Innovation Park@Rutgers
New Brunswick – Livingston Campus

Executive Summary

Collaborate • Innovate • Transform
Innovation Park@Rutgers is an Initiative of Rutgers, The State University of New Jersey
Project Leadership provided by the Rutgers Office of Research and Economic Development

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Cover photo: The newly revitalized Livingston Campus at Rutgers University—New Brunswick, future home of Innovation Park@Rutgers

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Introduction

Rutgers University seeks to develop a research park, referred to as Innovation Park@Rutgers (“Innovation Park” or “Park”), which will be located in the heart of the Rutgers–New Brunswick campus. The Park will create and support an innovation ecosystem, catalyzing integrative research; nurturing the creation of breakthrough commercial applications; promoting industry-academic collaborations; and serving as an economic development catalyst for New Jersey. Innovation Park will provide industry tenants with state-of-the-art facilities, equipment, programs, and amenities, as well as direct access to Rutgers’ expert faculty and talented students. This report outlines the vision and plans for the Park.

An initiative of the Rutgers Office of Research and Economic Development (ORED), the Park is designed to be at the forefront of Rutgers’ efforts to catalyze university-industry-government collaborations that will translate into economic growth and community benefits. Innovation Park will create and support a broad innovation ecosystem that will solidify Rutgers’ position of leadership in the new knowledge economy and serve as a national model for technology-led economic development. Innovation Park will produce a multitude of benefits for the university, industry, and the state, by creating “communities of innovation” that promote research collaborations, technology transfer and commercialization, job creation and public-private partnerships.

This plan for Innovation Park was developed with input and guidance provided by a broad representation of internal university stakeholders and external stakeholders, including industry and community leaders, and public and state economic development officials. Innovation Park will leverage and build upon Rutgers’ research strengths, particularly those that have robust synergies, linkages and applicability to key industry clusters in New Jersey, and the strongest potential for interdisciplinary collaborations.

Innovation Park will also complement Rutgers’ core values as identified in the university’s 2014 Strategic Plan. It will be a critical asset in shaping “tomorrow’s university” through expanding research capabilities, catalyzing multi-disciplinary exchange, and providing experiential learning and employment opportunities. The Park will be wholly unique, offering space, programs and resources that do not currently exist in one location anywhere in the state.

In 2015, Rutgers ORED engaged U3 Advisors to develop a business plan and implementation strategy for the project to ensure that the planning for Innovation Park was as comprehensive as possible. U3 Advisors’ analyses built upon an extensive assessment of the Park concept undertaken by Battelle Technology Partnership Practice for ORED in 2012.

In conducting the study, U3 Advisors worked closely with a team of experts at Rutgers (Rutgers Team) who brought strong institutional knowledge in university facilities and infrastructure, programming, specialized equipment and services, and academic expertise.
The Park will be based on a service-centric model and will feature programmatic elements that provide a range of resources to support collaborative innovation.

Rutgers’ Value Proposition

Rutgers’ human capital, facilities, resources and connections will be appealing to potential partners and tenants of the Park. The university was recently recognized as one of the 100 most innovative in the world. It is highly regarded for its research output, with over $700 million in research expenditures in 2015, 300 research centers and institutes and 3,100 patents and applications under management. Renowned scholars and inventors on campus can provide tenants with direct access to some of the world’s brightest minds. Rutgers’ students are among the nation’s best, with SAT scores that exceed the national average and more Fulbright Scholars than nearly every other research university in the U.S. In addition, Rutgers’ students will have the opportunity to work and study at Innovation Park, providing business executives with a steady stream of talent.

In 2012, the largest higher education merger in U.S. academic history occurred when legislation mandating the integration of most of the University of Medicine and Dentistry of New Jersey (UMDNJ) into Rutgers University was signed into law. As a result, on July 1, 2013, Rutgers Biomedical and Health Sciences (RBHS) was formed as a major new health care education, research, and clinical division at Rutgers. RBHS serves as an umbrella for legacy UMDNJ schools and clinical units and several pre-existing Rutgers units with key health-related missions. The formation of RBHS provides tremendous opportunities for collaboration in the health sciences that previously did not exist.

Rutgers will leverage its size and diversity to turn the Park into a distinctive place – an innovation ecosystem in the center of Rutgers’ main campus, located within the heart of the Northeast corridor. The Park will support open and collaborative innovation by providing physical infrastructure and programmatic elements that incentivize knowledge sharing and partnership among diverse actors.

The university’s vast resources will be made available to Park tenants. These include:

- Specialized equipment such as Caliburn, one of the nation’s most powerful supercomputers
- Training and education – Courses and programs can be tailored to meet the specific needs of an individual company
- Services to support business formation and growth, such as assistance with product development and manufacturing
- Social and recreational opportunities, including access to Rutgers’ sporting and cultural events

Innovation Park also presents an opportunity to fill an acute need in the local market for smaller and midsized wet lab space, shared and flexible lab space, in addition to state-of-the-art facilities tailored to an evolving life sciences and tech market that do not currently exist.

Programs at Innovation Park will include:

- Advanced Computing
- Business Development
- Community Investment
- Corporate Engagement
- Entrepreneurship Support
- Food Innovation
- Global Partnerships
- Integrative Research
- Sustainability
- Tech Commercialization
- Translational Science
- Workforce Development
Rutgers Research Strengths

Building upon the analysis undertaken by Battelle in 2012, U3 Advisors worked closely with the Rutgers Team and an Internal Advisory Board to identify research strengths at the university that have the greatest potential applicability to commercial users. These areas of strength are generally interdisciplinary and can broadly be summarized as follows:

- Advanced computing
- IT, telecom, and cyber security
- Food innovation
- Advanced materials and manufacturing
- Medical devices and biomaterials
- Health sciences
- Energy storage, generation, and efficiency
- Logistics and supply chain management
- Chemistry/cosmetics/personal care

Refining this list, the Rutgers advisory groups, together with ORED and U3 Advisors, confirmed that advanced computing and food innovation are well developed programs, with existing industry partners who may be recruited to locate at the Park. They have the strongest potential for further development as programmatic anchors for Phase One of the Park.

Proposed Phase One Development

Considering the university’s research strengths and local industry needs, U3 Advisors recommends that Phase One of the Park include three buildings (in priority order):

**Advanced Research Computing Facility** – 45,000 SF of high performance computing and data infrastructure, classrooms, offices, meeting rooms and interactive space.

**Needs being addressed:** Advanced computing infrastructure and expertise are critical resources that impact the productivity of industry, security of data, and the ability of researchers to understand and develop solutions to complex challenges. Investment in these resources is crucial to ensuring the resiliency and strength of New Jersey’s economy, as well as the competitiveness of Rutgers’ researchers.

**Food Innovation Center** – 60,000 SF of food manufacturing, commercialization and collaboration space, research labs, and a research and development kitchen.

**Needs being addressed:** Since 2001, more than 2,000 entrepreneurs and companies have sought Rutgers’ expertise in food science, engaging with the university via its existing Food Innovation Centers located in Piscataway and Bridgeton. These centers offer space, technical support, product manufacturing and process development, food safety training, and other business services. There is tremendous and increasing demand for services at the centers, and both of these existing programs are at capacity.

**Industry Collaboration Building** – 90,000 SF of Class A office and laboratory space, conference rooms, dining and collaboration space.
Needs being addressed: A principal mission of Innovation Park@Rutgers will be to drive innovation, generating the talent and research that can expand technology-related sectors of New Jersey’s economy. In order to achieve the objectives of this mission, partnerships with private industry will be integral to attracting the best talent and to establishing firm links between research and application. The Industry Collaboration Building will be positioned to serve as the hub for these activities.

Each of these buildings will offer space for Rutgers’ uses and external partners. The Advanced Research Computing Facility will house the Advanced Research Computing Initiative Program; the Food Innovation Center will be home to the Food Innovation Program; and the Industry Collaboration Building will be the primary location for various programs such as workforce development. Park tenants, regardless of which building they lease space in, will have access to programs, services, and amenities designed to spur company formation, grow high-potential businesses, and retain and attract talent. The proposed timeline for implementation of Phase One can be found in Table 1.

Table 1. Phase One Implementation Strategy Timeline

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<th>Fall 2021</th>
<th>Spring 2021</th>
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<td>Board of Governors approves Articles of Incorporation and by-laws for new entity. Board appoints Executive Director.</td>
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Economic Impact Assessment

U3 Advisors, in conjunction with BJH Advisors and the Rutgers Team, completed an economic impact analysis of the proposed Phase One development scenario for the Park. The analysis found that the project has potential to generate significant economic impact in the state, estimated at:

- 800+ direct employees (assuming full occupancy) who can potentially produce over $500 million in aggregate increased economic activity
- 1,330 indirect and induced jobs
- Over 200 direct construction jobs
- $12.2 million in tax revenue
Introduction
Chapter 1: Project Overview and Context
Project Overview and Context

I. Background

Innovation Park@Rutgers is a Rutgers University-led initiative to develop a signature corporate and community collaboration/commercialization complex that will serve as a national model for technology-led economic development. Located on the university’s main New Brunswick campus, it will act as the front door to Rutgers, serving industry, the university, and the community. Innovation Park will create and support an innovation ecosystem that spans New Jersey and beyond, facilitating collaborations between and across academia and industry, while incubating and growing high-potential businesses. The Park will initially focus on Rutgers’ core competencies that closely align with New Jersey’s key industry sectors and that have the strongest potential for interdisciplinary collaborations. Thematic programs will operate at the intersections of these sectors and disciplines, breaking down traditional silos in order to encourage discovery and knowledge sharing.

Park users will have access to specialized equipment and facilities, a skilled and educated workforce, and resource networks. Innovation Park will be wholly unique, offering space and resources that do not currently exist in one location anywhere in New Jersey. The Park will provide tremendous benefits, catalyzing convergent research and groundbreaking solutions to complex research problems, technology commercialization, job creation, and university-industry partnerships that stimulate economic growth for Rutgers University and the State of New Jersey.

Innovation Park will stimulate integrated innovation by bringing together a diverse group of researchers, students, industry leaders, and community members seeking to address barriers to progress in tackling critical global problems.

Innovation Park complements Rutgers’ core values as identified in the university’s 2014 Strategic Plan. Specifically, it will promote innovation and encourage collaborations across disciplines and between the university and external stakeholders. The Park will be a critical asset in shaping “tomorrow’s university” through its facilitation of “adaptive and flexible connections between the academy and the economy.” The Park will spur public-private partnerships and enhance cooperation between Rutgers and “the business communities that will employ our students and translate the products of our research into practice.” Having industry co-located on campus will enable “the flow of knowledge between the academy and these local, national, and global business communities.”

Innovation Park will stimulate integrated innovation – the coordinated application of scientific, technological, social, and business innovation to develop solutions to complex challenges – by bringing together a diverse group of researchers, students, industry leaders, and community members seeking to address barriers to progress in tackling critical global problems. This approach will create experiential learning opportunities, showing students the “applicability and value of their chosen field” and enabling them to “test ideas in practice and see how they are applied in a social context.” This approach will also “advance faculty achievement and innovation, and create an environment that fosters collaborative and interdisciplinary discovery.”
Why an Innovation Park?

Beginning in the 1950s but accelerating in the 1980s, universities across the United States developed university-related research parks that promoted proximity to and interaction among university researchers, private industry, and student workforces. These parks are viewed as “important as a mechanism for the transfer of academic research findings, as a source of knowledge spillovers, and as a catalyst for national and regional economic growth.”

In 2013, the Battelle Technology Partnership Practice conducted a survey of more than 130 university-related research parks across North America and determined that overall, these parks “provide a location in which researchers and companies operate in close proximity, creating an environment that fosters collaboration and innovation, and promotes the development and commercialization of technology.”

University research parks are also an important resource for local industry, providing access to core university facilities and a diverse range of businesses services. These include assistance in accessing capital from public and private sources, technology and market assessment, business planning, and more.

The principal objectives of Innovation Park @Rutgers are as follows:

- To provide facilities and programs that catalyze integrative research, spur the creation of new academic disciplines and curricula, support the discovery of transformative solutions to challenging research problems, and nurture the creation of breakthrough commercial applications.
- To promote collaborations between industry and academia that are built upon co-located resources and innovation initiatives catalyzed by Rutgers’ areas of research excellence. The Park will have an industry focus and the private sector will play a role in its governance.
- To develop state-of-the-art facilities that encourage cross-disciplinary innovation; support academic research, internships, and workforce training enterprises; and accommodate incubation programs in a culture of entrepreneurship;
- To increase technology transfer, licensing, and general commercialization of Rutgers research;
- To provide state-of-the-art space for growing and midsized companies that is not currently available, does not exist, and/or is not affordable in the Central New Jersey market;
- To serve as an economic development catalyst that promotes growth and diversification of strategic industry sectors in New Jersey.

Innovation Park@Rutgers: Opportunity and Approach

Innovation Park@Rutgers is the result of the recognition that the university must create greater value from its primary mission of research, teaching and outreach.

It is the first and only initiative of the university to create a physical space that co-locates industry and academia, providing industry with a one-stop shop where they can access talent, facilities and services. The Park will promote multidisciplinary collaborations and support all phases of the innovation pathway, from research through commercialization.

Park programs will be designed to build on Rutgers’ strengths and address New Jersey industry’s desire for “frictionless” university-industry interactions. In bringing industry onto campus, the university will be able to offer experiential learning opportunities and future career prospects to students. Programs will be modeled on best practices learned at the Rutgers Honors College, the Rutgers Food Innovation Centers,
the Small Business Development Center, and other centers. In addition, best practices gleaned through research and discussions with park managers across the country have been incorporated into the planning process for the Park.

The concept for Innovation Park has been introduced to stakeholders from industry, government, the community, and academia. Through more than 40 letters of support and letters of intent, stakeholders have voiced a demand for this type of space and associated programs. A number of industry representatives have expressed interest in potentially locating all or a portion of their operations in the Park.

Rutgers Preliminary Planning

The effort to develop Innovation Park@Rutgers dates back to 2011, when ORED engaged Battelle Technology Partnership Practice to undertake an assessment and development pathway for a collaboration and commercialization complex at Rutgers–New Brunswick.

This assessment, presented to Rutgers in 2012, evaluated the university’s core research focus areas, growth opportunities, and institutional readiness for collaboration in order to identify key drivers for development of the Park. The Battelle study examined the broader regional economic context from an industry and real estate perspective, interviewed over 150 university and industry stakeholders, and undertook a best-practices evaluation of applicable university research parks.

Based on its analysis, Battelle determined that the Innovation Park concept was viable and there was both external and internal demand for this type of development at Rutgers.

The Innovation Park project was put on hold, however, following Rutgers’ 2013 absorption of the University of Medicine and Dentistry of New Jersey and the creation of the state’s academic health center, Rutgers Biomedical and Health Sciences (RBHS). In 2014, Rutgers joined the Big Ten and the Big Ten Academic Alliance (previously known as the Committee on Institutional Cooperation), a consortium of 14 world-class research universities. With Big Ten membership and major schools of medicine, a school of nursing, ancillary research institutes, and health science-related centers and programs now incorporated institutionally into Rutgers–New Brunswick, the university is in an even stronger position to contribute value to Innovation Park.

In 2014, preliminary planning for Innovation Park resumed and, as part of the Rutgers master planning effort, ORED, in collaboration with Rutgers Facilities, identified an approximately 40-acre greenfield site on the Livingston campus at Rutgers–New Brunswick as the future site of Innovation Park. A map of the Park site can be found in Figure 1.

ORED established a Rutgers Team consisting of university representatives from a variety of units...
and schools throughout the New Brunswick campus. In addition, internal and external advisory boards were formed, composed of stakeholders with institutional and industry knowledge and experience which is integral in planning for Innovation Park.

In May 2015, Rutgers was awarded a $500,000 grant (one of only ten issued nationwide) from the U.S.–EDA to develop an implementation strategy and sustainable business model for the Park.

The Rutgers Team also continued with preliminary programmatic development of the Park, based on Battelle’s initial identification of areas of opportunities. Most significantly, this included the establishment of advanced computing capabilities on the proposed site of the Park with a modular data center installed in December 2015 and equipment following in the spring of 2016. The installation of this equipment has already garnered national and international attention for Rutgers. In June 2016, the Rutgers supercomputer was ranked #2 most powerful in the Big Ten, #8 among all U.S. education institutions, #49 among academic institutions globally, and #165 among all supercomputers worldwide.

**Benefits of Medical School Presence**

Historically, many of the most successful university research and innovation parks in the country were those located adjacent to academic medical centers (AMCs) and focused on life sciences and biotechnology. These parks provide access to critical resources and expertise sought by biopharmaceutical and other life sciences-related businesses who are increasing their engagement with the public sector in an effort to:

- Identify breakthroughs and advances in basic research that present clinical development opportunities
- Improve existing therapies and treatments
- Access science and medical talent

One of the primary ways in which industry engages with AMCs is through clinical trials. Tufts Center for the Study of Drug Development analyzed 3,000 grants involving nearly 450 industry sponsors and 22 medical schools and found that three quarters of the grants were joint clinical trials. Site selection of clinical trials is a critical component of the commercialization pathway. Choosing the wrong site can lead to significant delays and added costs. A large body of research exists on this topic – highlighting the importance of carefully choosing an appropriate site and the potential to reduce health care costs by better managing clinical trial site selection.

Each year, Rutgers supports 350 clinical trials (industry-sponsored and Rutgers investigator-initiated studies). More than 200 principal investigators conduct trials in over 50 therapeutic areas. Rutgers has specific expertise in cancer trials. The university has the state’s only National Cancer Institute-designated comprehensive cancer center and one of only 14 National Cancer Institute-designated Minority-Based Community Clinical Oncology Programs in the U.S., providing access to trials that are available nowhere else in New Jersey, and in few locations in the nation.

Rutgers’ AMCs have a record of innovation and technology transfer. Significant innovations in medicine can be attributed to the university, including the discovery of the first gene mutation linked to Parkinson’s disease; two of the newest anti-HIV drugs, Intelence and Edurant; and the use of interferons in treating cancer. Research conducted at Rutgers’ AMCs generate spin-off companies and technology licensing revenue. As an example, Aquarius BioTechnologies Inc., a bio-delivery drug discovery company with a novel and proprietary technology platform for treating infectious diseases, was developed at Rutgers and acquired by Matinas BioPharma Holdings – a New Jersey-based company, in January 2015. Medical students studying at Rutgers are developing their own life sciences businesses through the Biomedical Entrepreneurship Network. Faculty and
student spin-offs will be able to lease space at Innovation Park, where they can access state-of-the-art labs and equipment, and be located in close proximity to their founders and research partners.

Life sciences companies, in particular contract research organizations that engage in cancer clinical trials and companies that seek collaborative opportunities to develop treatments for complex diseases and conditions, will benefit from co-location in the Park through access to Rutgers’ AMCs – and their research, resources, and talent. These companies may also experience increased levels of patent activity. A recent study found that firms located in a university park that has an associated medical school have a higher level of patent activity.  

II. Benchmarking and Best Practices

In order to guide the analysis and recommendations for the proposed Innovation Park, the U3 Advisors team undertook a benchmarking and best practices evaluation in 2016 of a cohort of university and research parks around the country. In selecting this cohort and its applicability to the Rutgers initiative, the evaluation considered the mission and objectives of each project; its location and size; research or specialization focus (if any); the role of the sponsoring institution; ownership and management structures; financing approach; and programs, services, and other amenities.

The evaluation expanded upon a comprehensive best practices study undertaken by Battelle in 2012. Battelle selected and analyzed parks at other state universities around the country that it determined had features comparable to the Rutgers profile, specifically large land-grant universities with strong commercial incubation and spinout programs.

Battelle’s benchmarking evaluation focused on five research parks:

1. bwtech@UMBC (University of Maryland Baltimore County)
2. Centennial Campus (North Carolina State University)
3. Delaware Technology Park (University of Delaware)
4. Purdue Research and Technology Park (Purdue University); and
5. University Research Park at the University of Wisconsin Madison).

Battelle identified five principal lessons learned from this cohort of research parks:

- Pursue an active strategy to grow the research park around specific areas of university research strengths
- Connect to broader state-led development efforts, particularly as they pertain to business attraction, marketing, and financing.
- Maintain strong university engagement and linkages in the governance structure of the research park. The university should be actively involved in setting the direction of the park. Maintaining close connections with the sponsor university’s technology transfer office and broader commercialization efforts is also important.
- Pursue an active mix of large anchor tenants and multi-tenant/incubation space as an essential feature of the research park.
A university anchor and/or large anchor tenant can serve as important catalysts for development of the park, but it is also important to consider a broader pipeline of tenants.

- Ensure that any development approach to the park incorporates flexibility. Pursue a development model that allows for calibrated responses to market changes. A master development model may be too rigid. The university must ensure that there is a market for the value proposition it has established before pursuing any developer partnership.

In expanding upon the 2012 analysis, U3 Advisors considered two important developments that have taken place in the interim since Battelle’s report: (1) Rutgers’ absorption of the University of Medicine and Dentistry of New Jersey and the creation of Rutgers Biomedical and Health Sciences, and (2) Rutgers’ joining the Big Ten Conference and its associated academic consortium.

Because of these actions, U3 Advisors determined that its benchmarking and best practices analysis should consider a high-level overview of all research parks at Rutgers’ new Big Ten peers. In addition, a larger peer group outside the Big Ten was considered that could serve as applicable models to inform Rutgers’ efforts. The additional examples the U3 Advisors team identified included institutions with medical schools, successful projects based on university research strengths, and noteworthy management and governing structures.

Big Ten Peers

Of Rutgers’ 13 fellow Big Ten institutions, 11 have university-affiliated research parks. Two of these, Purdue and the University of Wisconsin Madison, were evaluated in the Battelle Report. The others are:

1. Pennsylvania State University Innovation Park. A 118-acre project focused on tech companies and light manufacturing. Buildings are owned by multiple developers while the park is managed by PSU staff.

2. University of Maryland M Square. A suburban research park with a strong federal government presence developed as a joint venture with a Maryland-based suburban office developer.


4. University of Iowa Research Park. Strong university presence with a focus on incubation. Established with significant state funding and tax abatements.

5. University of Nebraska Innovation Center. First phase opened in 2014 with a strong focus on agriculture and food science. Developed in partnership with a private developer. Significant university presence in Phase 1 will allow for more speculative development in future phases.


7. University of Michigan North Campus Research Complex. A 28-building corporate campus acquired by the university from Pfizer in 2008. Focus is on university-industry partnerships with a particular focus on medicine and the auto industry.

8. Ohio State University SciTech. A 56-acre campus developed and managed by a partnership entity comprising OSU, the State of Ohio, and the City of Columbus. Strong university presence.

9. Indiana University Technology Park. Opened in 1996 with university presence only; now seeking tenants. University anchors include the Cyberinfrastructure Building and IU Data Center with supercomputer.
The two remaining Big Ten institutions, the University of Minnesota and Northwestern University, do not have affiliated research parks.

Additional Research Park Projects of Note

- University of Maryland BioPark (UMBio) which is noteworthy for its successful multiphase partnership with a developer that has an excellent national track record working with research universities;
- University of Miami Life Science and Technology Park, built in partnership with the same developer as at UMBio and with a focus on both health and applied sciences;
- Nanotech Center at SUNY Polytechnic in Albany, notable for its successful focus on industry partnerships in the field of nanotechnology;
- Wake Forest Innovation Quarter, an urban research park that is a partnership between Wake Forest University, Wake Forest Baptist Medical Center, the City of Winston-Salem and the State of North Carolina. The Innovation Quarter has a focus on medicine, bioscience, materials science and information science. It is being developed by the same private developer as UMBio and the University of Miami.
- Technology Square at Georgia Tech, significant for its focus on advanced computing and industry partnerships.

Lessons Learned

Key observations and trends that were noted include the following:

Lesson 1: Role of the Sponsoring University

1. At successful research parks, the sponsoring university needs to serve as a catalyst and show early commitment, in both research programming and facilities, to attract developers.

2. The sponsoring university should provide opportunities for industry-university co-location and collaboration. A strong university-industry partnering focus is prominent at the University of Nebraska, the University of Michigan, the University of Delawary, SUNY Polytechnic, and the University of Maryland Baltimore County.

3. Any university programs at the research park should have an interdisciplinary focus that has synergies with private industry sectors.

Lesson 2: Planning for Flexibility

While some projects that were examined were undertaken within a comprehensive master plan and others have been developed in a more phased and/or ad hoc approach, it is important to note that any plan for the project must incorporate maximum flexibility as one of its principal assumptions. The market for office and lab space is fluid and dynamic, and it is difficult to project trends and needs far out into the future.

Lesson 3: Facilities and Amenities

1. It is important to provide a variety of space options that address the needs of companies throughout their arc of growth.

2. Amenities, place-making, and physical connectivity are increasingly important.

3. Conference and convening facilities are an important component of a successful research park. Large conference centers that can host industry-related events are key to fostering collaborations and learning.

- At the University of Illinois, the developer (Fox-Atkins) and the university jointly developed a medium-sized hotel and conference center (known as the “iHotel”) seven years after the initial opening of the research park.
At the USF Research Park, a full-service conference facility is owned and managed by the USF Research Foundation, while conference space at a nearby Embassy Suites Hotel is “soft” branded as part of the research park.

University of Nebraska Innovation Center, repurposed a disused historic exhibition hall as a conference center, which is managed by the University of Nebraska Alumni Association.

At UMBio, a small conference center, which includes an auditorium and two conference rooms, was developed in the Phase 2 developer-built building.

Use of university core facilities and equipment is a valuable amenity, particularly for start-up or medium-stage companies who would otherwise not have access to such expensive equipment, tools, and services.

Lesson 4: Programs

1. University-developed programs can serve as a tool to attract and sustain tenants. Examples include “Experts in Residence” programs that provide tenants with university-affiliated specialists in such fields as data analysis, logistics, and supply chain economics, and programs designed to foster innovation and entrepreneurship.

III. Market Assessment

The Park will offer state-of-the-art laboratory, R&D, office, and collaboration space where companies can readily access talent, specialized equipment and facilities, and collaborators within a vibrant university community. Much more than a traditional real estate development, the Park will function as the catalyst for an innovation ecosystem that bridges the divide between disciplines, academia and industry. University, industry, government and community partners will be able to work in a collaborative environment across sectors and disciplines, along the entire innovation pathway from basic research through commercialization. It is anticipated that the Park will also generate substantial direct and indirect impacts for the university, as well as for the local and state economy. These include creating new products, solutions, technologies, academic disciplines and jobs.

Location and Real Estate Market Considerations

The Central New Jersey market, with its historic position as a leading U.S. cluster for the pharmaceutical industry, boasts a highly skilled workforce that has helped the region emerge as a preferred location for the many midsize companies that have formed as a result of shifts in the pharma sector. These companies have a demonstrated need for smaller laboratory spaces (2,500–10,000 SF) that are currently scarce in New Jersey, particularly in the Central New Jersey market, providing an opportunity for Innovation Park to meet a space and facilities need. There is also a high demand for incubator space in the region as the existing incubators, most notably the New Jersey Economic Development Authority’s Commercialization Center for Innovative Technologies in North Brunswick, have no available space.

The identified site on the Livingston campus provides tenants with adjacency to the Livingston and Busch campuses, fostering potential interdisciplinary collaborations with Rutgers’ engineering and applied science programs and the business school. The location will also provide tenants with access to Rutgers faculty and students in addition to university core facilities, which could prove to be valuable assets for start-up and mid range companies.

The proposed Innovation Park will provide state-of-the-art, specialized space that does not currently exist in the local market, in addition to having the potential to meet demand for “in-between” lab space of 2,500–10,000 SF.
Meeting the Demand

Innovation Park will be designed to encourage collaborations – between industry and academia, across industries, and within an individual company. Rutgers faculty and staff will work on-site, along with service providers, community groups and government agencies. Company leaders will be able to walk down a hall and knock on the door of a food scientist or a biochemist, sip coffee with a postdoc student, or chat with a government employee on the way to the parking lot. Executives will have access to the variety of resources necessary to start and/or grow a business, all in one place. The location on the Rutgers campus will also provide quick access to faculty, students and research facilities, and provide opportunities for student internships.

The Park will accommodate small and large tenants, allowing established companies to locate next to start-up and emerging companies and potential partners. Modular lab space will give companies the flexibility to expand or contract in size to suit their changing needs, while shared equipment, resources and common areas will contribute to a feeling of being located within the supportive environment of an incubator.

Innovation Park will be constructed to meet current best practices and anticipate future trends in workplace priorities such as:

- Shared computers and equipment – Equipment and computers will be available to multiple tenants; Rutgers faculty/staff/students with expertise in data analysis will work on-site and be available to assist companies in running reports and assessing data
- Flexible space that can quickly be converted from lab to office or vice versa – As companies progress from R&D through commercialization, their space needs also evolve
- Open spaces and break areas – Light-filled spaces that are warm and inviting, creating a place where individuals are comfortable and want to spend time interacting with others who may not work in their department or even their company

International Opportunities

It is the intention that Rutgers will pursue a “Soft Landings” designation for the Park. Developed by the International Business Innovation Association (InBIA), the world’s leading organization advancing business incubation and entrepreneurship, the Soft Landings program recognizes “select incubators as having specialized programs and/or facilities for helping companies break into international markets.” Organizations that achieve this designation gain global exposure for their demonstrated leadership in working with foreign companies. InBIA leverages its vast network of contacts and resources to market Soft Landings facilities to foreign firms, making it easy for those seeking space or program support to identify and connect with the relevant facilities in their target market.

Rutgers has significant experience assisting foreign companies in accessing the U.S. market. Two of the university’s existing incubators have achieved Soft Landings designation – the Rutgers Food Innovation Center–South and the Rutgers EcoComplex. The Rutgers Food Innovation Center–South is the only food
incubator in the world to have this distinction. The Soft Landings program has proven to be a powerful tool in attracting foreign firms to New Jersey. As an example, the Rutgers Food Innovation Center–South has served clients from the nations of Italy, Spain, Israel, Greece and Brazil, to name a few.

Access to Talent

**Advanced Computing:** New Jersey ranks among the top five states in the nation for having the highest employment levels of computer and information research scientists, computer programmers, and software developers - applications. In addition, the New York-Northern New Jersey-Long Island region is one of the top three big data employment markets in the country.8

**Food:** New Jersey has the 2nd highest employment level of food scientists and technologists of all U.S. states. With 1,150 food scientists and technologists working in New Jersey, the location quotient for this occupation is 2.88, well above the national average and third highest of any state in the nation.9

**Life Sciences:** New Jersey is the #2 state in the country for biochemists and biophysicists and ranks #3 nationally for specialized employment in research, testing, and medical laboratories.10 It is also the only state in the country with a high degree of specialization in four of five major bioscience subsectors – drugs and pharmaceuticals; research, testing, and medical labs; bioscience-related distribution; and medical devices.11 42.1% of the life sciences workforce in New Jersey is located in Central New Jersey, and companies including Merck, Novo Nordisk, and Bristol-Myers Squibb have sited operations in the region in order to access the local talent pool. Nearby Somerset County ranks #1 in the state for the percentage of its population holding a bachelor’s degree or higher.

Rutgers University is a major asset in the region. With more than 67,000 students, Rutgers is an important contributor to the local talent pool. The university is developing new programs to increase the number of STEM graduates, further enhancing the state’s reputation as one of the nation’s best locations for recruiting life sciences employees. As an example, the Woodbury Bunting-Cobb Residence Hall for Women in STEM is the first of its kind in the nation, and is part of a larger project to encourage women to pursue degrees and careers in STEM.

**Amenities**

Innovation Park will offer access to student and faculty talent, academic collaborators and amenities. The Park should benefit from the considerable investment in retail and entertainment that is taking place at the Livingston campus. Amenities that will be located in the Park include a café, walking path, educational programs, access to a 300-acre environmental preserve, entertainment, meeting and event space, among many other amenities. Shuttle service to downtown New Brunswick can be provided, based on demand. Free buses, targeted to the student population, are currently available to anyone seeking to travel between campuses.

**Technology/Advanced Computation Market – Overview**

In 2014, New Jersey’s technology cluster accounted for 359,700 jobs or 11% of all private sector employment statewide. Middlesex County had the most employment in the technology industry amongst all other counties in New Jersey, with nearly 54,000 jobs. The New Jersey Department of Labor and Workforce Development predicts that computer and mathematical occupations in the state will grow by 16.5% from 2012 to 2022.12 Much of the expected growth in tech jobs can be attributed to the explosion in the amount of data that is being produced – so called big data. According to MGI and McKinsey’s Business Technology Office, “Leaders in every sector
will have to grapple with the implications of big data, not just a few data-oriented managers.” Analyzing large data sets will become “a key basis of competition, underpinning new waves of productivity growth, innovation, and consumer surplus.” Analyzing big data requires a significant investment in equipment and talent.

Innovation Park will provide direct access to advanced computing equipment capable of processing large datasets as well as individuals who possess the computation skills that are most in-demand. Rutgers recently added a Professional Science Master’s Degree in Business Analytics to its curriculum offerings. Information Week rated the new degree among its Top 20 Big Data Analytics Master’s Degrees nationally. The program prepares students for careers in predictive modeling, business intelligence, analytics, and data mining. Companies that locate at the Park will be able to hire student interns, graduates, and faculty consultants from this and many other data analytics and computer science programs offered at Rutgers.

**Food Manufacturing Market – Overview**

New Jersey is home to 1,900 food manufacturing companies that employ 31,000 people. Middlesex County has the fifth highest employment in food manufacturing of all 21 New Jersey counties. According to the New Jersey Department of Labor and Workforce Development, “The food manufacturing industry has exhibited steady growth in New Jersey from 2009 through 2014, both in terms of employment and the total number of establishments.” JLL reports that during 2014–2015, food and beverage companies leased 2.1 million square feet of space in New Jersey.

New Jersey has historically been a location of choice for the food industry. Campbell Soup Company established its headquarters in Camden in 1869 and Mars has been producing M&Ms in Hackettstown since the 1940s. Nestle, Pinnacle, Goya and Unilever are also located here. In recent years, New Jersey has received an influx of New York food businesses like Junior’s Cheesecake and Streit’s Matzo who are moving to the state for lower cost facilities and access to a specialized workforce. The food industry is a major component of New Jersey’s economy with $126.79 billion in gross sales volume generated in 2012.

Innovation Park will be well positioned to attract food companies. The Park will become the new home to the existing Food Innovation Center–North program that is currently located in Piscataway. This well-established program has revenue generating clients and services already in place. In addition, the expertise of staff who currently manage the Food Innovation Center–South (FIC–South) program in Bridgeton will be leveraged to develop new research and collaboration opportunities, as well as safety certification and other training...
programs. These programs and facilities are unique in the country and will be expanded in a proposed 60,000 square foot Food Innovation Center in the Park. The facility will be U.S. Food and Drug Administration (FDA) and U.S. Department of Agriculture (USDA) inspected and “best in class” in terms of sanitary design, fit and finish, and operating protocol. In addition, the building will have uniquely designed lab and collaboration space that will facilitate multi-disciplinary public-private research in functional and medical foods. Companies that locate at the facility will have direct access to Rutgers faculty and staff, student interns, educational programs and services, as well as flexibly designed space. An existing client of the Food Innovation Center–North (FIC–North) program, Pinnacle Foods Inc., shared that having a presence at FIC–North has “helped us to advance the development of our products. The ability to do product development in a research setting enables us to further our research efforts evaluating multiple options we could never do in a production setting.”

Innovation Park can also leverage the tremendous success of the FIC–South in international business attraction:

- Designated as a Soft Landings site by the International Business Innovation Association for its expertise in welcoming non-domestic firms to the U.S. market
- Memoranda of Understanding with agencies and entities in several foreign countries, and clients that have originated from Italy, Spain, Israel, France, Greece, Brazil, Columbia, Jamaica and Costa Rica
- Created an international network of food business incubation and innovation programs, called FoodBIN (Food Business Incubation Network)

Innovation Park will offer an environment that will be highly sought after by those in the food industry. The two innovation centers that currently exist at Rutgers have been tremendously successful. The FIC–North is at capacity with a waiting list, and the FIC–South receives one to two inquiries per day from individuals who want to lease space and/or access a program(s) available at the Center.

**Endnotes**

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Rutgers’ Value Proposition

I. Rutgers University Resources and Local Market Needs

Rutgers University is an ideal partner for emerging and established companies that wish to be part of New Jersey’s growing innovation economy. Innovation Park will be positioned to encompass a thriving community of technology companies and academic enterprises and will offer opportunities for industry-university collaboration, access to the university’s technology expertise and talent, and shared use of Rutgers facilities and resources.

Location

Innovation Park is located in the heart of the Northeast Corridor with easy access to the nation’s largest and most dynamic population centers. Situated between Rutgers’ Busch and Livingston campuses, the Park will be adjacent to the university’s hubs for engineering, life sciences, and applied sciences, as well as the new Rutgers Business School. The surrounding Central New Jersey region is a global center for large pharma and midsized life sciences companies. The region boasts a highly skilled workforce and is home to almost 75% of the state’s R&D laboratory facilities. With proximity to New Jersey Transit, Amtrak, the New Jersey Turnpike and highways 18 and 287, the site also offers easy connections to both New York City and Philadelphia.

Rutgers Research

Rutgers University is one of the nation’s premier public research universities and has a longstanding tradition of academic excellence and breakthrough research in the advanced technologies that are essential to New Jersey’s key industries. Rutgers’ interdisciplinary approach – particularly in the fields of advanced computing, food and nutrition, biomaterials, and restorative technologies – offers a competitive advantage to private sector partners whose needs may span a number of disciplines. Rutgers also has a growing track record in business partnerships and commercialization and Rutgers’ innovations play a critical role across New Jersey’s leading industry sectors. Rutgers brings an unequalled vision and commitment to development of Innovation Park. As the State University of New Jersey, facilitating the growth of the state’s economy and technology ecosystem is part of Rutgers core mission.

State-of-the-Art Facilities Tailored to an Evolving Life Sciences and Tech Market

Central New Jersey is home to headquarters or major operations of many of the world’s largest pharmaceutical companies, including Johnson & Johnson, Bristol-Myers Squibb, and Novo Nordisk. However, the New Jersey life sciences landscape is currently undergoing a significant evolution away from dominance by large, global, pharmaceutical corporations to a more diversified economy characterized by more nimble midsized biotech and generic drug companies.

Innovation Park is well positioned to serve the needs of this emerging sector by providing the type of specialized state-of-the-art laboratory and other facilities that currently do not exist in the New Jersey market. These include more flexible multi-tenant lab spaces for midsized companies, continuous manufacturing and bioprocessing, in addition to meeting and conference facilities and co-location spaces that facilitate industry-university collaboration. The Advanced Research Computing Facility will have unmatched computing power in this market and will serve as a valuable resource for companies across many sectors.

Programmatic and Physical Resources

Innovation Park will allow companies located there to take full advantage of the university’s
many programmatic resources, including entrepreneurial support, continuing professional and technical education for employees, and proximity to sponsored research and engagements. By locating on the Rutgers campus, companies will be able to more easily recruit top talent from campus while also having access to student interns that can provide an educated workforce with a high potential for full-time recruitment after graduation. In addition, companies will have access to Rutgers facilities, including use of the Advanced Research Computing Facility, laboratories and other shared resources.

II. Rutgers Ecosystem Development

The Park will be more than a collection of people and buildings. It will create and support an innovation ecosystem, defined as a “distinctive collection of people, firms, institutions and relationships [that] combine in finely tuned ways to not only provide scientific advances… but to also turn ideas into products and take them rapidly to market…”¹ The Park will encompass economic and physical assets and facilitate networking assets:

- **Economic assets**: Companies, organizations, departments, centers
- **Physical assets**: Buildings, public spaces, and other infrastructure
- **Networking assets**: Relationships among individuals, companies, organizations²

Individually, each category is important, but a successful ecosystem depends on their combination. In *The Rainforest*, Victor Hwang and Greg Horowitt contend that the most productive systems allow talent, ideas, and capital to flow throughout the system.³ Critically it is the networking assets – relationships – that determine the level of connectedness in an ecosystem. The ecosystem model at Innovation Park is outlined in more detail in the diagram included as Figure 1.

Through the strategic design of infrastructure to facilitate face-to-face interactions, as well as programmatic initiatives, Innovation Park will bring together people from diverse backgrounds and different disciplines and engage them in collaborative work toward a common goal. The buildings located in the Park will not be siloed by sector, but rather will be organized in thematic programs focused on complex systems. As one example, Rutgers is partnering with Tel-Hai College and the Israel Economic Development Taskforce in the area of healthy, functional foods. This program will cut across academic disciplines and industry sectors, engaging Rutgers’ food scientists and graduate students, health sciences, consumer goods manufacturers and behavioral nutritionists, legal experts and health care providers.

Rutgers is in process of formalizing a relationship with Wageningen University & Research and other international universities and partners to study, innovate solutions, and disseminate knowledge related to complex systems. The universities will develop best practices for engaging academics in multidisciplinary projects. This engagement can have a compounding effect, as the frequency of collaboration between academia and industry increases when research centers are “focused on multidisciplinary or programmatic research.”⁴

Universities are “recognizing the power of crossing traditional academic lines thinking to develop relevant solutions” to the complicated challenges facing society. “This recognition is triggering the creation of innovation centers that drive cross-pollination and fuse creative fields…”⁵ Innovation Park’s signature programs align with the university’s research strengths and regional market trends. Importantly, the work conducted at the Park will occur at the junctions – where big data meets food, or where advanced materials impacts the life sciences.

Tenants of the Park will have access to experts in business and technology (from Rutgers faculty
and industry), service providers, sources of capital, student interns, and other resources that will aid them in moving their innovations from the lab to the market. Many of these resources will be physically located on-site, but tenants will also benefit from linkages to Park collaborators located throughout the region, the U.S. and abroad. Formal programs will encourage networking and sharing of ideas, both within the Innovation Park ecosystem and outside of its physical boundaries. Furthermore, the Park will be fashioned to enhance the potential for serendipitous encounters, as innovation is chaotic and uncontrollable, and it is often through unplanned and chance introductions that new ideas are formulated. The Park will feature collaboration spaces, cafes, walking trails, and information boards (both digital and physical).

Through the provision of economic and physical assets and the facilitation of networking assets, Innovation Park will nurture a community of innovators that share a culture of entrepreneurship. These innovators will leverage the tremendous assets of Rutgers and New Jersey’s economy to further scientific discovery, advance understanding of complex systems, and invent novel solutions to global challenges. The Park will fill a gap in the existing New Jersey market, as no physical or virtual place today provides this combination of assets.

III. Rutgers Program Opportunities Summary

The Park will serve as a convener of ideas, bringing students, faculty, industry, and the community together to develop solutions to grand challenges, launch new businesses, and build meaningful connections between the academy and external stakeholders. The Rutgers Team identified and formulated a range of programs that will attract and support industry tenants and Rutgers’ faculty and students, who will learn, experiment, and work at the Park.
Rutgers Advanced Research Computing Initiative

Overview/Purpose. Rutgers University’s 2014 Strategic Plan calls for the creation of on-campus advanced cyberinfrastructure capabilities that will benefit not only the university, but also industry throughout the state. In 2014, the Rutgers Discovery Informatics Institute (RDI) secured $10 million through the New Jersey Higher Education Leasing Fund for the purchase of supercomputing equipment. This equipment, known as Caliburn, was installed in the Spring/Summer of 2016 and ranks #2 among Big Ten schools and #8 in the nation in terms of computing power. Concurrently, through the efforts of RDI and Rutgers Office of Economic Development, the university established the new Office of Advanced Research Computing (OARC) in early 2016. Leadership with proven knowledge and experience in launching internationally respected academic research computing and cyberinfrastructure ecosystems was recruited to head up OARC. These two large-scale commitments by both the state and the university lay the groundwork for establishing a sustainable advanced research cyberinfrastructure (ACI) environment at Rutgers. Under an umbrella program tentatively called the Advanced Research Computing Initiative (ARCI), a scalable next-generation ACI environment is being provided that leverages local, regional, national, and cloud resources to create a powerful solution to meet advanced research computing needs and to catalyze an environment conducive to innovation. With a centralized ACI ecosystem anchored by a state-of-the-art Advanced Research Computing Facility, academic, industry and government partners will have a nationally recognized and trusted resource for their research computing and big data needs.

A more detailed description of the ARCI program and proposed building can be found in Section IV of this chapter.

Rutgers Food Innovation Program

Overview/Purpose. Rutgers has shared its expertise in food science with more than 2,000 entrepreneurs and companies via programs and services offered at the university’s existing food innovation centers currently located in Piscataway (FIC–North) and Bridgeton (FIC–South). Both programs have received tremendous interest from industry and are at capacity. It is proposed that the existing FIC–North operation, with revenue generating clientele and services already in place, be relocated to Innovation Park. Here, its successful program supporting technology and business knowledge transfer will be integrated with faculty, staff and students at Rutgers University. The new FIC–North facility will complement the Rutgers FIC–South program and together they will serve to network and aggregate the food industry with academia, government agencies, and domestic and international research partners.

A more detailed description of the Food Innovation program and proposed building can be found in Section IV of this chapter.
Business Services

Overview/Purpose. Rutgers’ size and diversity allows it to offer numerous services and amenities to faculty, students, industry and surrounding communities. Corporate executives consider where to locate their business based on access to talent, and highly sought after employees often expect to work in an amenity rich environment that includes recreational opportunities, dining options, and spaces that promote interaction and collaboration across businesses and industries. The Park will provide a variety of amenities and value-added services to tenants, making it a destination where innovative businesses want to locate.

Program Components. Amenities and value-added services will be provided by Rutgers University and external resource providers including state agencies, law firms, banks, and others. These amenities and services will be available to all tenants, and many will be tailored to specific groups of tenants. For example, foreign executives will have access to the federal-level SelectUSA program that provides 1-on-1 support for international companies new to the U.S. market.

Beneficiaries. Park tenants will have access to many of the resources needed to develop and grow their business, at any stage of the innovation pipeline, without having to leave the boundaries of Innovation Park. The Park will provide a work environment that encourages collaborations, promotes productivity, and meets the business development, recreational, educational, and entertainment needs of its tenants and their employees.

Corporate Engagement

In 2014, Rutgers created the Office of Corporate Engagement (OCE) with a mission to:

- Increase industry-sponsored research and other types of corporate engagement
- Streamline the process for industry engagement and enable ease of navigation to Rutgers’ programs and expertise

The office gathers intelligence on potential partners, proactively outreaches to business, facilitates engagements, and communicates Rutgers’ vast resources. The OCE acts as a “one stop shop” for business and industry, facilitating introductions to Rutgers researchers, corporate contracts and career services staff, and others. The OCE will relocate to the Park, which will function as a physical entry point for business and industry to the university, and will be instrumental in identifying and recruiting corporate tenants.

Program Components.

- Central Point of Entry for Industry: In late 2014, OCE launched a business portal (https://businessportal.rutgers.edu/) that allows business and industry to search for Rutgers research expertise, licensing opportunities, job training and employee recruitment services.
- Proactive Outreach: OCE contacts potential partners and initiates a dialogue around business growth strategies, company needs and objectives. This knowledge and insight informs follow-up and future outreach efforts.
- Facilitating Industry Engagement: OCE responds to industry requests for research expertise, working with an OCE-created network of Rutgers “scouts” to facilitate an industry/faculty match.
International Business Attraction

Overview/Purpose. At Rutgers University, diversity is an everyday ingredient of university life and one of the school’s greatest strengths. Rutgers’ slogan, “Jersey Roots, Global Reach” celebrates the university’s impact abroad. Recognizing that the increasingly complex challenges of the 21st century transcend national borders, the university encourages faculty to engage with their international peers and offers a range of hands-on learning opportunities to equip students with the knowledge, awareness and skills necessary to be good global citizens.

Rutgers’ activities in the international arena extend beyond the higher education community. Universities are powerful assets for attracting foreign direct investment, and Rutgers is no exception. Two of three Rutgers incubators have been awarded a Soft Landings designation for their expertise in acclimating non-domestic firms to the U.S. market. Innovation Park’s proposed location in Central New Jersey makes it an especially attractive landing pad for foreign businesses and entrepreneurs. State-level initiatives have been launched to support the growth of foreign enterprises and New Jersey is recognized as one of the top destinations in the U.S. for immigrants and multinational companies. The Park will leverage the already existing assets and programs at the university, state and federal levels to recruit international tenants and to support collaborations between Rutgers and foreign companies, universities, research institutes, and others.

Program Components.

- Transition Assistance: Rutgers will offer services specifically designed to ensure that international firms have a smooth transition to the U.S. market, such as visa assistance, counseling, and orientation programming.
- Operations Assistance: Rutgers will connect foreign executives to resource providers with expertise in topics including payroll, tax, and regulatory compliance.

Workforce Development

Overview/Purpose. According to Manpower Group’s 2015 Talent Shortage Survey, nearly 1/3 of U.S. employers have difficulty filling job vacancies and over 40% admit that talent shortages are having a negative impact on their ability to meet client needs. Increasingly, access to a skilled workforce trumps all other location considerations. Human resources services are highly valued by employers, and sought after in research parks.

The Workforce Development Program at the Park will provide business tenants with seamless access to a diverse, skilled workforce, while maximizing professional development opportunities for Rutgers students and alumni, Park workers, and community members.
Program Components.

- Human Resources Recruitment and Screening Services: Rutgers staff will connect tenants to Rutgers students and alumni, entry-level workers from the community, and senior-level experienced workers from the community and beyond. Staff will assist tenants in identifying and hiring the best candidates by pre-screening resumes, conducting initial interviews, and more.

- Professional Development and Degree Education: Employees of Park tenants will have access to an array of education options from short online courses to Ph.D. programs.

- Career Development Workshops, Services, and Events: Students and employees of Park tenants will be offered a comprehensive set of tools with which to prepare for, or advance their careers.

- “Pipeline” Education Programs for the Community: On-campus programs run by select partners will provide education and training designed to place youth and adults from the surrounding communities into entry- and mid-level jobs in the Park.

- Technical Assistance for External Partners: The Director of Workforce Partnerships will identify funding sources, build responsive education programs, and coordinate and facilitate connections between workforce partners and Rutgers programs.

Entrepreneurship Programs

Overview/Purpose. Between 2013 and 2014, start-up activity in the U.S. experienced its largest year-over-year increase of the past 20 years. College graduates are more likely to choose entrepreneurship than those with no college degree. In order to meet the demand for entrepreneurship training and education, an increasing number of colleges and universities are providing resources and services to support entrepreneurs and grow small businesses.

Rutgers offers classes in entrepreneurship, operates several incubators and makerspaces, and hosts student entrepreneurship clubs. The population of Rutgers’ student entrepreneurs and innovators is growing, as evidenced by an almost doubling in the number of students choosing to minor in entrepreneurship from 2013 to 2015. The university supports entrepreneurial-minded faculty and staff through the Office of Research Commercialization, which has assisted in the launch of over 100 start-up companies.
Entrepreneurship activities within the university community, though numerous and diverse, are decentralized and occur across many buildings and campuses. Innovation Park is the idea location to nurture this ecosystem, as it will provide a central place in which entrepreneurs can access services and expertise; a high-quality infrastructure to support the innovation pipeline; and will facilitate interdisciplinary collaborations and networking among industry, academia, and the community.

**Program Components.**

- **Phase 1—Business Assistance, Mentoring, and Programming:** Entrepreneurs tend to be focused on their research and on bringing technology to fruition, yet are often unaware of the business elements that are required to successfully launch a product or service. At the Park, entrepreneurs will have access to services providers, mentors, and experts who can provide assistance with market research, legal matters, grant writing, data analytics, and more.

- **Phase 2—Entrepreneurship & Experiential Learning Lab:** The Lab will be located in the Industry Collaboration Building in the Park and will provide affordable lab and office space to aspiring entrepreneurs. Lab tenants will be required to complete a seven to ten week education and training program.

- **Phase 3—Gap-Funding for University Research:** Promising research at Rutgers often faces a funding gap between the research and commercialization phases. In order to address this gap, ORC will manage an evergreen fund that will provide financial support and business expertise to early-stage Rutgers technologies.

**Community Development**

**Overview/Purpose.** Rutgers University has a threefold mission to provide for the instructional needs of New Jersey’s citizens, conduct cutting edge research, and perform public service. The university takes its responsibility to be a good neighbor seriously and has initiated a variety of programs and services designed to meet the needs of the communities in which its campuses are located.

The university’s 2014 Strategic Plan outlines several goals, including connecting research to community needs and improving the health and wellness of individuals and populations locally. Innovation Park will leverage the resources and expertise of students, faculty and tenant companies to launch programs that generate economic, health, and other positive outcomes for the local community.

**Program Components.** Through the Park, three community engagement programs will be established.

- **Business Skills:** Training will be provided to small businesses and entrepreneurs on topics such as marketing, social media, accounting, and other business basics.

- **Education Outreach:** Rutgers will partner with Middlesex County College to expand its existing teacher training initiative to include experiential and service learning
opportunities. Innovative, cross disciplinary programs such as food science, big data and wellness will allow educators to expand their breadth of knowledge in complex systems and interdisciplinary instruction and learning.

- **RNeighborhood Investment Initiative:** Funds will be allocated to projects that address community priorities and have the potential to produce the greatest impact. A community advisory board will be part of the funding selection committee.

### Sustainability

**Overview/Purpose.** As part of its 2014 Strategic Plan, Rutgers University identified five integrated themes that touch on some of the most pressing issues and problems of the 21st century, including sustainability. Rutgers seeks to become a leader in developing scholars that are equipped to address environmental challenges. In so doing, Rutgers will promote linkages between the university’s campuses and schools and externally with communities and industries, recognizing that interdisciplinary collaboration is essential for advancing viable solutions. Rutgers will create living laboratories for sustainability by implementing models of sustainable practices on its campuses.

The inclusion of sustainability design and programmatic elements at Innovation Park will promote research collaborations, university-industry partnerships, and community development, while adding economic, social, and environmental value to the Park’s bottom line.

Implementing sustainability design and programmatic elements at Innovation Park will benefit Park tenants and Rutgers in a variety of ways, by:

- Making the Park more resilient through the potential installation of a microgrid
- Reducing energy costs via sustainable water infrastructure and compliance with LEED standards
- Creating a healthier environment for Park tenants, through compliance with WELL Building Standard, which can directly impact quality of life and productivity
- Educating the next generation in matters of sustainability
- Offering experiential learning opportunities to students, business leaders and the community

### Program Components.

- **Advanced Energy Infrastructure:** The Park will leverage existing assets located on Livingston campus, including a 25MW substation and other utilities. New energy infrastructure, such as a fuel cell, may be developed to support the Park’s advanced computing infrastructure.
• **Sustainable Wastewater Infrastructure:** Opportunities for capturing heat from wastewater effluent, greywater recycling, and more, will be explored.

• **LEED Standards:** The Park will pursue LEED-Platinum or Gold rating for its buildings.

• **WELL Building Standard:** The Park will pursue certification of at least one building, with subsequent monitoring of health and wellness outcomes.

• **Sustainability Education:** The Park will serve as a living lab, providing numerous opportunities for on-site experiential learning. Educational programming will be available to students, tenants, and the community.

• **Living Labs:** Data on systems operability will be available for research and other purposes. Students, business leaders, and community members will be able to study, observe, and interact with design elements and infrastructure.

• **Ecological Preserve:** Interactive programs in environmental stewardship and recreation will connect the Park with the adjacent 300 acre Ecological Preserve (EcoPreserve).

**EcoPark Concept**

The Park will be designed to minimize its environmental footprint, while reducing operating costs and enhancing quality of place for its tenants. Innovation Park will incorporate the natural setting of the adjacent EcoPreserve into its overall design to provide greater connection to the environment that surrounds it. Landscaping will feature native flora and provide habitats for wildlife. Living infrastructure such as constructed wetlands and green design using eco technologies will provide benefits such as rainwater capture and energy efficiency.

Outdoor recreation spaces will provide opportunities for interacting with nature and the Park community. Shenzhen Bay Tech Eco-Park and various other eco and eco-industrial parks provide inspiration for Rutgers’ vision of the Park’s green infrastructure and design.

**Rendering of Shenzhen Bay Tech Eco-Park**

The Park Sustainability Program will seek to improve the economic and environmental performance of tenant businesses by promoting collaboration in managing water, energy, waste, transportation, and other resources. Various initiatives may be considered, such as coordinating deliveries of supplies to reduce truck traffic, purchasing green office and lab supplies in bulk, and sharing excess and waste materials. Environmental metrics for Innovation Park, such as energy usage and waste diversion, will be tracked and shared with tenant companies and Rutgers’ students and researchers.

**Rutgers Biomedical and Health Sciences**

**Overview/Purpose.** Rutgers Biomedical and Health Sciences (RBHS) was officially formed on July 1, 2013 via the New Jersey Medical and Health Science Education Restructuring Act which merged most of the former University of Medicine and Dentistry of New Jersey with Rutgers University. The merger greatly enhanced opportunities for increased academic collaboration, innovation, commercialization, and economic development across the region.
RBHS is an academic health center that:

- Provides patients and the community with health care for everyday needs and specialized services for complex diseases, illnesses and injuries
- Offers unique care not available elsewhere in the region
- Teaches generations of health care professionals
- Develops technology and carries out research that improves lives

Program Components.

- Rutgers Medical Device Accelerator: A Center will be created to house physicians and engineers who can collaborate in developing novel medical devices that address unmet clinical needs.
- Developing Novel Therapeutics for Neurodegenerative Diseases: Translational studies will be undertaken to identify therapeutic targets and molecules for developing treatments for degenerative disorders of the brain and novel disease modifying therapies that will slow the progression of certain disorders.

Institute for Restorative and Regenerative Technologies

Overview/Purpose. The Institute for Restorative and Regenerative Technologies at Rutgers University (IRT@RU) will bring together diverse Rutgers system-wide communities and global collaborators to exploit the rapid discovery and development of new biomaterials, cell based therapies, devices and drugs.

Program Components. IRT@RU will be built as a networked consortium focusing in the following areas.

- Research Partnerships: Stimulate innovative basic, applied and translational research in biomedical science focused on bone, tissue and organ restoration
- National Programs Funded by Federal Grants and Contracts: Coordinate and support biomedical technology programs focused on restorative technologies
- Education and Outreach: Serve as a focal point for biomedical education and professional development in restorative technologies
- Technology Transfer and Translation: Contribute to the activities of the Office of Research Commercialization and the Office of Translational Science by developing and sustaining expertise in regulatory science; establishing and promoting interactions with businesses and angel investors; and supporting entrepreneurial activities of faculty
IV. Phase One Proposed Buildings

1. Advanced Research Computing Facility

**Purpose**

Advanced research cyberinfrastructure is an overarching theme for Innovation Park@Rutgers, and will serve as the central core to support the technology and computing needs of industry, faculty research and other scholarly activities. Strategic initiatives led by RDI² and OARC will provide a scalable next generation ACI environment that leverages local, regional, national, and cloud resources, and is conducive to facilitating innovative ideas. The motivation for this undertaking are the challenges created by the growing scale and complexity of models, data, the internet of things, alternative energy solutions, economics, human dependency, and environmental impact and “addressing these challenges requires a holistic approach that includes R&D, industry engagement, workforce development, policies and regulations, and sustainable business models.”¹⁰ With an ACI ecosystem for the entire university community managed by the Rutgers Advanced Research Computing Initiative, the university and industry partners will be provided with a recognized and trusted “place to go” to develop infrastructure solutions and workflows to enable science, education, and scholarly achievements that are not possible today.

**Program Leadership**

The two primary units that will comprise ARCI are RDI² and OARC. These units will work together to advance the research computing capabilities and computational and data driven research across the university.

RDI² is the university leader in advanced cyberinfrastructure, and brings extensive expertise in multidisciplinary computational and data-enabled research with collaborations across the university, and with industry. It is also playing a leadership role in the state’s cyberinfrastructure and big data efforts. RDI² has already obtained over 50 grants totaling more than $40 million, including very large cyberinfrastructure grants. It has architected and is currently deploying the largest research computing platform in Rutgers history. It also operates one of the largest production data cyberinfrastructures for the U.S. National Science Foundation’s Ocean Observatories Initiative.

OARC provides system personnel and services to support and manage research computing resources, provides technical expertise and user services, and helps bridge the gap between researchers, campus IT, and local, regional, and national ACI ecosystems. OARC is uniquely placed in the university’s structure, reporting to both the Senior Vice President for Research and Economic Development, and the CIO/Senior Vice President for Information Technology.

RDI² and OARC are engaged in collaborative planning with other universities and organizations in the Mid-Atlantic States as well, including the University of Pittsburgh, Pennsylvania State University (PSU), Drexel University, Temple University, City University of New York (CUNY), NJEdge.Net (the New Jersey Research and Education Network) and the Keystone Initiative for Network Based Education and Research (KINBER).
Current regional collaborations include the New Jersey Big Data Alliance (NJBDA), a consortium of NJ government, academia, and industry that was initiated by RDI2 and the OED “to address, in a strategic and coordinated manner, the significant and immediate challenges posed by the proliferation of data sources and the resultant deluge of digital data.”

Beyond the New Jersey region, partnerships are being explored with Rutgers’ Big Ten/CIC peers and universities/organizations nationwide, such as the Open Science Grid (OSG). Existing national programs that Rutgers is a part of include Internet2, the OSG, XSEDE and CASC, the latter two through RDI2. Partnerships with international universities and organizations are also being considered. Industry partnerships, both local and national, are expected to be a vibrant element of the Advanced Research Computing community.

Program Details

Proposed programs to be conducted by the Rutgers ARCI include, but are not limited to the following:

• State-of-the-Art Research Computing and Data Management

The most substantial service that will be offered by the Rutgers ARCI is the coordination and facilitation of advanced high performance/throughput computing and data science resources. Academic and industry-affiliated researchers will benefit from an interdisciplinary, collaborative environment in which to perform leading-edge research with access to computing and advanced data analytics equipment and programs which may otherwise be unavailable to them or cost-prohibitive to maintain on their own.

Just as important as the facilitation of research, is the coordination of HPC equipment and data storage that will be provided. Data storage is a noted concern of researchers across the globe. ARCI will fill this existing gap at Rutgers, providing a rich storage infrastructure and transforming Rutgers’ research computing capabilities.

• Public and Educational Outreach Programs

A vibrant public space and pioneering programs for students and community members will make the Advanced Research Computing Facility the flagship destination of the Innovation Park campus. Next generation scientists, engineers, and students from many disciplines will be drawn to the facility for training, workshops, and seminars in cutting edge advanced high performance/throughput computing (HPC) technologies, given by both the ARCI staff and world-renowned figures in the HPC community. ARCI will be a means for sharing knowledge and expertise between Rutgers communities and the public. Innovative programs will bring in local community members and work to entice the next generation of computational and data scientists.

• Cybersecurity/Information Security

Out of this age of unprecedented technological advancement, a new field has rapidly arisen: cyber/ information security. The need to protect information and privacy, especially as data generation grows exponentially and without end, is perhaps one of the most inexhaustible challenges of this generation. ARCI will offer security services and solutions for university and industry partners, and may offer courses for students delving into the protection of information and information systems, data rights and ownership, liability and risk, theft and destruction.
Building Design

To reach its full potential, the proposed Rutgers Advanced Research Computing Facility will include a machine room and data center, a multistory interactive lobby and event space, classrooms and meeting space, makerspace, offices and open work space dedicated to facilitating collaborative efforts amongst team members. ARCI itself will catalyze socio-technical changes in research across all fields of science and engineering, using architecture that encourages open collaborations among different disciplines and stimulates new thinking. Modern architecture will assimilate with smart building design and technological advancements in green computing to produce a space that speaks to creativity and collaboration while maintaining an ecologically responsible and pioneering footprint. The building will integrate technology into a highly reconfigurable work environment with:

- Smart rooms
- Immersive displays
- Multimedia integration
- Abundant natural light
- Public mixed-use space including open lobby/event area and makerspace for imagination and ingenuity
- Data visualization displays
- Walls of screens and interactive touch technology
- Data collection and management through the building itself and the materials that are found within
- Workspace that encourages collaboration and creative thinking
- “Hotel” space for short-term projects

2. Food Innovation Center

Overview

The Food Innovation Center at Innovation Park will be positioned as a network hub, knowledge aggregator, business accelerator and portal to a food industry cluster that services Rutgers University, industry, the state of New Jersey, and domestic and international research partners.

Comprehensive services and state-of-the-art facilities and equipment will support the entire innovation pathway—from research to product development to commercialization. New multidisciplinary research and academic programs will be developed and fostered to catalyze the integration of three scientific disciplines:

- Food and Agricultural Sciences
- Health, Wellness and Life Sciences
- Data Analytics and Advanced Computation

As a result of this innovative, multidisciplinary approach, Rutgers will be positioned as an international leader in the scientific understanding, development and commercialization of advances that will emerge from the integration and triangulation of these disciplines. Innovative products will be developed and commercialized resulting in the creation of new companies, new/expanded businesses and new products, generating economic impacts for Rutgers and New Jersey, and improving the health and wellness of people globally. Cutting edge research in the areas of Healthy, Functional and Medical Foods, as well as in other areas centered around food production, distribution, and storage will be targeted.

Program Leaders

The Rutgers Food Innovation Center, the Office of Economic Development, and a team of faculty advisors will provide management, scientific expertise and advisory leadership to this program, and aggregate the resources that will be needed to support it.
Rutgers Food Innovation Centers

The Park Food Innovation Center (Park FIC) will benefit greatly from two internal support systems at Rutgers that will be transferred and/or leveraged to the new Park facility.

- **FIC–North**

The Park FIC will house the personnel, resources and clientele of the existing FIC–North, as this entire program will be transferred from its current location to the Park location.

The center provides space, equipment and services to tenant clients who are mainly small entrepreneurs, allowing them to focus on developing and growing their business. The center also provides Rutgers students with opportunities for paid internships, class tours, mentoring for product development competitions and guest lecturers when requested.

The 31,000 SF facility contains USDA FSIS and FDA-inspected manufacturing space, as well as a Product Development Laboratory, Quality Control Laboratory, Pilot Plant, Warehouse and other support space including an information resources room, a conference room, and offices. The facility and related equipment are available for short- and long-term use for proprietary product and process development.

The center has three main programs aimed at meeting the needs of New Jersey regional businesses and the nation:

- **CORANET (Combat Ration Network)**
  - DoD funded contract research and development focused on improving the manufacturability and quality of rations for the nation’s military.

- **TEP (Technology Extension Program)**
  - Space rental and fee-for-service programs targeted at existing food companies and entrepreneurs in New Jersey.

- **Instrument Support (Mass Spec Lab)**
  - Fee-for-service mass spectrometry serving mid-size to large companies in need of advanced analysis and identification of food compounds, environmental and packaging material contaminates, dietary supplements and drugs. This program is housed in the Food Science building on the Cook Campus.

The services provided to the food industry include use of space and technical support allowing clients to produce saleable product on a commercial scale, product and process development aimed at creating new foods and beverages for clients ranging from start-ups to major global food companies, food safety training and business mentoring designed to coach entrepreneurs about the food business and advanced analytical services.

Programs and projects are tailored to meet client needs, budgets and expectations.

- **FIC–South**

FIC–South is a globally recognized food business incubator and economic development accelerator that provides extensive programs in training and workforce development; customized and comprehensive business and technical mentoring services; and a 23,000 SF USDA and FDA-inspected facility that enables design, development, analysis, commercialization and manufacture of value-added food products for sale to retail and food service markets.

FIC–South has been named as the 2016 “Food Incubator of the Year” by the International Business Innovation Association (InBIA) and recognized as an “Agricultural Innovation Center Demonstration Program” by the USDA.

FIC–South currently has Memoranda of Understanding with agencies and entities in several foreign countries, and clients that have originated from Europe, the Middle East, and Central and South America. This includes a
highly publicized partnership with Tel-Hai College in Israel, focused on the field of Healthy, Functional and Medical Foods. In addition, FIC–South has attracted domestic clients from as far away as California and Hawaii, including a company that is pioneering the field of scientifically-derived imitation meats made entirely from plants.

FIC–South works very closely with state and federal government offices associated with economic development, including Choose NJ, the Business Action Center, the NJ Department of Agriculture, and USDA Rural Development. These resource partners, and many others that FIC–South has developed, will become immediate partners of the Park FIC.

**Beneficiaries**

Beneficiaries will include start-up and established companies in Food, Life Sciences, Nutraceuticals and Allied Food Sectors, that are seeking to fund and/or partner on research objectives, gain access to new technologies, commercialize new technologies, develop and manufacture new products, expand operations, enter new markets, etc.

The Park FIC will aggregate the food industry value chain and also aggregate a network of resources to meet the diverse needs of projects and opportunities that will result. These resources will include:

- Domestic and international academic research partners
- Federal, state and community agencies
- Industry trade associations
- Venture capital and investor groups, and foundations
- Industry suppliers and service providers
- Business mentors and consultants

**Program Components**

**Systems-Based Research**

Industry researchers and Rutgers faculty will be able to conduct novel applied multidisciplinary research, working in collaboration with other researchers at university partners worldwide, in the areas of Food and Agricultural Sciences; Health, Wellness and Life Sciences; and Data Analytics and Advanced Computation. As a result, cutting edge computational science will be applied to food in all its manifestations: production, processing, distribution, storage, sale, consumption, and disposal.

Applications could include computational science directed toward:

- Analyzing the food microbiome of specific crops (coffee, cocoa, soybeans, etc.) and the gut micro-biome of humans and livestock.
- Analyzing and predicting bioactive components (peptides, small molecules, etc.) of specific foods for both human and animal health based on both established and novel bioinformatics techniques and analyses of structural data in the Protein Data Bank located at Rutgers.
- Optimizing food distribution and storage using modern network theory to improve efficiency and reduce waste (currently ~35% of all food produced in the U.S. is thrown away.)

Applications could also include genomic science directed toward:

- Understanding the idiosyncratic component to human and animal wellness and its relation to diet.
• Analyzing the genetic variety in food crops and its relation to production efficiency and stress tolerance.

• Analytical science (chemistry and physics) applied to development of novel sensors for food quality and safety.

• Materials science applied to development of novel packaging and storage containers that reduce waste and provide smart sensing and reporting abilities.

**Services, Space and Connectivities**

The Park FIC will provide key services, spaces and connectivities that are critical to establishing a true multidisciplinary innovative environment that catalyzes partnerships, business development and economic growth.

Services that consist of subject matter expertise will be provided by a network of industry professionals.

A proposed 60,000 SF facility will include: a shared-use food processing environment equipped to meet the many variable processing needs of clients, while being FDA and USDA inspected and “best in class” in terms of sanitary design, fit and finish, and operating protocol; R&D kitchen; research laboratories that can support short and intermediate term (1-12 months) multidisciplinary research projects conducted by Rutgers scientists, visiting scientists, students, etc; presentation/conference rooms to support private as well as public presentations, training and meetings; and administrative offices.

Connectivities that consist of both physical spaces and virtual/electronic networks that bring people together to initiate, encourage and support cross-disciplinary work and collaborations, provoke conversations, introduce specialists to existing and novel problems, and otherwise generate a rich multidisciplinary network to fertilize innovation and collaborations.

The Park FIC will provide a mentoring team that can advise faculty, entrepreneurs and established food businesses throughout the research and development process. Staff will provide or facilitate the following types of professional mentoring services for its clients (sample list only):

• Business and Partnership Development
• New Product Development
• Technology Commercialization
• Quality Assurance and Food Safety
• Community Engagement
• Development and Support of Experiential Learning Program for Students

3. Industry Collaboration Building

**Overview**

The Industry Collaboration Building will be a privately developed and owned facility. Its location in the heart of Innovation Park will allow industry tenants to have maximum contact and regular interaction with Rutgers’ faculty, researchers, and students.

**Building Attributes**

Rutgers envisions the Industry Collaboration Building as a flexible Class A office and laboratory building that will provide significant opportunities for interaction with the Rutgers academic community and become known as one of the premier tech addresses in Central New Jersey. The building will comprise approximately 90,000 gross square feet of office
space and wet/dry lab space, meeting/training rooms, conference facilities, Rutgers corporate programs, collaboration spaces, a makerspace, dining facilities, and other amenities that are designed to stimulate networking and partnership creation. Tenant spaces should be flexible to meet a full range of space needs, allowing companies to grow and expand within the building.

V. Economic Impact Assessment

Introduction

Economic development is driven by building blocks in the economy: entrepreneurs, innovation, workforce, investment climate, support for businesses in expanding markets, and the connection between universities and industry. These components feed industry specialization and commercialization of new technologies, creating regional competitive advantages and economic growth.

University innovation parks have emerged to stimulate the university/industry dynamic, bringing together critical elements for innovation (i.e., intelligent people, research, entrepreneurial training, and collaborative spaces to encourage professional networking) and taking advantage of their geographic proximity and interaction with one another. University innovation parks can help entrepreneurs overcome challenges to creating high-growth businesses by providing incubation space, mentorship, and specialized programs and services. They can also offer strategic advantages to existing companies competing in the global economy. For example, university researchers may collaborate with businesses to develop new manufacturing processes, products or materials.

U3 Advisors, in conjunction with BJH Advisors, (collectively the “Consultants”) completed an economic impact analysis of a potential development scenario for the three proposed Phase One buildings of Innovation Park. The analysis estimates the number of direct, indirect, and induced jobs created through the construction (estimated in worker-years) and operation of the project, as well as its overall earnings and economic output in the local economy.

Rutgers staff completed an additional tax analysis to determine fiscal impacts of Innovation Park for the federal government, state and local municipalities.

Findings

i. Direct Effects

Temporary Construction Effects. According to assumptions provided by Rutgers, construction hard costs are estimated at $49 million, or approximately $250 per square foot. The Consultants assume that 50% of the hard-cost budget is composed of labor and that each construction employee will earn an average of $120,000 in wages and benefits annually (New Jersey construction wage). Based on these assumptions, Innovation Park will create 205 direct construction jobs (measured in worker-years).

Permanent Effects. The direct effects associated with permanent jobs are a function of square feet of space by use and industry at Innovation Park and average income per worker year by industry. The project is estimated to generate 810 post-construction permanent jobs.

ii. Indirect and Induced Effects

Temporary Construction Effects. The direct employment (measured in worker-years) and output generated from the construction of Innovation Park is expected to catalyze an additional 141 indirect and induced jobs (also measured in worker-years), $15 million in indirect and induced earnings, and $39 million in indirect and induced output in the New Brunswick economy.

Permanent Effects. On-going annual activity at Innovation Park will generate 1,335 indirect and
induced permanent jobs, $74 million in new indirect and induced earnings, and over $200 million in indirect and induced output in the New Brunswick economy.

iii. Aggregate Economic Impact

Temporary Construction Effects. The aggregate direct, indirect, and induced economic impact from the construction of Innovation Park is estimated to generate 346 more worker-years, $40 million in additional earnings, and $88 million in total output from construction activity.

Permanent Jobs. The aggregate direct, indirect, and induced economic impacts from permanent jobs associated with Innovation Park will generate 2,146 jobs, $146 million in earnings, and over half of a billion dollars in direct, indirect, and induced output.

iv. Additional Fiscal Impacts

It is estimated that the construction of the Park will generate approximately $12.2 million in tax revenues for the federal government, the state, and local municipalities.

The estimated annual tax impact generated by the operations of the Park is approximately $52.2 million, of which $16.6 million is expected to go to state and local municipal governments.

Direct and Indirect Benefits to the University

Research parks provide a multitude of benefits to local, regional, and state economies. They can also directly benefit their host institutions. The Rutgers Team solicited feedback from Association of University Research Park (AURP) member institutions regarding the impact their park(s) has on their university. The Rutgers Team also conducted research on the topic, sourcing much of the data from research park annual reports. The findings of the survey and research revealed that having a research park can lead to increases in:

- student internships
- hiring of alumni
- entrepreneurship
- publication rates
- research funding
- patent activity and commercialization of research
- interactions with industry
- donations/giving to the university, as well as an enhanced ability to hire pre-eminent scholars, and an improvement in quality and reputation of the university

Endnotes

1 National Governors Association Chair’s Initiative: Growing State Economies Twelve Actions, 2011 – 2012
2 The Rise of Innovation Districts: A New Geography of Innovation in America, May 2014, Katz, Bruce and Julie Wagner
4 Universities and Colleges as Economic Drivers, 2012, Lane, Jason and Bruce Johnstone
5 The Next Hot Trend On Campus: Creating Innovation, February 25, 2015, Brad Lukanic
6 U.S. Employers Suffer Largest Talent Shortage in Skilled Trades, 2015
7 The State of the American Entrepreneur in 2015, May 29, 2015
8 U.S. Entrepreneurship Rates Reverse Trend, Reach New Heights
12 Square feet of space by use and industry from the U.S. Green Building Council and the National Institute of Health with some Rutgers University specifications.
Chapter 3: Implementation Strategy
Implementation Strategy

I. Organization and Management Approach

A variety of models exist for the ownership, governance and financial structure of research parks and for the relationship between the research park and the sponsoring university.

For the university, the preferred governance structure must facilitate opportunities to promote alliances with key industry sectors, expedite research collaborations, help recruit and retain top research faculty, support the ability to commercialize faculty research, and provide Rutgers students with meaningful employment opportunities, all while fostering a culture of entrepreneurship. For private companies, the Park will provide proximity and access to applied research and Rutgers talent. The preferred governance structure should also ensure that private companies benefit from enduring links to Rutgers through sponsored research and long-term partnerships. For all parties, it is integral that the governance structure provide a strong framework for incremental growth while allowing for the flexibility to respond to changing and often unpredictable market conditions.

II. Recommended Governance Structure

501(c)(3) Entity

Battelle and U3 Advisors agree that governance of the Park by an independent yet university-affiliated entity is optimal to ensure continuity in project management and mission, in addition to enabling better collaboration and coordination with private industry.

The advisors recommend that the university establish a special purpose entity, a 501(c)(3) non-profit corporation that can be led by a Board of Directors comprised of 9–13 leaders from the university, government, and the business community, and chaired by the university President or the President’s designee. This entity can be wholly owned by the Board of Governors of Rutgers University.

III. Proposed Ownership Structure

The consultant team recommends that Rutgers seek a developer partner who will be fully engaged in creating and sustaining a vibrant ecosystem at the Park. The developer will manage and operate the Park in an ownership capacity in collaboration with Rutgers; participate in the development of Park programs; and coordinate leasing efforts with the Park’s larger branding initiatives.

Occupying university-owned land adjacent to both the Livingston and Busch campuses, the proposed site of Innovation Park has long-term strategic importance to Rutgers. Therefore, the consultant team recommends that the university retain full ownership and control of the land, though this may be transferred to the 501(c)(3) governance entity, depending on its structure.

As the Park will likely be built in multiple phases over several years, development sites should be conveyed to private developers via separate unsubordinated ground leases that are set to commence as construction begins on each parcel.
Improvements on the ground lease will likely be owned both by the university and private developers, depending on their use, though Rutgers or the special governing entity would own most internal roadways, common open spaces and common site infrastructure.

IV. Implementation

Rutgers has already undertaken a number of steps to ensure a successful path forward for the development of the Park, including:

- A comprehensive environmental assessment of the proposed site and
- A preliminary infrastructure assessment of the site have been completed.
- An RFI was issued to developers and expressions of interest have been received.
- An external advisory board was formed.

Conclusion

Innovation Park will be much more than a collection of buildings. Rutgers University will leverage its size and diversity to turn the Park into a distinctive place—an innovation ecosystem that provides meaningful connections between industry and academia. The Park will be a national model for technology-led economic development, contributing value to New Jersey businesses and communities and Rutgers University. It will be a critical asset in shaping “tomorrow’s university,” acting as the physical focal point for connecting Rutgers to the business communities that will employ its students and translate the products of its research into practice. Innovation Park will stimulate entrepreneurial activity; provide industry with access to an unparalleled talent pool; support multidisciplinary research directed at solving complex issues; and encourage the commercialization of promising technologies.

We invite you to be part of it.
Senior Administration Steering Committee

Robert Barchi, President, Rutgers University
Antonio Calcado, Executive VP University Strategic Planning and Chief Operating Officer
Richard Edwards, Chancellor, Rutgers New Brunswick
Michael Gower, Exec. VP, Finance and Administration and University Treasurer
John Hoffman, Sr. VP and General Counsel
Barbara Lee, Sr. VP, Academic Affairs
Kim Manning, VP, University Communications and Marketing
Peter McDonough, Sr. VP, External Affairs
Christopher Molloy, Sr. VP, Research and Economic Development
Michele Norin, Sr. VP, Chief Information Officer
Brian Strom, Chancellor, RBHS

Internal Advisory Board

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