port Business Incubator⁹, the Innovation Center @3401¹⁰, and the Digital Health Accelerator¹¹ (*see the Activities section for further information on these initiatives*). This diverse group focuses on the future of healthcare, advanced materials, health IT, and other information technologies.

Donors are organisations and individuals that offer funds to the Science Center in the form of sponsorships and donations to maximise the impact of the programme activities. Some of the 2015-2016 initiatives and events that received support include *Nucleus 2016*, a networking event for business and civic leaders, entrepreneurs, innovators; the Innovators Walk of Fame; and the 2015 launch of *Innovation Plaza*¹², a 'pocket park' where members of the diverse local community come together to relax and socialise, and find inspiration for new ideas.

uCity Square's community is composed of incubator residents and established life science and tech companies, medical offices, research organisations, and restaurants that together employ more than 8,500 people.





Implementation

4. INPUTS

The Science Center receives both financial as well as physical input. With the urban development plans and real estate management both playing key roles in the sustainability of the Science Center.

Financial input secured for Science Center activities is derived from three sources: real estate assets, public support, and private funding.

- ▶ **Management of real estate assets** results in an annual cash flow of roughly \$5m (€4,6m). The long-standing cooperation between Science Center and Wexford Science + Technology has particularly boosted the investments made in the generation of new office and lab area and physical facilities to be used as rental space for new businesses and start-ups that will locate themselves in the premises.
- ▶ **Public support** refers to the grant funding from all levels of government – local, state and federal - with the sum going to development of new public spaces and investments in programmes. In addition, participants of the Science Center’s programmes also raise public funding, such as Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) grants, to support their R&D and product development.
- ▶ **Private funding** is the support received from foundations, i.e. William Penn Foundation, as well as companies, to be invested in programme activities, such as Quorum or business incubators.

With regards to the physical input, **urban development** played a key role in the success of the Science Center. The Science Center acquired ‘Unit 3’, its first property, from the government authorities to start its research, property development, and programme activities over 50 years ago. In the 1960s, the Science Center was granted one of the five units in the West Philadelphia region as redeveloper as part of a project implemented by West Philadelphia Corporation, and the Philadelphia Redevelopment Authority, with the remaining units allocated to the University of Pennsylvania and Drexel University¹³. Government-supported research projects assigned to the organisation from the very moment of its inception enabled Science Center to begin constructing its first entirely new building.

There are **currently 15 buildings in the Science Center Campus** reserved for office, lab, retail and residential purposes. Joining forces with Wexford Science + Technology, the Science Center is further expanding its physical campus - rebranded as *uCity Square* - which encompasses a total of more than 100,000m². Together with Wexford, the Science Center will **add nearly 400,000m² of office, lab, residential and retail** to expand the existing mixed-use community where businesses meet talent, research, and urban amenities. The 10-15 year growth plan will do justice to its status as ‘**Philadelphia’s innovation corridor**’¹⁴.

5. ACTIVITIES

Science Center activities can be clustered around the five missions the organisation has identified for itself: business incubation, connections to capital, community building, education and workforce development, and infrastructure for development.

Business Incubation

Business incubation services offered by Science Center primarily aim to help new start-ups to survive the ‘valley of death’, the period of negative cash flow until first revenues are made. Recognising the challenge both tech-start-ups and the companies in the life science fields experience in securing finances, finding the right talent, and scaling their businesses, Science Center provides two major incubation services for emerging ventures: the Port Business Incubator and the Innovation Center @ 3401 (ic@3401), plus two complementary community initiatives: Global Soft Landing and Regional Affinity Incubation Network.

- ▶ Established in 2000, the **Port Business Incubator** supports entrepreneurs with turnkey office and lab space, community programming and networking opportunities, as well as access to the specific resources they need to scale up. Approximately 30 companies are in residence at the Port at any time.
- ▶ **ic@3401**, launched in collaboration with Drexel University, complements the activities of the Port, by hosting 30 additional tech start-ups in a co-working environment. Both incubators connect innovators to the resources they need, as well as providing them a platform to grow to benefit from the economic development in the region.
- ▶ **Global Soft Landing**, started in 2006 as part of the incubator, aims to help international companies establish a presence in the U.S. market. The Science Center is one of approximately 30 organisations around the world to earn a Soft Landing designation from the International Business Innovation Association (inBIA)¹⁵.
- ▶ **Regional Affinity Incubation Network (RAIN)** is a community of over 70 organisations that explores ways to make the start-up and innovation economy in the tristate region more vibrant, connected and accessible. The network convenes each July for an annual RAIN Conference in Quorum, **the Science Center’s clubhouse for entrepreneurs**.

Connections to Capital

It is among the core missions of the Science Center to help entrepreneurs and researchers obtain access to capital through partnerships with universities, hospitals, and investors, and guide them through the commercialisation process via targeted programmes. The programmes particularly designed to achieve these goals are the QED Proof-of-Concept programme, Phase 1 Ventures (P1V), and the Digital Health Accelerator (DHA), each fulfilling a complementary role to bridge the gap between research and innovations with commercial potential.

- ▶ **The QED Proof-of-Concept** programme provides business development support for academic researchers developing early-stage life science and healthcare IT

technologies. Since its launch in 2009, more than 100 faculty led projects have received mentorship from industry experts through the programme.

- ▶ **Phase 1 Ventures (P1V)** works with “long-horizon” intellectual property including pharmaceuticals, biotech, healthcare, medtech, materials and energy. The programme leverages the Science Center’s network of experienced entrepreneurs along with corporate and product-development professionals to strategically contribute expertise to the commercialisation process.
- ▶ **The Digital Health Accelerator (DHA)** supports companies ready to transition from research and development to sales. The programme selects promising companies from around the world and provides them with funding, collaborative workspace, professional mentorship, and introductions to key healthcare stakeholders and investors in the Greater Philadelphia region.
- ▶ **The University City Keystone Innovation Zone (KIZ)** provides tax credits to early-stage tech and life sciences companies. With a pool of up to \$15 (€13.8) million in tax credits available to eligible companies annually, the KIZ tax credit programme significantly contributes to the ability of eligible young companies to transition through the stages of growth.

Community Building

The Science Center facilitates a thriving entrepreneurial community in the Greater Philadelphia area to nurture innovation, by bringing together stakeholders from diverse sectors of the innovation ecosystem, i.e. researchers, academic administrators, entrepreneurs, public and private investors at a central gathering space.

Quorum - ‘the entrepreneur’s clubhouse’

This is where the members of the region’s entrepreneurial ecosystem come together to learn, share, and generate new ideas. Every year the space attracts more than 8,500 people who want to benefit from the offerings:

- ▶ Quorum Co-working Lounge, a free informal co-working spot with Wi-Fi, plugs, and whiteboards that is unique to Philadelphia;
- ▶ Quorum Signature Programmes, designed to connect entrepreneurs to investors, some of which include:
 - Coffee & Capital, the monthly programme that matches entrepreneurs to investors in an informal environment, for Q&A sessions over coffee and small breakfast.
 - Entrepreneur in Quorum, over the course of a year, two seasoned entrepreneurs host monthly open office hours in Quorum for the start-up community.
 - Lunch for Hungry Minds, a monthly seminar on regional academic research in a range of fields.
 - Office Hours, a monthly programme featuring a different advisor who meets one-on-one with entrepreneurs, answering their questions and offering targeted advice.

- Reporter in Residence, a monthly drop-in session where entrepreneurs can meet with a news reporter for media advice.
 - Smart Talk, a quarterly series that illustrates best practices and business strategies via panel discussions and individual presentations by seasoned entrepreneurs and funders.
- ▶ Events, workshops, conferences, and receptions in a 4,500 square-foot event space

Education and Workforce Development

One of the core missions of the Science Center is building future workforce specialised in STEM fields. This mission is pursued through educational initiatives of the organisation that target young minds.

FirstHand is a unique programme launched by the Science Center to engage students in the STEM disciplines of Science, Technology, Engineering and Math, combined with Arts (STEAM), through hands-on projects and real-life lab experience. Programme participants find the opportunity to work together with scientists and researchers at Science Center companies, as well as receiving mentorship from professionals and being exposed to different career fields.

FirstHand Lab is a dedicated lab space designed as a safe and innovative environment for students to experiment and participate in hands-on projects. The lab, which is based in the midst of an incubator facility, is equipped with lab benches, sinks and cold storage, laptop stations, a laser cutter, drill press, whiteboards, and projectors.

Serving local youth from under-resourced schools, and the teachers and professionals from their communities is seen critical to engage students with the STEM subjects and promote opportunity in the region in the long term.

Infrastructure for Innovation

With nearly 250,000m² lab and office space on its 70,000m² legacy campus, the Science Center offers the physical assets that allow innovation clusters to flourish, and fuel transformation of the neighbourhood. Joining forces with Wexford Science + Technology, the organisation aims to expand up to 400,000m² area with 10 new buildings to further leverage the existing innovation ecosystem. Together, the 100,000m² site is called uCity Square. This expansion is predicted to have an enhanced level of impact. Future companies settling in uCity Square will have a number of options to choose from, and existing firms will find an opportunity to find new places to connect to the ecosystem.

Investments in the infrastructure not only influence the performance and impact of the companies, but also have the power to instigate a culture of innovation and change in the local community. Some of the examples include (i) the uCity Square community gathering spot **Innovation Plaza**¹⁶, and the **Innovators Walk of Fame**¹⁷ integrated into the plaza to celebrate the contribution of visionaries, and (ii) **Esther Klein Gallery** (EKG) which aims to have a positive impact in the cultural life of West Philadelphia and the broader community using creative arts as a platform to explore the relationships between art, science and technology.¹⁸

6. OUTPUTS

Since its inception in 1963, the Science Center has produced a significant number of outputs that have considerably shaped the social life and the economy in the region. Overall, 442 life sciences, health, IT, and emerging technology firms have benefited from the services of the Science Center over more than 50 years. Currently 214 of these companies are still active, with 155 located in the greater Philadelphia region¹⁹. Looking individually at each of the activity clusters in the previous section, as of 2016,

▶ **Business incubation** initiatives

- Port and ic@3401 incubators support approximately 60 companies from across the world who participate in the incubation programmes, support services, programming, and networking
- RAIN has attracted more than 850 leaders in the entrepreneurial and innovation community since its establishment in 2009. It currently has over 70 organisations that support the innovation economy
- Global Soft Landing Programme has hosted about 50 international companies from approximately 14 countries since 2006.

▶ **Connections to capital** initiatives

- The QED Proof-of-Concept programme partners with 21 regional academic institutions to support commercialisation efforts of their faculty-led technologies. More than 400 faculty members from these institutions have submitted over 500 proposals to the programme. Out of these, over 100 proposals have been selected to participate in the programme to receive business development support. Since 2009 \$5.45m (€5m) has been granted to 31 participating projects resulting in nine licensing deals and formation of six start-ups.
- Phase 1 Ventures (P1V) has helped to launch 18 new companies during 2015 and 2016. The programme has provided approximately \$1.5m (€1.4m) in seed funding – often the first capital for these companies, which have gone on to secure more than \$2m (€1.8m) in outside capital from public and private sources.
- The Digital Health Accelerator (DHA) has helped thirteen companies to grow out of prototype stage to commercialisation. Participants have cumulatively secured \$40m (€36.9m) in product sales and investment and created 160 jobs in the first two years of the programme.
- The University City KIZ initiative has facilitated almost \$8m (€7.4m) of tax credits being awarded to 48 University City KIZ companies since 2006.

▶ **Community building**

- Quorum attracts more than 8,500 people every year who want to benefit from the programme offerings
- The programme has recruited 15 non-profit organisations in Pennsylvania, New Jersey, and Delaware as strategic partners who support the initiative's mission in innovation, entrepreneurship and tech-based economic development

▶ **Workforce development**

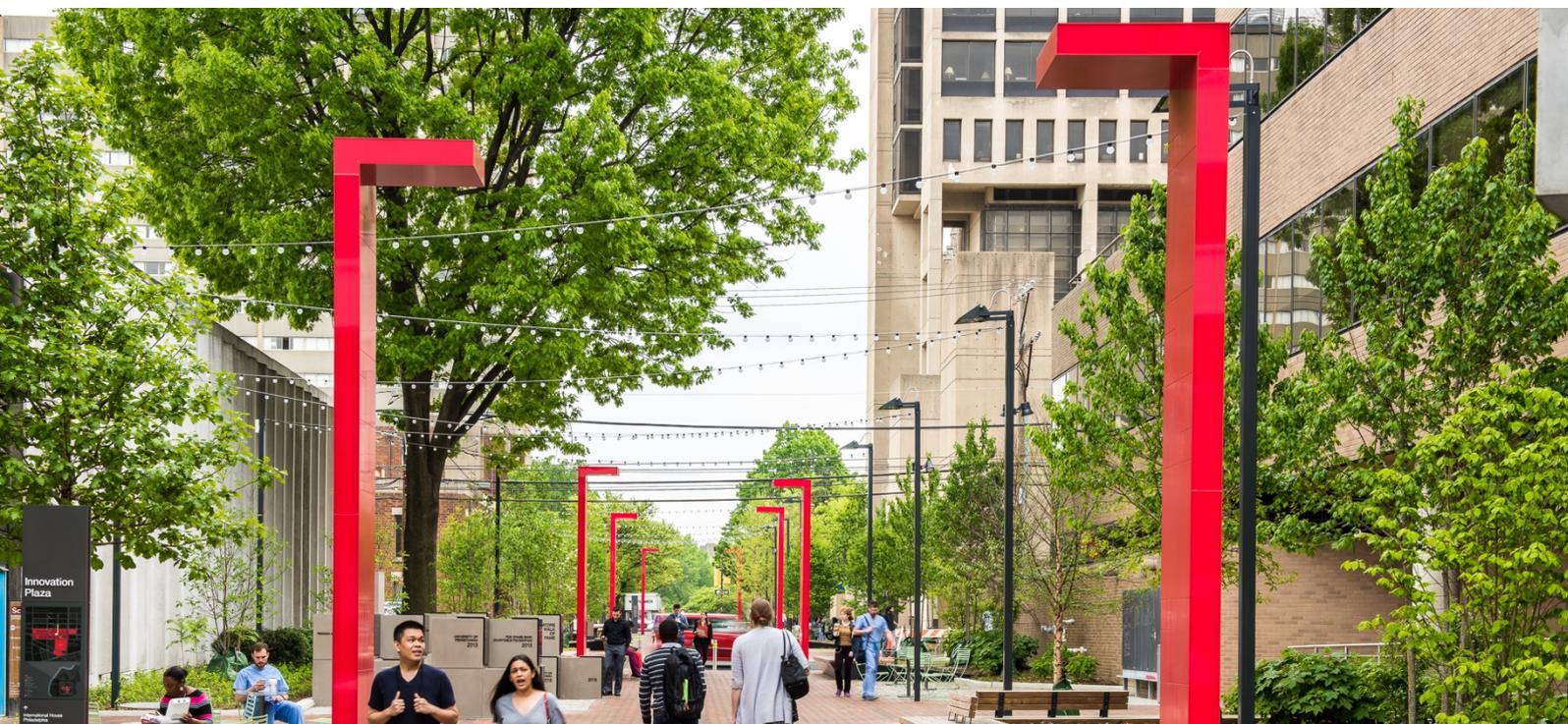
- In 2016, the FirstHand programme hosted 187 educators who participated in 1,205 hours of FirstHand workshops
- 31 professional scientists from 15 Science Center companies mentored students in their company labs.
- 581 students participated in FirstHand programmes for 2,700+ hours of engagement.
- ▶ Infrastructure
 - The Science Center has been operating on a 70,000m² campus with nearly 200,000m² lab and office space. It is now in the midst of a 40,000m² expansion that will add nearly 400,000m² of office, lab, residential and retail.

7. IMPACTS

The June 2016 report²⁰ “The University City Science Center: An Economic Catalyst for Greater Philadelphia” prepared jointly by the Science Center and the Economy League of Greater Philadelphia and Econsult Solutions Inc. reports that Science Center incubators helped to drive nearly **\$13b** (€12b) in annual economic activity in the Greater Philadelphia in the year 2105, an amount that accounts for **2.2%** of the region’s total economic output.

The data used in the analysis included the information of firms that have received Science Center incubation services, as well as those that received benefits from being located at the Science Center before the launch of the Port business incubator in 2000.

The Science Center has provided incubation services to 442 firms since it was established in 1963, 214 of which are still in business today²¹. The **155 firms** in the Greater Philadelphia area that have benefited from Science Center business incubation services directly employ **12,000 people**. According to the report, there are **40,313 jobs** - just over 1% of the region’s workforce - that are directly or indirectly supported by the 155 firms in 11 counties. Moreover, the jobs at firms incubated at the Science Center are in high-skilled and high-wage category with an average salary of **\$103,000** (€95,000), which is nearly double the region’s median annual wage of \$52,000 (€48,000). Each year these jobs pay **\$3.7b** (€3.4b) in salaries.





Support & Influencing factors

8. SUPPORTING MECHANISMS

The Science Center has its roots in the urban development project with extensive financial and physical infrastructure support provided by the local and federal governments, as well as other funding agencies. This strong top-down investment and the continuing financial support made by the public agencies as well as by all levels of the government offices set a solid base for the future activities of the organisation.

9. BARRIERS AND DRIVERS

The Science Center was designed to be both regional and collaborative. In this respect, the **stakeholder approach and regional outlook** adopted by the Science Center are identified as the two underlying philosophies that drive the success of the organisation.

The stakeholders include the Science Center's 31 shareholders as well as universities, research institutions, industry professionals, researchers and entrepreneurs from a diverse range of sectors. The Science Center serves as a **convener and a catalyst** helping these constituents become an integral part of the thriving economy in the region. On the other hand, it is not a unidirectional relationship; the **stakeholders and shareholders are actively engaged** in Science Center activities as well towards achievement of the organisational goals. With regards to the regional outlook, it is clearly put forward that while the centre is physically located in the University City District, it has a **regional orientation with a focus on the Greater Philadelphia Region** which allows the Science Center to capitalise on a broader range of assets.

10. FUTURE CHALLENGES

Two main challenges have been expressed by the organisation: funding, and alignment with stakeholder interest.

Funding

The organisation has to calculate on how to manage funding to be invested in a higher number of activities. Diversification of revenue streams is one of the strategies they implement to ensure sufficient funds for the new projects.

Stakeholder interest

Partially a challenge, which could also be considered an opportunity for the Science Center to push itself to grow further, is the number of stakeholders involved with the organisation whose interests and motivations change throughout time. Given that the cooperation with the 31 stakeholders has been carried forward over 50 years, it is due to the abilities of the Science Center to adapt, evolve and develop an understanding of what stakeholders need to

remain relevant. Challenges arise not only because the organisation has to adjust itself to the stakeholder needs, but also manage a smooth communication among them to maintain the cooperation dynamics.

11. CONTEXT

It is the Greater Philadelphia region, the University City Philadelphia, and the West Philadelphia neighbourhood that have contributed to the distinct character of the Science Centre, which led to it being the powerhouse in the region's innovation economy. In order to understand the rationale and motivations behind the mission of the centre, it is important to look deeper into the context that made the Science Center to what it is today.

Started in the West Philadelphia neighbourhood "Unit 3" in the 1950s, the Philadelphia Redevelopment Authority (PRA) urban renewal project marked the conception of the Science Center with the prospects of it becoming a catalyst for the economic, cultural, and academic progress in the University City. West Philadelphia Corporation, described as the 'institutional coalition' made up of the University of Pennsylvania, Drexel Institute of Technology, Philadelphia College of Pharmacy and Science, Presbyterian Hospital, and Philadelphia College of Osteopathy²², cooperated with the PRA in the redevelopment of the properties, as well as dedicating human and financial capital to the University City infrastructure, recreation, and cultural development initiatives to turn the city into an attractive spot for scientists and scholars who will be recruited to the Science Center.

While the financial and physical investments were in place to start off the centre's activities, there existed challenges to be tackled. The University City planners opted for the urban city centre as the ideal location to establish the Science Center in 1963 to benefit from the amenities of the city to attract high-tech industries. However, this also meant demolitions and displacement of the working poor local residents in the area, inevitably leading to hot debates in racial politics and organised demonstrations from the students and locals. Adding to the tensions with the community, Science Center was under pressure from the PRA to construct buildings regardless of their function. This forced the centre to direct its focus on real estate operations to offer space to organisations in efforts to meet the financial obligations towards the PRA²³.

After gaining financial stability in the 1970s and a push by the 1990s' reviving economy, the Science Center started to flourish as an engine of economic development in the region. By the 2000s it became a hub for entrepreneurs launching businesses in the areas, i.e. life sciences, clean tech, IT, bioinformatics, and nanotechnology, accompanied by the construction of new office spaces, labs, and other physical facilities that host new initiatives developed by the organisation. Campus development is still one of the priorities of the Science Center, in cooperation with Wexford Science + Technology, as well as community development, and education and workforce development particularly targeted to the disadvantaged communities in West Philadelphia.

When the context of University City is considered, the Science Center innovation district adheres to one of the most common five models, the 'Anchor Plus', where "large scale mixed-use development is centred around major anchor institutions and a rich base of related firms, entrepreneurs and spin-off companies involved in the commercialisation of innovation"²⁴, which, in our present case, is the University of Pennsylvania, Drexel University and the University City Science Center that represent the major anchor institutions to pull together the resources and drive the change in the region.

In the wider context, it is the U.S. Economic Development Administration that has been co-funding the advancement of the Greater Philadelphia Region through economic development projects and programmes, among which are a job development centre, the World Class Greater Philadelphia initiative led by the Economy League of Greater Philadelphia²⁵, and the Science Center projects QED Proof-of-Concept and Quorum programmes.

12. KEY SUCCESS FACTORS

There are three key success factors that ensure the success of the Science Center over time:

1. A broad **regional base** and ability to adjust to changing external circumstances

The Science Center has embedded itself in the region, its **proximity** to some of the key knowledge institutions in the area has resulted in taking up a central role in the Greater Philadelphia area.

2. The ability of the organisation and its staff to **adapt and evolve** to remain relevant

Having the support of more than 31 key stakeholders provides the organisation with a strong base, however also means catering to a wide variety of changing needs. The ability of the Science Center and its staff to understand those needs and being able to adjust to the change in circumstances with their stakeholders but also society in general have enabled it to stay ahead of the game.

3. A **diverse revenue stream and partial financial independency**

The diversification in the revenue stream of the Science Center and its ownership of a large number of physical space allowed has led to positive returns. Its ability to re-invest and continuously expand on its facilities and bringing in new partnerships (e.g. Microsoft) make the organisation less depend on single stakeholders and provide **autonomy**.





Further Information

13. MONITORING AND EVALUATION

The Science Center identifies two layers of monitoring tools to assess their organisational activities: broad and organisational monitoring indicators.

Broad indicators pertain to the five-year strategy goals that engage in stakeholders, the region, and the rest of the world. These indicators define annual objectives that will be achieved each year. On the other hand, individual indicators are designed based on the goals of the particular programmes, i.e. a project on job creation using the indicators of number of programme attendants, and rates of employment. Additional indicators target priority groups and activities to tap into talent, i.e.

- ▶ Provision of development opportunities for minorities and women
- ▶ Connectivity of local, underserved communities
- ▶ Early education
- ▶ Workforce development

14. SUSTAINABILITY MEASURES

The Science Center has, over the course of its more than 50 years' existence, proven its sustainability. Through the diversity in revenue streams, the independency towards single stakeholders and its unique ability to adapt to changing circumstances the Science Centre has gone through numerous changes ensuring continuous growth.



15. TRANSFERABILITY

The Science Center ecosystem model is described as largely unique, for the diversity of its stakeholders, including a number of local and regional HEIs with very distinct needs and interests. However, the stakeholder approach and the regional development outlook of the model are emphasised as transferrable elements that could be replicated in different country contexts.

16. AWARDS AND RECOGNITION

The Science Center has been granted multiple awards for its contributions in the development of the greater Philadelphia area. Some of the latest accomplishments are:

- ▶ in 2016, the Science Center's Digital Health Accelerator was named the Most Promising TBED [technology-based economic development] Initiative by SSTI;
- ▶ (<https://www.sciencecenter.org/news/science-center-s-digital-health-accelerator-named-most-promising-tbed-initiative>)
- ▶ in 2016, the Science Center was the Visionary Award Winner at the Greater Philadelphia Chamber of Commerce 23rd Annual Excellence Awards
- ▶ (<http://chamberphl.com/upcoming-events/151012.html>)
- ▶ in 2014, 3737 Market Street opened with LEED Gold certification. It is the first health care building in Pennsylvania to have a chilled beam system - an advanced convection HVAC system designed to heat or cool large buildings.
- ▶ <https://www.sciencecenter.org/news/press-release-wexford-science-technology-and-university-city-science-center-announce-that-anchor-tenant-penn-medicine-university-city-is-expanding-to-two-additional-floors-at-new-3737-science-build>
- ▶ in 2011, 2013, and 2016 the International Business Innovation Association designated the Business Incubator Port as an **iNBIA Soft Landings International Incubator**
- ▶ In 2009, the Science Center included a new building, 3711 Market, which is **LEED** certified at the silver level and features one of the largest green roofs in Philadelphia.

17. PUBLICATIONS AND ARTICLES

(2016) University City Science Center: An Economic Catalyst for Greater Philadelphia: <http://economyleague.org/uploads/files/58297327680929710-university-city-science-center-an-economic-catalyst-for-greater-philadelphia-june-2016.pdf>

(2016) University Science Center Annual review: <http://ucscreview.org/boosting-science-center-impact.html>

(2015) Delaware valley Regional Planning Commission Annual Review: <http://idrum.us/reports/15053.pdf>

18. LINKS

Science Centre Website: <https://www.sciencecenter.org/>

19. CONTACT PERSONS



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20. REFERENCES

- ¹ <http://www.upenn.edu/>
- ² <http://drexel.edu/>
- ³ <http://ucitysquare.com/>
- ⁴ <http://www.ucscreview.org/creating-ucity-square.html>
- ⁵ <https://www.sciencecenter.org/our-community/shareholders>
- ⁶ <https://www.sciencecenter.org/our-community>
- ⁷ <https://www.sciencecenter.org/discover/qed>
- ⁸ <https://www.sciencecenter.org/discover/phase-1-ventures>
- ⁹ <https://www.sciencecenter.org/discover/port-business-incubator>
- ¹⁰ <http://www.ic3401.org/>
- ¹¹ <https://www.sciencecenter.org/discover/digital-health-accelerator>
- ¹² <https://www.sciencecenter.org/discover/innovation-plaza>
- ¹³ <http://www.archives.upenn.edu/img/misc/ucitymap.html>
- ¹⁴ <https://www.sciencecenter.org/uploads/attachments/ciq11ozvx000gqylquqat9z1c-sciencecenter-presskit-6-21-16.pdf>
- ¹⁵ <https://inbia.org/>
- ¹⁶ <https://technical.ly/philly/2015/12/08/science-center-innovation-plaza/>
- ¹⁷ <https://www.sciencecenter.org/discover/innovators-walk-of-fame>
- ¹⁸ <http://estherkleingallery.tumblr.com/>
- ¹⁹ <http://economyleague.org/uploads/files/58297327680929710-university-city-science-center-an-economic-catalyst-for-greater-philadelphia-june-2016.pdf>
- ²⁰ <https://aurp.memberclicks.net/assets/PDFs/science-center-economy-league-report-spreads.pdf>
- ²¹ <http://economyleague.org/uploads/files/991387262636638312-university-city-science-center-impact-summary-june-2016.pdf>
- ²² <https://library.temple.edu/scrc/west-philadelphia-corporation>
- ²³ <http://philadelphiaencyclopedia.org/archive/university-city-science-center/>
- ²⁴ <https://www.brookings.edu/essay/rise-of-innovation-districts/>
- ²⁵ <http://economyleague.org/>