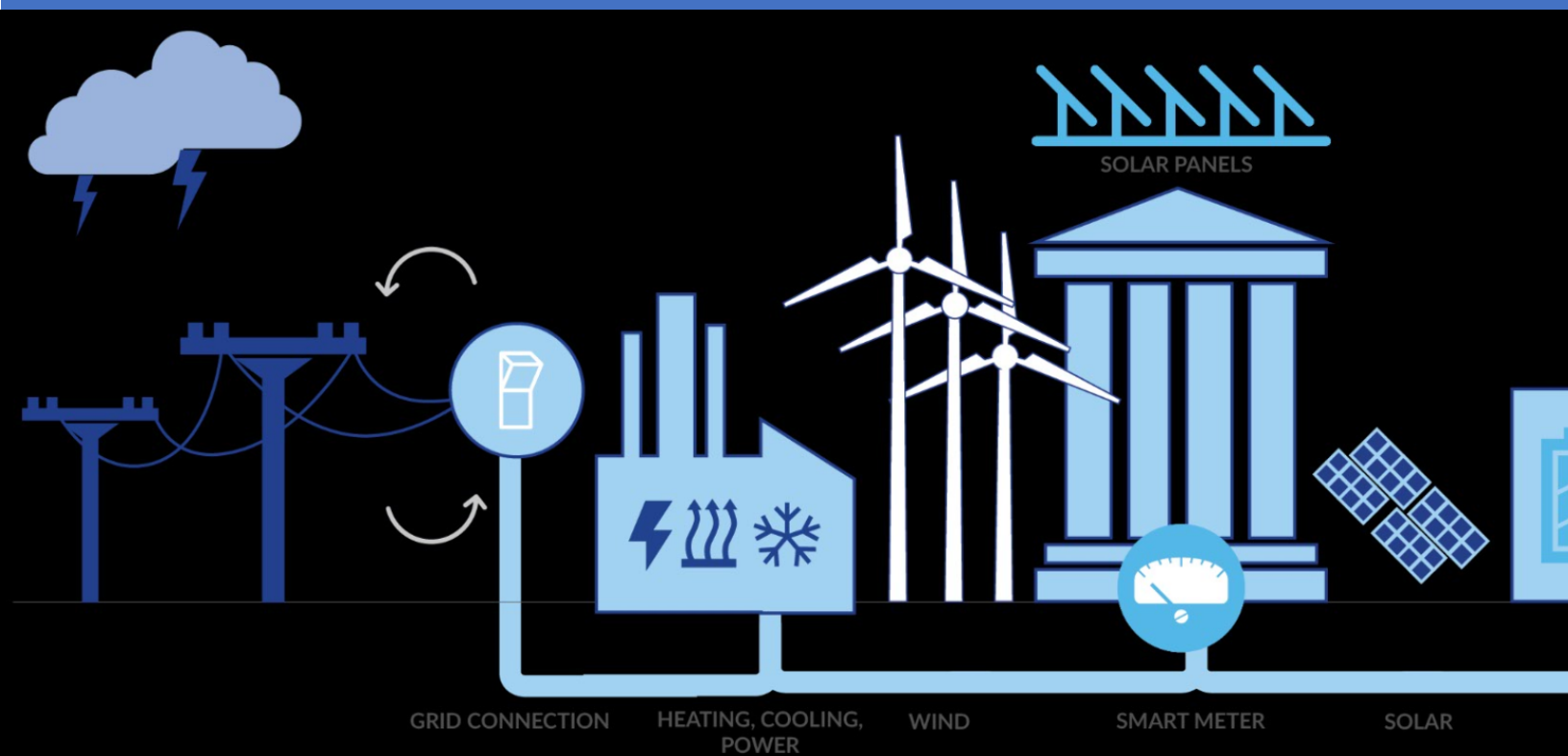


The URI Microgrid Innovation Campus



Executive Summary

Vision

The Raimondo Administration has a strong track record of action that establishes it on the leading edge of energy innovation. There are great examples one can point to, from the first offshore wind development in the US to changes being considered in the traditional regulated power industry to remove barriers to microgrids and other distributed energy resources. In keeping with this challenge to the status quo and in order to unleash technical and commercial innovation, Anbaric Development Partners (ADP) proposes to develop the URI Microgrid and its associated control center housed in the Center for Energy Security and Resilience (CESR). The former will be carried out as a partnership with URI and the latter (CESR) serves as the core of our response to the RIIC RFP. Collectively, the URI Microgrid and CESR make up the URI Microgrid Innovation Campus.

The outcome of a successful selection by the RIIC evaluation committee and the subsequent successful agreement on and execution of the remainder of our proposal will result in:

- **A clean energy microgrid at URI's Kingston campus** that will be optimized for energy consumption to address the growing needs of the campus in an integrated manner. Heating, cooling, lighting, power, chilled water, and other systems will be provided in a comprehensive way to meet the specific needs of URI's students, faculty, staff, researchers, and visitors on a least-cost basis for the next 30 years. The URI Microgrid will be sustainable, both financially and environmentally. It will enable URI to meet its resilience and sustainability goals and become a platform that allows the integration of future technological advancements. It also will eliminate the liabilities related to breakdowns due to underinvestment in aging infrastructure.
- **An Advanced Microgrid Control Center** (and a potentially larger RIIC housing multiple projects) hosted in a location close to URI's Kingston campus (see Confidential Submittal – Physical Facility Description for location and additional information). URI could potentially own the building as an asset used for academic purposes beyond the needs of the RIIC. The state-of-the-art facility would enable collaboration among researchers, industry, academics, administrators, and students.
- **A platform for experiential learning** that will transform URI's energy infrastructure from a utility function into an integral part of education at URI by enabling hands-on learning. Students, faculty, and researchers will benefit directly through data/information sharing and indirectly through the culture changes that a higher awareness of energy production and consumption enables. This awareness based on intelligent data analytics will reduce consumption and the associated carbon footprint.
- **A new research frontier for URI and southern Rhode Island.** A lab at CESR equipped for developing medium-voltage direct current (MVDC) microgrid power electronics and systems will open new opportunities for research at URI and across southern Rhode Island related to the

next generation of all-electric Navy ships. MVDC microgrid research will drive increased faculty engagement with leading Rhode Island defense contractors, the Department of Defense, and renewable energy firms, and will seed new startups to drive technology commercialization.

The URI Microgrid in Kingston will serve as the model for similar microgrids throughout the state thrusting Rhode Island into what is considered by many experts as the future of the energy industry.

Team

Our proposal is about transformation that will break the cycle of underinvestment and modernize energy infrastructure. It also is the least cost way to transition to the grid of the future that URI needs and deserves. Capital constraints cause incremental investments to extend the life of aging systems, leading to high lifecycle costs for a University that is an integral part of Rhode Island's future.

It is critical that this transformation be carried out by a team of well-funded companies with deep expertise in all aspects of such a transition—finance, engineering, instrumentation, big data, planning, operations, and capital projects. We have assembled a team uniquely positioned for this comprehensive approach:

Anbaric has built \$1.5 billion in energy infrastructure projects with another \$4.5 billion in progress.

Our proposal is about transformation that will break the cycle of underinvestment and modernize energy infrastructure.

- **Anbaric Development Partners, LLC (ADP)** conceives, incubates, develops, and invests in projects that strengthen the bulk power grid, integrate regional markets, and bring renewable energy to population centers. ADP's objective is to develop innovative energy infrastructure projects that fall outside the scope of traditional industry participants and are expected to exceed \$2 billion in fully constructed assets.
- **Tx Grid 1, LLC (Tx Grid), a wholly owned subsidiary of the Ontario Teachers' Pension Plan Board (OTPP)** which is Canada's largest single-profession pension plan, with C\$180.5 billion in net assets as of June 30, 2017. OTPP was founded in 1990 to actively invest the plan's assets and administer pension services on behalf of school teachers in the province of Ontario. On February 21, 2017, Tx Grid and Anbaric formed ADP to invest in early stage development of electric transmission systems and microgrid projects. Per the ADP Amended and Restated Limited Liability Company Agreement dated March 8, 2017 ("ADP A&R LLC Agreement"), Tx Grid 1 LLC has committed to provide ADP with capital to fund ADP's research, incubation, and development of projects.
- **Schneider Electric** is a global specialist in energy management and automation that develops connected technologies and solutions to manage energy and process in ways that are safe, reliable, efficient, and sustainable. Schneider invests in R&D to grow innovation and differentiation, with a strong commitment to renewable development. Its 160,000 employees operate in 100 countries, and the firm has a long relationship with Rhode Island.

- **Ramboll**, founded in 1945 in Denmark, today has more than 300 offices in 35 countries with 13,000 employees. The firm works across eight markets—buildings, transport, planning & urban design, water, environment & health, energy, oil & gas, and management consulting. Ramboll's solutions target today's megatrends, with a holistic and multi-disciplinary approach to projects.
- **Intersection** is an Alphabet (Google's parent company) portfolio company focused on digitization of cities and helping municipalities, real estate developers, and public-private partnerships create connected, responsive communities. The firm guides clients as they envision new experiences, develop comprehensive plans, and implement technology to unlock new sources of revenue, reduce costs, and improve the quality of life in mixed-use environments. Intersection has about 1,000 employees and is headquartered in New York.

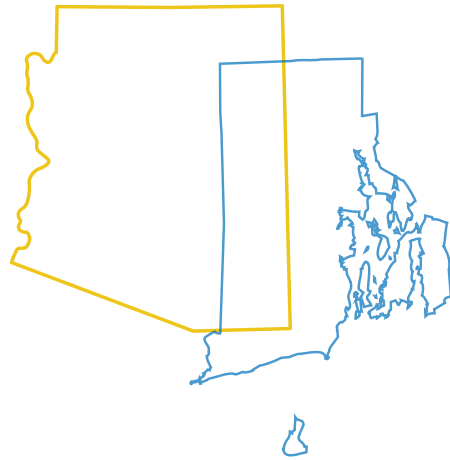
Innovation is in the DNA of each of our team members:

- **Anbaric** has developed \$1.5B worth of energy related projects with another \$4.5B in progress. Anbaric upended the traditional utility industry by connecting New Jersey to New York City (two distinct power pools) with independently developed and constructed high-voltage direct current transmission lines. These power lines were taken from concept stage through commercial operations by Anbaric and its partners in these projects.
- **OTPP** is one of the progressive financiers making significant investments in infrastructure under leading edge contractual arrangements, such as one with Anbaric, to drive value creation. Their ability to innovate in the investment world has resulted in one of the best long term returns among pension funds.
- **Schneider Electric** is the consummate innovator that has been recognized with numerous awards, patents, and a rich history of cutting edge products in the energy industry. Their US headquarters campus is set up as a microgrid, and we ask that the evaluation team visit this facility to experience first-hand a working microgrid and the related control center.
- **Ramboll** has carried out several innovative projects in the energy industry, their record in transition from steam-based systems to hot water-based systems is unmatched globally. The firm is a pioneer in large-scale district heat projects and built Copenhagen's iconic waste-to-energy plant that raises the bar for resource optimization—and features a ski slope and climbing wall on the roof to integrate it into the urban setting.
- **Intersection** is at the forefront of the smart cities revolution, with award-winning products like Link, the largest and fastest free public Wi-Fi network in the world. It has also developed the Digital Master Plans for some of the largest real estate developments in the US, including New York's Hudson Yards, in which it processes data from over 250,000 sensors.

This team strikes the right balance between pragmatism and vision, between engineering and business, between enhanced functionality and real benefits offered by information technology. ADP has the

domain expertise in energy and related subject matter; it also has the project management expertise to carry out complex projects in a multi-stakeholder environment.

ASU- Rhode Island Innovation Center



MARCH 2, 2018



Executive Summary

Having made its mark in such traditional industries as healthcare, financial services, and ocean technology, Rhode Island is now seeking to strengthen its foothold in the new economy with the aim of fostering business growth, job creation, and new investment. A team led by Arizona State University (ASU) will help Rhode Island accelerate and optimize this enterprise creating a hub focused on educating students and fostering entrepreneurship to encourage new products, jobs, and companies based on innovations in cybersecurity and related big data analytics, and the Internet of Things (IoT).

Applying more than 30 years of experience in establishing and sustaining innovation zones—and offering matching funds of \$6 million—ASU will partner with the University of Rhode Island (URI) to establish a 7,500-square-foot innovation hub for cybersecurity on a URI site as part of a larger Rhode Island Innovation Campus. Corporate, academic, and government partners, selected for their commitment and expertise, will also participate in this endeavor. Though not concluded at this time, discussions have been actively underway with potential partners who are interested in teaming, and we have included two letters of partnership.

The hub will include elements proven to spark and sustain innovation, such as portable classroom modules with virtual capabilities, research zones, incubator spaces for start-ups, and co-working and event facilities. Also included is a data modeling and visualization theater that will enable enhanced analysis for improved decision making and serve as a convening point for synchronous URI and ASU courses.

Within this platform, ASU and its partners will build an interdisciplinary and multi-faceted program to develop qualified, highly trained cybersecurity professionals and promote a wider community of entrepreneurship. This program will comprise the following primary activities:

- **Education and workforce development**, including joint undergraduate courses and joint graduate degrees; professional certifications; and courses taught simultaneously in Rhode Island and Arizona and other locations
- **Research in cybersecurity, big data analytics, and IoT** beginning with seed funding that will lead to wider collaborations with industry and government and follow-on funding opportunities
- **Commercialization and start-up resources and initiatives** provided through a partnership between ASU and URI's top-ranked entrepreneurship, innovation, and technology transfer teams; a network of mentors for student and faculty-affiliated start-ups
- **Community outreach and citizen science initiatives** that build on ASU programs and Rhode Island's Computer Science for Rhode Island initiative to include content on entrepreneurship, social entrepreneurship, and design thinking; citizen science programs, events, and exhibits to widen entrepreneurial enthusiasm, public knowledge, and participation
- **Platforms and facilities** to support the hub's four major activity streams, including a **data visualization and modeling theater** that uses audiovisual and information technology to display and model massive or complex datasets to be used and studied by researchers and decision-makers.

Innovation Campus Economic Impact

Based on impact studies of similar projects in Arizona and ASU's decades-plus experience establishing, building, and managing similar campuses and centers, we expect the entire Rhode Island Innovation Campus—including the cybersecurity innovation hub—to contribute \$115 million and 1,000 jobs to Rhode Island's economy in its first two years. Within 10 years, the project could generate a cumulative \$2 billion and 3,400 jobs, with multiplier effects contributing an additional \$120 million in income and \$150 million in revenue. And after several decades, the Rhode Island Innovation Campus could contribute tens of billions of dollars to Rhode Island's economy.

These projections are firmly rooted in the trajectory of similar ASU projects. For example, SkySong, the ASU Scottsdale Innovation Center, generated more than \$2 billion in economic impact across the Phoenix area in its first 10 years of operation (2007-2017), according to the Greater Phoenix Economic Council. Projections of the Council show that impact could grow to \$32 billion after three decades of operation.

The cybersecurity innovation hub alone could generate tens, even hundreds of jobs and contribute millions of dollars to Rhode Island. A similar industry-university cooperative center at ASU dedicated to wireless electronics research attracted 25 industrial partners and raised \$35 million in its first 15 years, including \$18.75 million in corporate contributions.

Capturing Opportunities in the Growing Cybersecurity Field

Cybersecurity is becoming an increasingly urgent concern as organizations observe or absorb the devastating economic and reputation impacts of cyber breaches. Worldwide spending on information security is on track to reach \$93 billion in 2018, and experts predict that by 2026, cybersecurity job openings could total well over one million. Innovation is key to success in this arena: New techniques and tools are and will be constantly needed to secure data against the rapid evolution in the type and quantity of cyberattacks perpetrated.

By supporting this types of innovation in a sustained manner, Rhode Island will position itself to create high-paying jobs and attract businesses and significant investment, as shown by the estimates above. In addition, advancing the ability of Rhode Island companies to thwart cyberattacks can help them avoid millions—or perhaps even billions—of dollar in damages. Such safeguards are especially important given that some of Rhode Island's top industries, including financial services, healthcare, and manufacturing, are key targets of cyberattacks.

Accelerating Progress through ASU Partnership

Combining its strengths with those of the ASU team described below, Rhode Island can accelerate the market entry and impact of cybersecurity innovations generated within the state's top research centers. Each of ASU's strengths have combined to earn us for three consecutive years the top spot in *U.S. News and World Report's* rankings for innovation.

Leadership

To lead the creation of a cybersecurity innovation hub within the Rhode Island Innovation Campus, our team combines experienced higher education and business executives who have fostered many of ASU's entrepreneurial activities and partnerships with some of the world's best cybersecurity researchers and educators.

Sethuraman Panchanathan, ASU's Executive Vice President of Knowledge Enterprise Development and Chief Research and Innovation Officer, has been instrumental in making ASU one of the nation's fastest growing research institutions—with research expenditures totaling \$546 million in 2017. In 2014, he was appointed by President Barack Obama to the US National Science Board (NSB). Panchanathan was also appointed by US Secretary of Commerce Penny Pritzker to the National Advisory Council on Innovation and Entrepreneurship (NACIE).

ASU's contact for this proposal, Associate Vice President of Knowledge Enterprise Development Ji Mi Choi, has been directly involved in fostering many of ASU's entrepreneurial partnerships and brings her experience from New York University, Columbia University, and other public-private partnerships.

Deans Kyle Squires (Ira A. Fulton Schools of Engineering) and Todd Sandrin (New College for Interdisciplinary Arts and Sciences) lead faculty involved with the Center for Cybersecurity and Digital

Forensics (CDF) and Cybersecurity Education Consortium. The latter could be expanded to include URI as part of our innovation hub.

Start-up Support and Commercialization Savvy

Rhode Island cybersecurity start-ups will be able to take advantage of some of the best commercialization resources available in an academic setting. Through Skysong Innovations, ASU's technology transfer division, ASU has become one of the top-ranked, top-performing US universities (in the top 25) in terms of intellectual property inputs (inventions disclosed by researchers) and outputs (licensing deals and start-ups). Further, URI students and faculty can benefit from training and coaching on transitioning university research into the marketplace, which draws from ASU's experience as a site for the National Science Foundation's Innovation Corps program, among others.

Technology Expertise

Partnering with ASU will give Rhode Island access to students and faculty at the US's largest public research university with some of the nation's top-ranked, best-funded computer science, math, and engineering programs and training capacity. Our interdisciplinary approach fits well with cybersecurity, requiring a variety of jobs at various skill levels in computer and information science, business, math, and social science.

Creating and Sustaining Innovation Campuses

Rhode Island will be able to learn from ASU's 35 years' experience creating six innovation zones within the Phoenix area. ASU has constructed, renovated, repurposed, or planned 1,197 acres, 31 buildings, and more than 4.75 million square feet with dozens of real estate and land development companies. These zones range from the long-established ASU Research Park—which employs more than 5,000 people—to the nationally acclaimed SkySong Innovation Center to the futuristic Novus Innovation Corridor.

Collaboration Experience

Activating an innovation campus requires coordinating with industrial, academic, and governmental organizations and participants in the public and private spheres. Our Rhode Island-based innovation hub could build on ASU's long history of fruitful collaborations around the world with public and private institutions. Through these experiences, ASU has learned to identify and integrate each partners' resources, expertise, systems, and processes to achieve common goals more quickly and effectively than would be possible working individually. University of Rhode Island researchers have figured prominently in these collaborations, co-authoring 28 publications with ASU since 2012, including a healthy proportion (15 percent) focused on computer science.

Further, ASU's collaborations have led to relationships and networks that would offer particular value to the cybersecurity innovation hub. Specifically, Rhode Island would gain privileged access to the Global Security Initiative (GSI), a university-wide interdisciplinary center that focuses highly complex problems, as well as ASU's Center for Cybersecurity and Digital Forensics described further in the proposal.

Ability to Match and Steward Funds

ASU is requesting—and will match, dollar-for-dollar—\$6 million to build the cybersecurity innovation hub. The financial aspects of this proposal build on ASU's familiarity with similar projects and its confidence that the operating model proposed will cover for at least 10 years all operating and programming costs without further support from Rhode Island. The cost proposal also projects external funding from corporate contributions and philanthropic support—a projection based on ASU's proven ability to partner with organizations that provide resources and support to ASU projects of high interest. The success of the

ASU entrepreneurial and commercial ventures discussed above underscores ASU's demonstrated ability to steward the funding model toward greater economic benefit.

Partnering with Rhode Island and Its People for Success

ASU's world-class cybersecurity and entrepreneurship expertise and decades-plus experience creating and operating innovation hubs and campuses will give Rhode Island and its people the spark it needs to ignite decades of economic growth. Our contribution—an innovation hub dedicated to cybersecurity, big data analytics and visualization, and the Internet of Things—takes advantage of a booming technology field affecting almost every industry in Rhode Island (and around the globe), while winning battles against criminals, hacktivists, and cyber terrorists in what U.S. Senator Jack Reed calls “the complex challenge of cyber warfare,” and solving problems in “one of the most significant and enduring challenges that all businesses, across industries, face.” Rhode Island can and will lead these research teams and this charge, while injecting millions of dollars into its economy.



Rhode Island Innovation Campus

Providence, Rhode Island



EXECUTIVE SUMMARY
MARCH 2, 2018

executive summary

Rhode Island has all the ingredients to be a leading hub of innovation, including a strategic location at the center of the Northeast corridor, strong talent pool and wide breadth of research fueled by world-class universities, political leadership, stable business environment, competitive cost of living and high quality of life. And, with support from the private sector and government, Rhode Island is ready to launch the next phase of technology commercialization, business growth and job creation. As recommended by *Brookings Institute's 2016 Rhode Island Innovates* report, the creation of purpose-built Innovation Campuses presents an opportunity to catalyze Rhode Island's innovation assets into greater economic growth and employment opportunities. Further, the State's commitment to this initiative is evidenced by the approval of a \$20 million bond issuance to support the creation of such Innovation Campuses.

The team, led by BioInnovation Labs LLC ("BioLabs") and Wexford Science & Technology, LLC ("Wexford"), believes that the newly-designated Providence Innovation and Design District presents the best opportunity for an Innovation Campus to amplify the momentum created by the State and University of Rhode Island into a catalytic, innovative, accessible environment that brings together researchers, entrepreneurs, and leading industry partners to live, work, play, learn and discover.

BioLabs is an internationally known, well-respected and highly sought after advisor, developer and operator of a membership-based network of shared lab facilities located in key biotech innovation clusters designed exclusively for high-potential, early-stage life science companies. It offers co-working environments that pair premium, fully equipped and supported lab and office space with unparalleled access to capital and industry partners.

In order to successfully implement the BioLabs platform, the team is requesting \$9.86 million from the State's bond proceeds.

BioLabs and Wexford believe that leveraging the considerable strengths of Rhode Island and the energy and enthusiasm of its leading academic centers of excellence into a world-class Innovation Campus involves much more than just a real estate transaction. It requires a long-term partnership between **an entrepreneurial life science company with a co-working platform with proven success in academic collaboration, programmatic excellence, substantial job creation and economic growth, and a development team with demonstrated vision and experience in creating and curating such environments, unsurpassed knowledge of the site and ability to execute the development plan on schedule and on budget.** The combination of our unique, respective value propositions results in a team with values that are aligned with the University of Rhode Island, a deep understanding of, and equity in, the local Providence community and a compelling case to successfully deliver and execute the State and University's vision for a catalytic Innovation Campus.

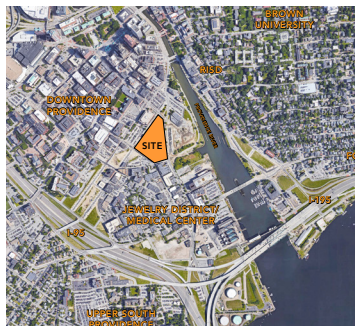
executive summary

BY ANCHORING THE INNOVATION CAMPUS PROJECT WITH A SHARED LAB FACILITY, BIOLABS ENVISIONS A STRATEGIC COLLABORATION INITIATIVE WITH THE UNIVERSITY OF RHODE ISLAND AND THE NEIGHBORING WORLD-CLASS UNIVERSITIES TO ESTABLISH A PIPELINE OF EMERGING TECHNOLOGY AND RESEARCH.

In short, we are ready to continue moving forward with the University of Rhode Island and Rhode Island Executive Office of Commerce on this important initiative.

The team believes there are a number of factors that will contribute to the growth and success of an Innovation Campus, or what Wexford refers to as a Knowledge Community, emanating from the Providence Innovation and Design District and will drive significant innovation development, including:

- Providence's unique strategic location within the middle of a thirty-three (33) million person megapolis with a GDP of \$2.1 trillion
- A platform for increasing levels of collaboration among universities: Brown University, University of Rhode Island, Rhode Island University, Lifespan, and RISD
- Rhode Island's extensive life sciences research strengths in neuroscience, infectious disease, public health, sensors, and imaging, among others, to complement strengths in instruments, data sciences, cybersecurity, unmanned systems and remote sensing
- State and City government focus on - and investment in - economic development impact
- Social and economic inclusion through strong relationships with Rhode Island Community College and other workforce development initiatives
- An expanding resource base of intermediaries and support organizations such as Social Enterprise Greenhouse, Founder League, RI BioScience Leaders, RI BioHub, and MedMates, among others



We further believe that the creation of an Innovation Campus initially centered on Parcels 22 and 25 within the Providence Innovation and Design District can fulfill the State's goals of:

- Fostering collaboration among industry, academic partners, and research institutions
- Creating new high-value innovation jobs
- Advancing Rhode Island's leading innovation clusters
- Catalyzing increased private sector investment in Rhode Island

Over the past two years, Wexford has closely worked with the Rhode Island Executive Office of Commerce and the I-195 Commission to envision, master plan, and outline a world-class Knowledge Community on Parcels 22 and 25. The first phase of this project, referred to as the Innovation Center, is currently under construction and will feature 191,000 SF of office and innovation space anchored by Brown University, Johnson & Johnson and Cambridge Innovation Center, experts at curating highly-serviced small office space, as well as featuring Venture Café/District Hall, providers of a broad range of social and innovation programming and networking.

In addition to this early momentum in the creation of an innovation ecosystem, Wexford brings the advantage of site control for the proposed Innovation Campus location as the second phase of development on Parcels 22 and 25, as well as a strategic capital partnership with Ventas, Inc. (NYSE: VTR), an approximately \$30 billion REIT, to ensure ample access to the capital markets to self-fund all project costs without the need for outside financing.

By anchoring the Innovation Campus project with a shared lab facility, **BioLabs envisions a strategic collaboration initiative with the University of Rhode Island and the neighboring world-class universities to establish a pipeline of emerging technology and research.**

ABOUT BIOLABS

BioLabs is an internationally known, well-respected and highly sought after advisor, developer and operator of a membership-based network of shared lab facilities located in key biotech innovation clusters designed exclusively for high-potential, early-stage life science companies. It offers co-working environments that pair premium, fully-equipped and supported lab and office space with unparalleled access to capital and industry partners.

BioLabs began as Cambridge BioLabs based in Cambridge, Massachusetts in 2009. The co-working laboratory space at Cambridge BioLabs was the first of its kind, bringing together small, early-stage biotechnology companies into one unified co-working space supplied with a suite of shared scientific resources.

From 2009 through 2013, Cambridge BioLabs grew and the organization observed and collected data that provided key insights into the early-stage biotechnology sector. In 2013, BioLabs leadership, in partnership with the Commonwealth of Massachusetts, created LabCentral, a facility aligned with BioLabs' philosophy of creating a collaborative co-working space for emerging biotechnology companies. Since 2009, BioLabs and LabCentral have successfully serviced over 230 separate startup projects and helped create over 800 new jobs and 2+ billion in equity investments. Beginning in 2015, BioLabs expanded its model to create sites in Durham, NC, New York City, NY, Princeton, NJ, San Diego, CA, San Francisco, CA and Boston, MA.

executive summary

BioLabs recognizes and encourages the relationship that exists between innovative academic institutions and the early-stage biotechnology companies that they so often given rise to. All of our sites are associated with internationally recognized universities including: Harvard University, Massachusetts Institute of Technology, Princeton University, New York University, Tufts University, University of California San Diego and the University of California San Francisco.

It is this focus on research universities that also led to our partnership with Wexford Science & Technology. Their Knowledge Community platform is ideally suited to amplifying the strengths of BioLabs across universities, start-ups, and established companies. Recently Wexford celebrated the grand opening of its newest project in Durham, NC, of which a 42,000 sf BioLabs is a key anchor and attractor. BioLabs is also in discussions to manage the shared lab component of CIC Philadelphia within Wexford's newest uCity Square building, 3675 Market, that is currently under construction.



ABOUT WEXFORD

Wexford Science & Technology is a development company exclusively focused on serving the strategic real estate needs of universities, academic medical centers and major research institutions. In just over ten years, Wexford has developed twelve Knowledge Communities across the country. These Knowledge Communities are vibrant, mixed-use, amenity and programming-rich environments that drive innovation across multiple disciplines and are built on a foundation of research, discovery, and entrepreneurial activity. They offer a stronger value proposition than traditional real estate in that they are closely aligned with, integrated into, and extend the intellectual capital, innovation and infrastructure of the university to produce a creative and productive 'sense of place' for research, start-ups, growth companies, and large corporate presence.

Wexford works with several universities who similarly act as catalytic forces within their own communities including the University of Maryland, the University of Miami, the University of Pennsylvania, Washington University in St. Louis, Brown University, Wake Forest University, and Duke University.

The success of our unique approach is a result of our commitment to long-term relationships with our university partners that span the development continuum from planning and design to permitting and construction to tenant attraction and program activation. This approach has resulted in the delivery of twenty buildings to-date across our portfolio with another five currently in development.



The Rhode Island Innovation Hub & Accelerators*

A RI Innovation Campus Proposal

March 2, 2018

Submitted by:

Brown University¹
IBM Corporation – IBM Alpha Zone¹
MassChallenge¹
The University of Rhode Island

With participation and support from

Ben-Gurion University¹
First Data Corporation¹
Visible Systems¹



¹ Letters of support in Appendix 1

Special thanks to the Rhode Island-Israel Collaborative (RIIC) which made key introductions between Brown and IBM Alpha Zone

*Proposed to be established as a 501(c)(3) Rhode Island Corporation



Executive Summary

The Rhode Island Innovation Hub (the “iHub”) will be established as a vehicle for the State to catalyze fruitful interactions between entrepreneurs, companies, academic researchers, students, and business support organizations and in order to commercialize innovations and accelerate startups that can address high-impact market needs.

The iHub is positioned to help bridge a major gap in Rhode Island: the idea-to-impact gap. *By bridging the idea-to-impact gap, the iHub will enable a sustainable innovation cycle that will become a magnet for companies and for startup retention in the region – thus creating jobs and spurring economic development.*

The iHub will help achieve the goals of the Innovation Campus RFP by:

- Providing an environment to foster collaborations between industry, start-ups, entrepreneurs and academic research entities – by leveraging the strengths of URI, Brown, and Ben-Gurion university.
- Creating new high-value innovation jobs via the generation of successful and commercially viable startups, and by being an innovation-friendly home for companies to establish a local presence.
- Advancing Rhode Island’s innovation clusters – in particular, via the iHub’s resident IBM Alpha Zone and MassChallenge accelerators.
- Catalyzing accelerated private sector investment in Rhode Island – by engaging with industry and supporting startup activity – both of which will prompt investments by companies and investors.
- Increasing the GDP of Rhode Island by accelerating revenue growth of successful start-up companies and increasing employment levels at every level in the companies.

Central to the iHub is the residence of two highly successful accelerator programs: IBM Alpha Zone and MassChallenge.

- The IBM Alpha Zone Accelerator is ranked as one of the top five in Israel and as the leading enterprise accelerator. Alpha Zone leverages IBM's top-notch technologies such as IBM Watson, and is particularly well-suited to support innovations for the digital economy and the enterprise market. Specializing in technologies around cloud services, AI, machine learning, cyber security, IoT, smart commerce, smart cities and more, IBM Alpha Zone holds the expertise to build enterprise grade solutions with both early and late stage startups for industries such as healthcare, energy, commerce, media & entertainment, transportation, and aviation. Since its launch in July 2014, Alpha Zone has supported close to 50 startups. See details here: <http://www-05.ibm.com/il/alphazone/index.html>.



- MassChallenge is a not-for-profit accelerator with an expanding global presence. It was launched in Boston in 2010 and has since accelerated ~1,495 startups that have raised \$3B+ in funding, generated \$2B+ in revenues, and created 80,000+ jobs. It supports entrepreneurs through well-established accelerator programs, and each year awards over \$2M in equity-free prizes to help seed their startups. See details here: <http://boston.masschallenge.org/>

Alpha Zone and MassChallenge will bring their know-how, experiences and full accelerator programs to the iHub in order to provide acceleration for innovative start-up ideas in Rhode Island. In addition, both Alpha Zone and MassChallenge have accelerators in other countries (notably Israel), and some of the startups housed in those countries have the need for a presence in the U.S. – which iHub could provide. This presents additional economic development opportunities for the State.

Over a 10-year period, it is projected that the iHub will support 100-200 startups and attract 20-50 corporate sponsors. Of the startups supported, 10 are expected to be successful and remain in the area creating approximately 200 new direct jobs and, with the multiplier effect, 800-1,000 total jobs – translating to annual economic value measured in the \$ tens of millions. We also anticipate that the iHub will encourage several corporations to establish a local strategic presence, as Infosys has done, thus bringing new jobs and associated economic benefits to the area. In addition, iHub will facilitate and encourage corporate partners to deploy research funding at start-up companies, mid-stage companies, Brown University, URI, and other Rhode Island Institutions which benefits the entities directly, and, of course, contributes to the economic health of the region. It is projected that at least \$5M in industry-sponsored research may be facilitated through the iHub over a 10-year period.

iHub will help expand the pipeline of innovations available for transition from idea to impact, and the accelerator programs provide a key missing link in that transition, namely the space, structure, support and seed funding needed to make it happen. iHub is additive to and synergistic with other Business Support Organizations (BSOs), and idea-to-impact components either existing or emerging in our ecosystem such as the Social Enterprise Greenhouse, Medmates, Senedia, The Tech Collective, SeaAhead, FIX, Brown Biomedical Innovations Inc (BBII – to which Brown has made an \$8M commitment), Sprout, RI Business Plan Competition, the URI Small Business Development Center, the Cambridge Innovation Center (CIC), and Brown's Nelson Center for Entrepreneurship (which is funded by a \$25M gift). With iHub in the mix, an innovation can naturally progress from proof of concept to nascent startup (e.g. MassChallenge and AlphaZone) to a more robust startup (e.g. CIC).

The iHub and its partners create a perfect storm of opportunity for Rhode Island by providing a home for innovators: ***we have combined best-in-class universities, startup accelerators, and industry partners to create a powerful and unique foundation for spawning innovation and turning it into impact.***



iHub is proposed by Brown University, IBM Alpha Zone, MassChallenge, and the University of Rhode Island – with additional support from Ben-Gurion University, First Data Corporation, and Visible Systems Corporation. It will operate in a 5,000 SF co-working style facility located in the up-and-coming Jewelry District of Providence. This physical space will serve as a “docking station” for companies, entrepreneurs, BSOs, service providers, academics and students to ideate and to collaborate on transforming innovative ideas into new products and services; and into startups to commercialize them. The space will also host conferences and events, and it will be used to provide educational workshops and boot-camps aimed at expanding technical, business and entrepreneurial “fluency” in the region.

URI and Brown view the iHub as a much-needed component in the innovation ecosystem that will allow both institutions to better support startups, provide opportunities for their students to engage with companies, and expand collaboration opportunities between their researchers. In addition, iHub will complement the institutions’ entrepreneurship-focused programs - for example, URI’s SPARC program and Small Business Development Center, and Brown’s Nelson Center for Entrepreneurship and B-Lab program.

In addition to its accelerators, another key element of the iHub is engagement with multiple industry partners – large and small companies that will contribute greatly to the innovation cycle by

- bringing forth innovation challenges and market insights;
- engaging with entrepreneurs and startups – providing them mentorship and commercial guidance;
- providing financial support to the iHub and its programs;
- engaging with academic researchers and sponsoring research projects;
- engaging with students – providing internship, capstone project opportunities, and employment opportunities;
- providing a framework, resources and assets for testing commercial viability of projects and startups.

iHub’s “founding” universities bring critical ingredients to the innovation ecosystem. Brown and URI are well-known anchors in the state, and Ben-Gurion University brings a complementary international component. Together, the three institutions bring world-class research capabilities and domain expertise in virtually every field – plus a cadre of students and aspiring entrepreneurs. In addition, Ben-Gurion’s own incubator is home to startups that need a U.S. presence which iHub can host.

In summary, the iHub will:

- Provide a physical space for the MassChallenge and the Alpha Zone Rhode Island accelerator programs, and their cohorts of start-ups.
- Support the local innovation and entrepreneurial ecosystem through mentoring, events, workshops, and bootcamps.



- Catalyze engagements and collaborations between local university researchers and students, with companies and startups.

Below is a summary of the overall 10-year economics projected for iHub. NOTE: all figures are estimated, and all commitments are subject to final internal approvals for each party, and to the enablement of this proposal through acceptance of an award of the requested funding from the State.

Funding Requested from Innovation Campus Bond			\$4.5M
Cash and in-kind contributions (see notes)	MassChallenge Program	\$3.3M	\$14M+
	IBM Cash	\$2.0M	
	IBM Cloud Services	\$8.4M	
	Brown staff support	\$0.8M	
	Brown in-kind	(see notes)	
Total Programmatic Costs			\$8.7M
Total Programmatic Funding (Cash, in-kind, and Sponsorships)			\$8.9M

Notes:

IBM has committed \$200K/year programmatic support – IBM will also provide startups with free cloud services worth \$120K/year per startup; Brown has committed support for programmatic staff – Brown has made or is making significant investments in entrepreneurship and innovation that will synergize with iHub, including: (a) IECV time and iCON programming (valued at \$200K/year); Brown and the Innovation Economy program (valued at \$200K/year); the Nelson Entrepreneurship Center (\$25M investment); and the Brown Biomedical Innovations fund (\$8M investment)

iHub will be established as a 501(c)(3) not-for-profit and managed by an managing director (potentially Andrew Mallon of MassChallenge. There will be a 7-member board of directors comprised of the iHub managing director (likely candidate: Andrew Mallon from MassChallenge), the executive director of Brown’s IECV (currently Daniel Behr), the executive director of URI’s Business Engagement Center (currently Katharine Flynn), a representative from IBM Alpha Zone, a representative from MassChallenge, a representative from Commerce RI, and an independent director.



Side Note: Brown's Perspective and Support

Although Brown University is excited to have taken the leadership position in coalescing this proposal, and is submitting the proposal, ***it is important to note that iHub is NOT being positioned as a “Brown program” – rather it is a program that will serve the Rhode Island innovation ecosystem as a whole, which of course includes Brown University.***

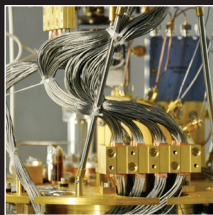
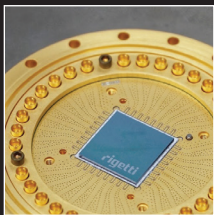
iHub will only succeed if it serves the community at large. Without doubt, Brown will benefit from the iHub's role in enabling a local thriving innovation economy – but iHub is for Providence and for Rhode Island, not just for Brown.

Brown continues to make significant commitments to programs and initiatives that play an important role in supporting and nurturing the local innovation ecosystem. These programs include:

- Provost Locke's "Brown and the Innovation Economy" initiative which partners with all regional stakeholders to develop and implement concrete steps to foster our local innovation economy (see Appendix 2);
- The Nelson Center for Entrepreneurship – with a \$25M commitment and a 10,000 SF building under construction;
- Brown Biomedical Innovations, an \$8M commercial development gap fund;
- The new Office of Industry Engagement and Commercial Venturing, which is attracting companies to the region and accelerating commercial endeavors;
- A \$50M commitment to expand translational medicine education and research;
- A new engineering research building;
- Major investments to expand core innovation competencies at Brown, including in the Data Science Initiative, the Computer Science Department, and the Brown Institute for Brain Science;

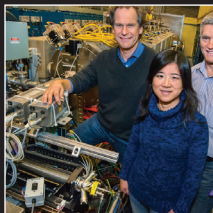
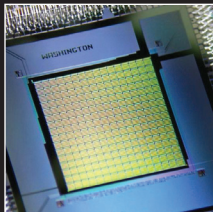
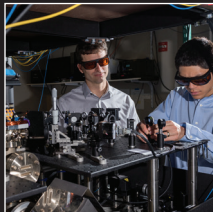
Brown University believes the iHub can be a very effective vehicle for Rhode Island to bridge a major gap in the state: the idea-to-impact gap. *By bridging the idea-to-impact gap, the iHub will enable a sustainable innovation cycle that will become a magnet for companies and for startup retention in the region – thus creating jobs and spurring economic development.*

Innovation Campus Rhode Island



Proposal

March 2018



Submitted by
City of Newport, RI

Submitted to
The Rhode Island Executive Office
of Commerce

B. EXECUTIVE SUMMARY

Rhode Island's Future is Bright and Very Fast

Imagine a world where computers are millions of times as powerful as they are today. Instead of gene mapping a person's DNA to just try to better target the disease, a program capable of mapping down to the protein level provides highly-specific cancer therapy at the cellular level. Or, perhaps a weather system model could predict the formation of a tornado, along with its specific path, with accuracy down to the street or house level, greatly surpassing anything possible today and providing far longer warning times and saving lives.

Quantum computing is as disruptive to the data and computational fields as the airplane was to transportation in the early 20th century. While quantum technology is in its infancy, the potential benefits of the concept have made quantum computing one of the most anticipated technological breakthroughs of the 21st century. As with any cutting-edge technology, the high costs and dynamic nature of the systems create a barrier to all but the best funded and resourced players. Entanglement Research Institute, Inc's, (eRI) Quantum and Alternative Computing Center (Center) that is proposed for Newport, RI transforms the model and provides a new framework to explore and leverage this revolutionary technology. By developing a state-of-the-art facility and using a fee-for-service model, Entanglement Research Institute, Inc. (eRI) is building a world-class quantum and alternative computing nexus that will bring these resources to academic, commercial, and government users at affordable costs in addition to convening a synergistic community with access to leading-edge development systems and tools. The Center will house the world's most advanced quantum computers and infrastructure, i.e. hybrid compute clusters, storage systems, and advanced networking. We are also developing a quantum framework, which will enable interoperability between systems and computational methods.

Fully integrated into the design and construction of the Center is digital and physical security architecture that safeguards the facility and the data from unauthorized access. This architecture will be layered and scaled to address corporate, academic, civilian, and national security aspects of both the Center and its users. Located adjacent to Naval Station Newport and its broad US

government customer base, the Center intends to gather and foster collaboration across governments, academia, and industry, while protecting the security of everyone's work.

This effort is unique in a number of ways, beyond just the quantum computing technology. In a true public, private, academic partnership, the City of Newport has stepped forward as the sponsor of this effort and serves as lead for this proposed funding collaboration with the University of Rhode Island (URI). eRI, the lead technical, financial, and operations partner, brings an unparalleled stable of technology and expertise to this effort. AECOM, one of the world's largest engineering, design, construction, and facility operations firms, brings not only its design and construction expertise, but also deep experience and qualification in digital and physical security of technology and mechanical systems. These three team members bring essential and complementary skills and expertise to this effort and in partnership with URI, we propose to make Rhode Island the nexus of quantum computing technology and innovation. In Newport, the partnering of government, academic, and corporate innovation and expertise is not a new concept, but rather a defining hallmark of the City since the US Navy established facilities there in the 19th century.

eRI will offer an interdisciplinary approach to research by combining large and disparate data sets, building algorithms to identify links, and solving big problems in one sector that may benefit from the insight and data of another sector. Such research and applications may have commercial appeal. To this end, we are in discussions with leading venture capital firms to establish a quantum startup incubator and fund that will reside in Newport next to eRI. This will facilitate an efficient mechanism to commercialize quantum research and the capabilities that will be discovered at eRI. We have also had preliminary discussions with companies interested in establishing R&D capabilities around eRI.

This project presents an opportunity to more fully integrate Rhode Island into the fabric of the nation's critical infrastructure by establishing a unique resource that connects and bridges thought leaders, practitioners, and entrepreneurs in this emerging field of quantum information science. Moreover, eRI's Quantum and Alternative Computing Center will attract the interest of a growing community of scientists, technologists, and

innovators. This, in turn, will promote unprecedented interactions across traditional disciplinary boundaries, be a strong attractor of talent, opportunity, and innovation that will reflect positively on Newport, the state, and the region. Most importantly, the Center and eRI will have an extensive eventual impact on how quantum information science is taught at the college and secondary level and bring a deeper understanding of quantum physics to a broad segment of the lay public.

“Although the U.S. retains global leadership in the theoretical physics that underpins quantum computing and related technologies, we may be slipping behind others in developing the quantum applications.” (House Science Committee Chairman Lamar Smith)

Economic Impact

Entanglement Research Institute and its Quantum and Alternative Computing Center will employ 52-68 full-time people in its first year of operations. eRI intends to grow its workforce to 225-300 over the following 36 months. Of these, we anticipate at least eight of these initial positions, though they will have competitive salaries and benefits, will require lower skills than the highly skilled workforce comprising the majority of the staff. It is our intent to target local hires and use the Center as an opportunity for community members to gain new skills and employment opportunities.

In addition to these full-time, long-term positions, we expect several hundred direct and even more indirect jobs to be created in Rhode Island during the construction phase of the project. While these jobs will be confined to the construction period, they will provide an additional boost to the local economy.

Beyond direct employment, indirect benefits will be created in the local economy by the researchers and other professionals who visit and work out of the Center for short and long term assignments. While these jobs may be based in other states, lodging and subsistence expenses will accrue locally.

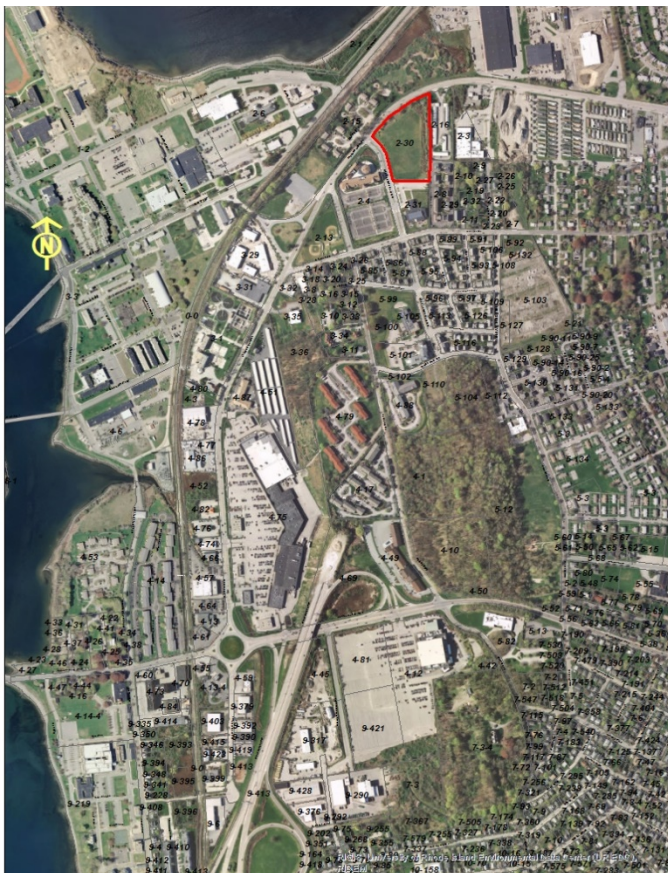
No such quantum or alternative facility exists today. eRI, and the City of Newport, are poised to make Newport and

Rhode Island the global epicenter for quantum and alternative research which we believe will attract students from across the globe. We believe that creating the proposed strategic research partnership with the University of Rhode Island will support URI's Academic Strategic Plan for 2016-2021 as well as its Transformational Goals for the 21st Century further attracting students from across the globe.

Physical Facility

The design of a world class research facility requires a balance of form and function. To address this need, eRI has partnered with AECOM, which brings decades of experience designing and building research, technology, and educational facilities across the globe. AECOM's work as the architectural and engineering contractor for the NASA Ames facility at Moffett Field in California is one example of their relevant experience in this space, but AECOM is also one of the largest consultants and contractors for the departments of Defense, Energy, and Homeland Security as well as other members of the US Intelligence Community. This design, infrastructure, and security expertise and experience partnered with eRI's deep understanding of quantum technology and innovation, the City of Newport's position as the local municipality, and URI's leading position in research and learning, creates an ideal partnership to develop this project.

The exact design of the facility is under development, but the general concept is for a secure and sustainable building complex of approximately 25,000 to 40,000 SF to be constructed on a five acre parcel currently owned by the City of Newport. Situated adjacent to Naval Station Newport (see maps on next page), the site is ideally situated to serve academic and corporate clients as well as government clients, both civilian and Intelligence Community (IC) organizations. The design of the Center will be developed under AECOM's Converged Resilience™ approach works across all domains and assesses threats and vulnerabilities as part of the design development process. The security team works side-by-side with the designers, construction, and operations teams to provide support throughout the program lifecycle.



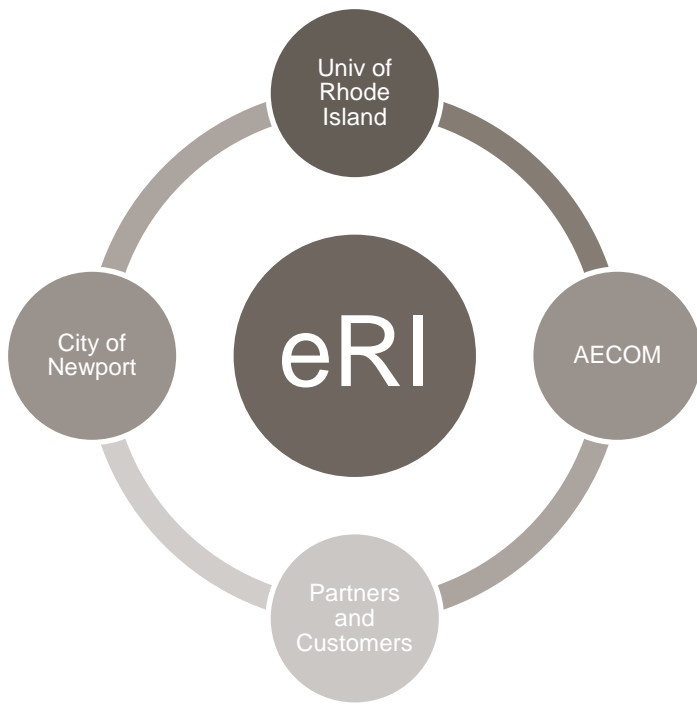
In addition to the security aspects of the design, AECOM has extensive experience designing and constructing sustainable buildings and campuses. Some of this work is described in the NASA Ames project description presented in Section E of this proposal, but much more of it is found in projects we have designed and built across the globe. From our work for some of the leading technology companies and universities in the world to the world's first LEED Platinum awarded stadium in Atlanta to the design of the Halley VI research station on the Brunt Ice Shelf in Antarctica. More information on AECOM's sustainability work can be found in our corporate sustainability report at <http://aecom.com/sustainability>.

Under this partnership of the City, eRI, AECOM, and URI, we will reduce the development, construction, and accreditation timeframes by creating an integrated project team that works together to anticipate and mitigate any roadblocks and delivers the Center from its current stage of development to operation within two years as depicted in the project timeline (below). The City's control of the land and deep understanding of the local and state project approval and permitting issues, eRI's strong partnership with the developers of quantum hardware and tools, and AECOM's deep expertise in design and construction and physical and cyber security, all bring URI a clear path to establishing itself as a center of excellence in quantum computing.

Team Members

Newport, Rhode Island is a unique City known for its historic charm, world class sailing, and natural beauty. Founded in 1639, and incorporated as a city in 1784, Newport was a beacon for religious tolerance and acceptance. Landmarks from those early settlement days can still be found when walking the streets. Important period architecture is still preserved and occupied even now. During the 18th century Newport was one of the five leading ports in colonial North America and she received international attention for her harbor and trade. Many of the homes and shops built during that time still stand today and Newport is recognized for having the largest concentration of colonial homes and buildings in America. The gilded mansions of the 19th and 20th century further illustrate the growth, rich history and beauty of Newport. The City is a visual delight and the ocean and bay provide world class boating and swimming, making Newport a true destination town for visitors and residents alike.

The City has a year round population of 25,000 residents with 4 million visitors annually. With its close



proximity to New York and Boston, Newport is within driving distance of all major East Coast transportation hubs. Cruise ships anchor in the deep water harbor and regional bus lines arrive daily to the City of Newport Welcome Center.

The United States Navy has been a presence in Newport since the Revolutionary War. A ceremony on October 1, 1998, established Naval Station Newport as the primary host command, taking over base operating support responsibilities from the Naval Education and Training Center. The Commanding Officer, Naval Station Newport reports directly to the Commander, Mid-Atlantic Region, and also to the Commander-in-Chief, US Atlantic Fleet. The base is home to more than 50 Naval and defense commands/ activities and is a premier site for training of uniformed and civilian employees.

The City government currently operates under a Home Rule charter which was adopted in 1953. This charter provides for a City Council/ City Manager form of governance.

The City Manager is the chief administrative officer of the City. The manager is appointed by a majority vote of the City Council and is responsible to the Council for the administration and management of the City.

Entanglement Research Institute's mission is to provide secure access to the latest quantum computing processors through a technology neutral research institute and to accelerate quantum computing and

quantum interoperability by letting the community create a library of compilers and programming languages. This will drive the development of a quantum framework (API) and researchers will be able to simultaneously access numerous quantum machines with different quantum processors. The founding framework for eRI is a partnership with the world's leading researchers, quantum companies, universities and the government.

AECOM is a global network of design, engineering, construction and management professionals partnering with clients to imagine and deliver a better world. As a premier, fully integrated infrastructure firm, we unlock opportunities, protect our environment, and improve people's lives. For the last four years, we have been named one of Fortune's World's Most Admired Companies. Additionally, we have ranked as Engineering News-Record's #1 design firm by revenue for eight consecutive years and recognized as Construction Dive's Company of the Year for the second year in a row.

Letters of Commitment and Interest

Letters of commitment and interest have been received from the following entities:

- Support Letter from Senator Dominick J. Ruggerio, President of the Senate; Senator Dawn Euer, Senate District 13; and, Senator Louis P. DiPalma, Senate District 12
- University of Rhode Island University Libraries
- The Southeastern New England Defense Industry Alliance (SENEDIA)
- Bradley Rotter (Impact Investor)
- D-Wave Government Inc.
- Rigetti & Co., Inc.
- Zapata Computing, Inc.
- Cisco Systems
- Scepter, Inc. (ScepterAir)
- Esri
- Planet Defense LLC

Each of these entities or groups see the value to the region and the country of this type of resource. The United States is positioned to lead the world in quantum computing, but this advantage can slip away if we don't solidly establish our leadership. eRI's Quantum and Alternative Computing Center in Newport is poised to help us win this important race.

INNOVATION CAMPUS RHODE ISLAND RFP SUBMISSION

Rhode Island Executive Office of Commerce
Attention: RI Innovation Campus RFP
317 Iron Horse Way, Suite 203
Providence, RI 02908

SUBMISSION BY:
Fabien Cousteau Ocean Learning Center (OLC) with
The University of Rhode Island Graduate School of Oceanography (GSO)
in collaboration with
Raytheon Integrated Defense Systems—Seapower Capability Systems

Fabien Cousteau Ocean Learning Center
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Appendix A: Non-confidential copy of the Executive Summary Suitable for Publication

Section B: Executive Summary for Publication (Public Variant)

Overview:

Fabien Cousteau, aquanaut, oceanographer, explorer, environmental advocate and founder of the Fabien Cousteau Ocean Learning Center (OLC), is continuing the work of his legendary grandfather, Jacques-Yves Cousteau, by redefining the frontiers of marine research.

In 2014, Fabien Cousteau successfully concluded Mission 31, a thirty-one-day continuous underwater research deployment housed in the Aquarius lab off Key Largo, Florida. Mission 31 produced 3 years-worth of scientific data, 12 published scientific papers, 70 Skype in the classroom sessions for more than 100,000 students around the world and 30 billion media impressions.

The success of Mission 31 set the stage for the development of *Project Proteus*.

Although our oceans are more accessible than sending astronauts into space, we have explored just five percent of our planet's waters. Investigating the mysteries of the ocean will accelerate advances in medicine, biotechnology, sustainable energy, food technologies and more, promising to improve the health of humanity and the oceans upon which all life relies.

Innovation Campus:

Proteus will engage leaders in the fields of oceanography, engineering, big data, climate science, naval architecture and construction to design and fabricate the facility.

There is no state similarly equipped to partner with the Fabien Cousteau Ocean Learning Center to bring this historic project to fruition than the state of Rhode Island with its rich heritage steeped in a maritime economy, first-rate education institutions devoted to ocean learning and private and public-sector partners at the forefront of technological innovation.

As such, over the past year, the Fabien Cousteau Ocean Learning Center (OLC) has executed Non-Disclosure Agreements and engaged in several months of meetings and conferences with the University of Rhode Island, Raytheon, a Second Rhode Island Defense Contractor (to be named at a later date), the Naval Underwater Warfare Center (NUWC), Southeast New England Defense Industry Alliance (SENEDIA), Undersea Technology Innovation Center (UTIC), High Performance Composite, Ltd. and others to begin work on this massive undertaking.

Raytheon, a second Rhode Island Defense Contractor, High Performance Composite, Ltd. and the Naval Underwater Warfare Center are sending delegations of engineers and business development officers to OLC's *Project Proteus* Symposium hosted by Microsoft on March 11 & 12, 2018.

These discussions have produced a concept to headquarter *Project Proteus* at the University of Rhode Island's Graduate School of Oceanography. Doing so will benefit URI's students and faculty, strengthen the university's relationships with local industry and enhance URI's position as a focal point of global marine research. The Innovation Campus will result in physical improvements to increase the competitiveness of URI Federal grant proposals, foster cooperation between URI and other leading marine research institutions and enhancing the State of Rhode Island's place on the map as a leader in maritime technology.

This partnership to construct an integrated Innovation Campus at URI's Graduate School of Oceanography will enhance the existing ocean technology infrastructure and includes several components.

- 1) A \$3,000,000 upgrade to the existing "Inner Space Center" (ISC) telepresence suite located at the GSO Narragansett Bay Campus.
- 2) \$564,500 for upgrades to the shared Electronics Development Lab (EDL) and OLC/*Proteus* office space located in the existing "Ocean Technology Center" (OTC) building at the GSO Narragansett Bay Campus.
- 3) \$64,625 for 5-year lease holds for the following rooms in the OTC building at GSO: Inner Space Center Command and Control Suite in OTC building (OTC room 104), office space for *Proteus*/OLC Rhode Island Headquarters (OTC rooms 105 & 106) and office space for History Investments Incubator (OTC room 117)
- 4) \$825,000 for three years of salary and benefits for OLC CEO Fabien Cousteau, *Project Proteus* Chief Engineer Saul Rosser and administrative staff of *Proteus* HQ located at URI GSO OTC building
- 5) \$950,000 - \$2,150,000 for joint research programming and production of educational webisodes for publication on YouTube and other online portals. Proposed OLC/GSO programming would include, but not be limited to: coral restoration and 3-D printing, oyster programs, research on methods to remove seaborne microplastics from the water column, carbon sequestration research and experimental programs, submersible docking station mechanics and underwater personal hygiene and waste management
- 6) \$1,200,000 for preliminary design schematics to be provided by industry such as Raytheon, Another Rhode Island Defense Contractor and High Performance Composites, Ltd.
- 7) \$450,000 for preproduction of the documentary film on *Project Proteus* and the partnership with the State of Rhode Island

Additionally, over the next decade, the OLC intends to construct several scale replicas of *Proteus* to serve as tourism and education centers to be placed at aquariums and theme parks around the globe, including the first in Newport, RI. This scale replica tourism and education center will feature real-time video feeds of ongoing research at the *Proteus* station and educational tools attracting students from across the state of Rhode Island, New England and the northeastern United States.

Finally, OLC has aligned with History Investments, a private equity and venture fund, which will focus its \$200,000,000-\$500,000,000 investment portfolio on supporting disruptive technology companies and other research entities that wish to work from the *Proteus* platform. History Investments will act as an incubator, attracting small businesses to Rhode Island in addition to investing in local public and private ocean tech businesses.

Team:

The Ocean Learning Center, partnering with the University of Rhode Island Graduate School of Oceanography and in collaboration with Raytheon, has assembled a team second to none to lead this Innovation Campus Proposal.

In addition to Fabien Cousteau, the technical aspects of the Project *Proteus* are proposed to be led by:

- Saul Rosser, CEO of Advanced Diving Systems, Inc. Mr. Rosser previously was head of the Aquarius Lab for Florida International University. Mr. Rosser will be a full-time employee of OLC as Chief Engineer and Project Manager for *Project Proteus*.
- Dr. Wayne Tucker, a leading expert on Deepwater Life Support and Survival and materials science, is a member of the OLC Advisory Board and will advise on technical aspects of *Project Proteus*. Mr. Tucker is currently employed by NUWCDIVNPT.
- It is proposed that Raytheon may provide services such as that of Chief Engineer, Systems Architect and Systems Engineer as well as perform functions on the Integration and Testing roles
- The OLC is currently in discussions with local Rhode Island Defense Contractors regarding fabrication of the housing for the submarine structure
- In addition to GSO, OLC is receiving guidance, support or input from the following leading academic institutions in the marine sciences:
 - o University of Rhode Island School of Ocean Engineering
 - o Rutgers Department of Marine and Coastal Sciences
 - o Northeastern University Marine Science Center
 - o Woods Hole Oceanographic Institute (WHOI)
 - o Massachusetts Institute of Technology (M.I.T.)

Non-technical leadership of the OLC and History Funds includes a broad array of senior executives across industry including Microsoft, IBM and AT&T who are lending their management expertise to the project. A full list of OLC board members can be found here:

<https://www.fabiencousteauolc.org/about/olc-board-members-and-advisors/>

This seasoned team is responsible for fundraising, management and oversight of the OLC.

History Funds is separately managed by Courtney Hall (Founder and MD, Hillcrest Venture Partners), Justin Green (Founder and CEO, Hayes Ventures), Karl Anderson (Founder and CEO, Viking Maccabee Holdings and formerly of Merrill Lynch, Morgan Stanley and SeaCrest Wealth Management) and advised by Paul Taubman (Founder and CEO, PJT Investments [NYSE: PJT]) and Andrew Grumet (Partner, Drinker Biddle).

The Rhode Island Executive Office of Commerce will no doubt receive many wonderful RFP responses worthy of funding. It is, however, beyond cavil that Project Proteus represents the submission with the greatest potential economic and scientific impact for both the citizens of Rhode Island and the world. To that end, we hope you enjoy reading our submission and we look forward to working with Commerce and the State of Rhode Island for many years to come.



Rhode Island Commerce Corporation

INNOVATION CAMPUS

March 2, 2018

Submitted by;

FARMING  TURTLES™

174 South Road
Exeter, RI 02822

Farming Turtles Innovation Campus

Executive Summary

Farming Turtles of Exeter, Rhode Island is seeking \$3.7 million from the Rhode Island Commerce Corporation to construct a 3-acre greenhouse with additional support building for the purpose of growing **microgreens** – a healthy leafy vegetable – for human consumption. The greenhouse and support building will create meeting space where students and staff from the URI College of Environmental Life Sciences (“CELS”) as well as farmers from around the state can participate in and learn from experiments to improve greenhouse design and crop yield. The commercial component of the project will provide job training, employment as well as a viable commercial indoor farming enterprise.

What - This Innovation Campus proposal contemplates construction of a 3-acre indoor growing facility and 20,000 square foot support building using advanced construction and design technology to grow **Microgreens**, a highly nutritious and fast growing leafy vegetable. The goals of this farming strategy are consistent with the goals of the URI Sustainable Agriculture and Food Safety program; creating a cost effective, sustainable and nutritious food source. And the goal of the project (Innovation Campus Greenhouse) is consistent with that of the Innovation Campus RFP which is to leverage the intellectual capital of URI to create a business that is sustainable while providing economic opportunities for Rhode Islanders.

The Innovation Campus would provide training and employment as well as a live classroom for URI undergraduate and graduate students to learn, develop and advance the science of growing and marketing nutritious plant based food as well as greenhouse design, construction and operation.

Microgreens are young seedlings of edible vegetables and herbs harvested less than 14 days after germination. Once the seed of an herb or vegetable begins to grow, it is considered a sprout. Once the sprout begins to grow, the baby plant is considered a microgreen. Due to their high antioxidant content, microgreens are considered a functional food, a food that promotes health or prevents

disease. Researchers found microgreens like red cabbage, cilantro, and radish contain up to 40 times higher levels of vital nutrients than their mature counterparts.

How - The cost of the campus including start-up operating capital is estimated to be **\$7.5 million**. Financing will be provided from the following sources; **\$3.7 million from the Innovation Campus grant**, \$3.5 million from Farm Credit East Bank in the form of amortizing debt and \$300,000 from the principals. A longstanding business relationship exists with Farm Credit East who has expressed interest in this project. Since the terms under which the bank loan will be provided are consistent with standard lending in this sector any risk concerning the availability of this financing source is minimized – particularly given Farm Credit East’s track record with the borrowers and the low leverage of the debt.

Where – The preferred location for the Farming Turtles Greenhouse Innovation Campus is on land owned by and adjacent to URI on **Peckham Farm**. In order to utilize the site an access road that traverses a stream needs to be constructed. The cost of this road and bridge is reportedly \$5MM – a cost that given the scale of this project cannot be supported. If this expense is shared with another project or otherwise reduced the Peckham Farm site would be the preferred location given its proximity to the URI campus and its resources. The budget includes \$500,000 for land infrastructure improvement and if **Peckham Farm** becomes a feasible location those funds will be applied to defray the cost of the access road.

An alternative location if the Peckham Farm site is not viable is a site several miles north of URI in Exeter, RI on a 22-acre farm currently owned by Ms. Lauri Roberts. Ms. Roberts & Mr. Joey Geremia own *Farming Turtles*, an existing microgreens farm which currently operates out of approximately an acre of greenhouse space located on the subject farm in Exeter. Ms. Roberts and Mr. Geremia, as partners in *Farming Turtles* are the Respondents to this RFP.

Why – Innovation in agriculture is lagging in Rhode Island. This grant will stimulate agricultural innovation by development of new and better healthy food alternatives; developing farming methods that use less scarce resources including water, energy and land; shortening the cycle between planting and harvesting; and increasing the utilization of technology in agriculture to

improve the economics of farming. Why is this important? URI projects that the State will require 600-800 acres of greenhouses in the next decade to satisfy the food production requirements of Rhode Islanders. In order for this to occur in an efficient and economical way these greenhouses will need to be constructed using advanced technology both in design and materials as well as operation. And they will need to be managed by workers who are trained in their construction and operation as well as food production and safety. In terms of advances in agricultural innovation (also known as Agtech), research greenhouses provide contained, controlled environments for scientists to explore a myriad of issues affecting plant life. At Bayer Pharmaceuticals researchers have determined the need to feed a global population of 10 billion by the year 2050 – requiring us to **increase production by 60-70 percent per farmer**. Developing crops with higher production rates, lower environmental impact and stronger resistance to disease is critical to meeting this need and expanding production capacity. These are all achievable goals of this Greenhouse Innovation Campus.

Microgreens are an ideal crop for a Greenhouse Innovation Campus concept as they provide both an **educational component** and an **economic engine**. Microgreens are an ideal educational product because they mature quickly and can be harvested in 14 days from germination. This short cycle facilitates rapid feedback on experimentation. And microgreens are ideal economically as they are the second most profitable crop per square foot to grow according to the USDA – cannabis being number one. And as an added benefit **the nutritional value of micro greens exceeds that of all other greenhouse crops**.

Who – There are two principals in this project with exceptional greenhouse construction, operation and farming skills; **Ms. Lauri Roberts** of Exeter, RI and her partner in *Farming Turtles* **Mr. Joey Geremia** who also owns *Geremia Greenhouses* in Wallingford, Connecticut. Ms. Roberts will be in charge of day-to-day farming operations of the Greenhouse Campus and Mr. Geremia will be the lead in design and construction as well as manage facility operations and maintenance. Both will be involved in sales and marketing. The URI collaboration will principally involve the Business Engagement Center and the College of Environmental & Life Sciences (“CELS.”) Both the Director of the Business Engagement Center as well as the Dean of the CELS will be vital resources in the collaboration efforts of this proposal.

Ms. Roberts and Mr. Geremia as leaders in the indoor farming industry are constantly seeking innovation to more effectively and efficiently produce healthy food sources. This Innovation Campus will allow them to bring state-of-the-art greenhouse development and farming to Rhode Island to create a replicable model for growing microgreens. This grant will help put RI at the forefront of greenhouse technology and microgreen cultivation – an industry the Dutch & Canadians have dominated. Additionally indoor farming of other agricultural products will benefit from innovations developed at this Campus.

Benefits of Farming Turtles Innovation Campus Greenhouse to RI

As noted above, URI has predicted that the State will require 600-800 acres of greenhouses to satisfy the food production requirements of Rhode Islanders. This growth will not occur unless an economically viable model of Greenhouse construction and farming is demonstrated. The goal of this Innovation Campus Greenhouse is to provide a proof of concept that indoor farming is a viable economic endeavor in Rhode Island, and that with the assistance of URI academic research, technologically advanced greenhouses can be replicated across the state. Farming Turtles estimates that by year-10 its 10-acre Innovation Campus Greenhouse will achieve the following benchmarks;

- **\$23 million gross annual revenue**
- **110 direct employees resulting in 200 additional indirect jobs**

Extrapolating this to 600 acres and applying more conservative yields given that other greenhouses will not grow microgreens (microgreens are more efficient than other crops) results in the following projections:

- **18,000 jobs (6,000 direct jobs and 12,000 indirect jobs)**
- **\$700 million in annual revenue - this is ten times the current gross annual agricultural revenue in Rhode Island**

The Innovation Campus concept provides a timely and exciting opportunity for Rhode Island to capitalize on the experience of Ms. Roberts and Mr. Geremia along with the ongoing academic research and development at URI.



Johnson & Johnson
MEDICAL DEVICE COMPANIES



EXECUTIVE SUMMARY

The purpose of the J&J Healthcare Innovation Campus in Rhode Island is to develop on-going patient-centered healthcare service-model innovations that improve patient outcomes while increasing efficiency and convenience, by integrating the process of care delivery more seamlessly into patients' lives. We'll achieve that by decentralizing the healthcare service model so that high quality care can be delivered from anywhere (such as a patient's home or work environment) and by applying new technologies (such as robotics, artificial intelligence, 3-D and bioprinting, genomics, and virtual reality) to enable more innovative therapies. As we do that, we will create a centralized data platform that will aggregate data from thousands of patients on the variables that impact recovery and give us insights into how to personalize the service of care for each patient to optimize recovery. Although this service model will eventually be applied to many areas of healthcare, one of our immediate areas of focus is the Smart Mobility Initiative, which looks to create innovative solutions that enable people to regain quality mobility faster following serious knee injuries and ailments.

Johnson & Johnson is especially pleased to partner with the state of Rhode Island on the Smart Mobility initiative as part of our overall commitment to healthcare innovation, and we expect the project to be a key early success story in the State's initiative to develop an innovation-driven economy. First, our accomplishments on the Smart Mobility initiative will bolster Rhode Island's reputation as a world leader for healthcare technology and innovation ("the Silicon Valley of Healthcare"), by solving some of the significant healthcare problems that trouble every government and population around the world. The Smart Mobility partnership will also accelerate the development of Rhode Island's Innovation Campus by creating a series of successful public-private innovation partnerships; these partnerships will serve as a role model to attract similar investments and partnerships. Similarly, the Smart Mobility initiative blends the best of both worlds – merging Johnson & Johnson's expertise in the business of caring, and the expertise of Rhode Island's world leading researchers and academia (with institutions such as URI, Brown and RISD) so that, together, we can tackle significant healthcare challenges. In this undertaking, we plan to especially build upon the state's core strengths, particularly in: (1) Bioscience, Neuroscience, & The Silver Economy, (2) Cybersecurity, Data Analytics, IoT & IT, and (3) Custom & Advanced Manufacturing. Finally, the Smart Mobility initiative will create a core set of capabilities to deliver healthcare in new, more effective and more efficient, ways. These new capabilities will spawn new business models that will create new high-value innovation jobs, and accelerate the development of Rhode Island's Innovation Campus and the growth of the state's innovation-driven economy.

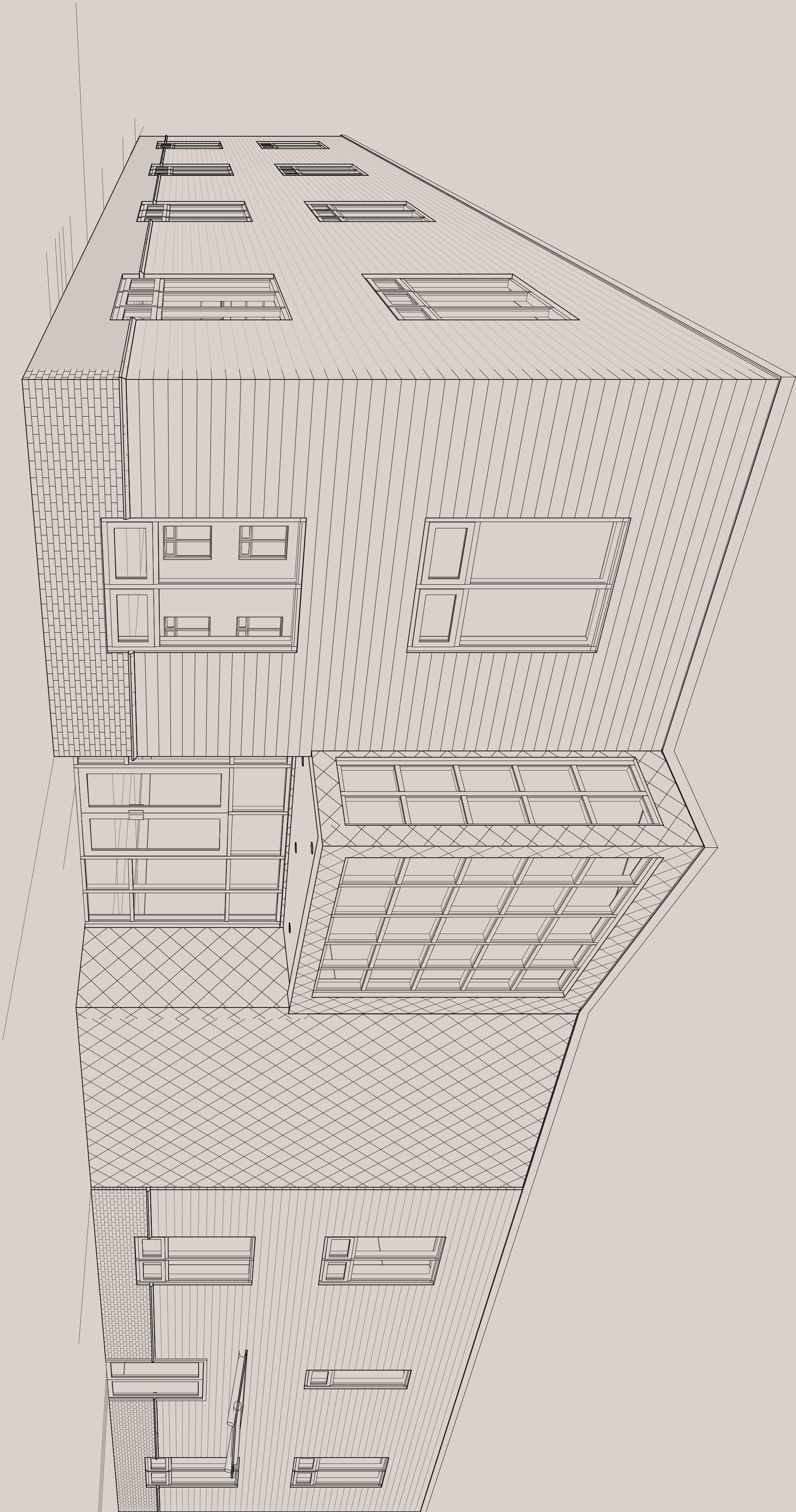
Johnson & Johnson is deeply committed to seeing the Smart Mobility solutions (and other healthcare innovations) developed and brought to market so that they can improve the lives of patients, as we have been doing [for the last 130 years](#). Guided by the values enshrined in our Credo, Johnson & Johnson devotes significant resources (over \$9 billion in 2016 alone) towards [innovation, research and the development](#) of new ways to care for the world. We are also fortunate to have some of the world's brightest minds within the Johnson & Johnson family – who have enabled our considerable success in commercializing new innovations and building them into valuable businesses. Likewise, we have developed many relationships and partnerships with private businesses, public institutions, and local, state and national governments across the world, including our strong relationship with the state of Rhode Island. We intend to bring our considerable resources (human capital, financial wherewithal, and broad network of relationships) to help make Smart Mobility, the J&J Healthcare Innovation Campus, and Rhode Island's Innovation Campus great successes.

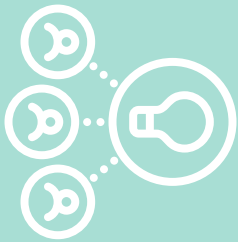
The Respondent submitting this proposal is DePuy Synthes Products, Inc., an affiliate of Johnson & Johnson ("J&J"). This proposal does not constitute a binding commitment and imposes no obligation on Respondent, J&J or any of their affiliates to proceed with the proposed transactions or relationships. This proposal is subject to negotiation of definitive agreements with the State of Rhode Island and our proposed collaborators identified as "team members" herein and approval by Respondent's management.



SLINGSHOT

A Connected Hardware Accelerator





B. Executive Summary

INTRODUCING: ***Slingshot Accelerator Space***: Professionally run innovation and accelerator space powered by a community of bold and passionate educators and industry innovators creating connected hardware and software.

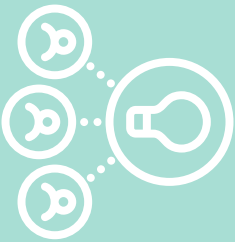
Can Rhode Island become a hub for innovation from around the globe? It can. And with SLINGSHOT, it will.

Entrepreneurs, dreamers, researchers and tinkerers the world over seek a crucial key to success: someone who can help them turn their inspiration into reality. SLINGSHOT launches their ideas and products into motion, accelerating growth both for start-ups and established companies.

Picture SLINGSHOT in the hands of the Ocean State's innovation influencers, launching technology successes forward from concept to full-grown commercial realization. Pin-pointing potential and developing it into successful, breakthrough ventures is something our anchor team has been doing for 20 years — and everything we picture for SLINGSHOT.

The approach we've honed over decades of close work with our business, higher-ed and research partners is highly scalable and proven to deliver results:

HARNESS PASSION Create an energetic, supportive culture that encourages ideas that push the envelope as well as get results.	PARTNER PARTNER PARTNER Put collaboration at the core of every project.	GATHER A BRAIN-TRUST Bring together rising-star innovation cultivators and cross-discipline knowledge partners to swiftly and strategically propel new technologies into the marketplace.	SOLVE REAL PROBLEMS THAT MEET REAL NEEDS Build companies and transform brands by crafting solutions that are meaningful.	BREAK NEW GROUND Pioneer industries that thrive on leading-edge thinking.
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B. Executive Summary

INTRODUCING: ***Slingshot Accelerator Space***: Professionally run innovation and accelerator space powered by a community of bold and passionate educators and industry innovators creating connected hardware and software.

Our Partners:

Our partners include members from public research and higher ed, incubator programs bringing young talent into the State, and private industry anchor tenants who directly contribute to the financial stability of the initiative.

1. PUBLIC RESEARCH AND COMMUNITY OUTREACH

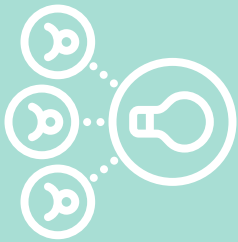
University of Rhode Island, College of Engineering
Bryant University, International Business College

2. STUDENT AND START UP RETENTION

MassChallenge

3. PRIVATE INDUSTRY

Loft, LLC - Principal Partner	Bose 908Devices	Mattel
Propel, LLC	Harman International	Sproutel
Nautilus Defense	Hasbro	Nanoterra
Motel.is	HiRoad	SirenMarine
Robson Advisors	Rigaku	Brady
SEG		
Senedia		



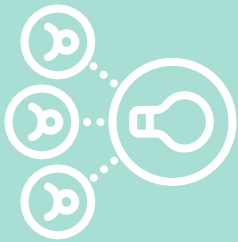
B. Executive Summary

INTRODUCING: ***Slingshot Accelerator Space***: Professionally run innovation and accelerator space powered by a community of bold and passionate educators and industry innovators creating connected hardware and software.

Our Programming:

Our IoT and connected devices programming will intersect with all communities of the State and beyond. We will offer unique skill building and entrepreneurial thinking to higher ed. We'll also offer our K-12 community, focused hands on hackathons where professional designers and engineers supply time and materials and kids get exposed to experimenting with design and design thinking. And, we will offer innovation workshops and research facilities to our startup and corporate clients as an extension of their R&D efforts.

1. PUBLIC RESEARCH AND COMMUNITY OUTREACH



B. Executive Summary

INTRODUCING: ***Slingshot Accelerator Space***: Professionally run innovation and accelerator space powered by a community of bold and passionate educators and industry innovators creating connected hardware and software.

2. STUDENT AND START UP RETENTION

Dr. Andrew Mallon (Founder and CEO of Calista Therapeutics, a 2013 MassChallenge winner that developed treatments for Cystic Fibrosis. He came to Rhode Island from Scotland in 2008 and was recruited to Brown University, where he led research and founded a successful Biotech startup. Dr. Mallon is the director of MassChallenge RI. The first group of 20 companies begin June 2018. Slingshot anchor companies will offer mentorship and manufacturing support to MassChallenge participants.

Slingshot will also provide dedicated space for those who have completed MassChallenge and have potential for next stage growth. Talent brought to Rhode Island by MassChallenge will therefore be retained during their formative next steps.

3. PRIVATE INDUSTRY

Loft, LLC (Sub-tenants including Propel, LLC, Nautilus Defense, LLC, Motel.is)
Unlike incubator clients who use the value-added services of Slingshot and may receive below-market rents, anchor tenants are traditional research, development, and technology-based companies or companies providing professional services to tenants within the building. Anchor tenant rents contribute to the financial stability and these tenants lease agreements will be set for a term of three to five years.

These companies are like-minded in what they offer Slingshot:

Consistency: Get to the next decision as quickly as possible and use that momentum to catapult the project to the next level. Strategic and critical thinking at every point.

Connected: The combined team is committed to RI and have a vast network of like-minded RI committed collaborators.

Experience: Decades of combined experience with large corporations, medical device companies, small start ups, post-doc scientific community, the US NAVY, and DOD.



Advanced Materials Innovation Center for Design & Manufacturing

March 2, 2018



Executive Summary

The Advanced Materials Innovation Center for Design and Manufacturing is a world-leading, interdisciplinary center for research, education, and economic development encompassing material sciences, manufacturing, and engineering of design thinking concepts. The Advanced Materials Innovation Center for Design and Manufacturing will focus broadly on materials innovation but with a concentration on two sectors that are demonstrating strong innovation related growth potential - textiles and composites. The Advanced Materials Innovation Center for Design and Manufacturing partnership is led by Polaris MEP and includes as core partners the Rhode Island Marine Trades Association/Composites Alliance of Rhode Island and the Rhode Island Textile Innovation Network. In addition the following organizations have an interest in collaborating as the Advanced Materials Innovation Center for Design and Manufacturing launches:

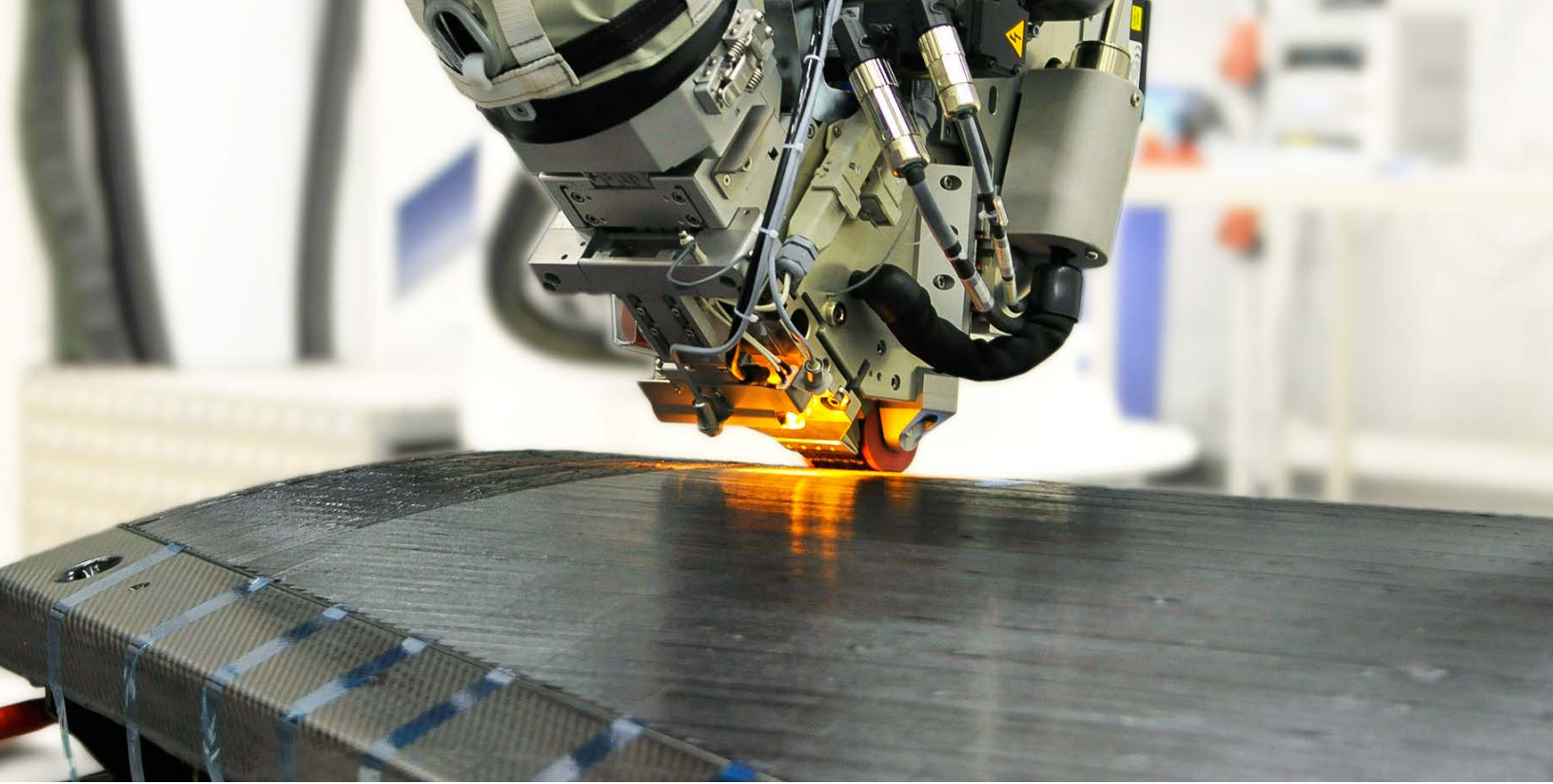
- University of Rhode Island
- Roger Williams University
- Rhode Island School of Design
- AS220
- IYRS
- DESIGNxRI



The Advanced Materials Innovation Center for Design and Manufacturing is proposing a connected innovation campus with nodes at each school and a collision space for shared programmatic activities. The design of this approach is based on extensive research led by Polaris MEP over the past two years regarding the need in Rhode Island for maker space and collaborative manufacturing space in general. We need to scale efforts in order to create a critical mass.

The Advanced Materials Innovation Center for Design and Manufacturing also responds to Brookings critique that because of our state's proliferation of small industries – we should focus on 'platform strategies' that bring together different disciplines that are critical for industry growth.

The Advanced Materials Innovation Center for Design and Manufacturing is proposed as an \$7.64 million platform effort with \$3.4m requested from the Innovation Campus program for real estate, equipment and related costs. A proposed match of \$4.25 million will come from private and federal contributions. This investment will allow for the addition of textiles and composites capacity at the University of Rhode Island, Roger Williams University and AS220 as well as the creation of collision space for increased collaboration.



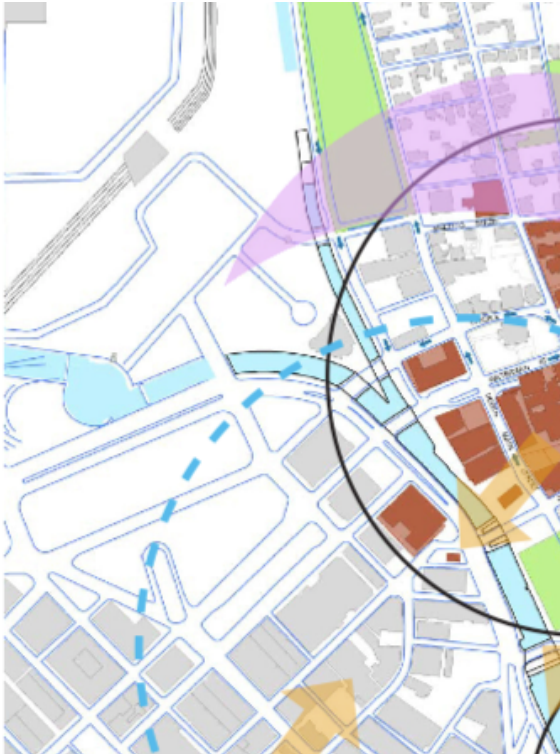
The Advanced Materials Innovation Center for Design and Manufacturing will:

- Identify and grow industry resources for the advanced materials industry
- Host a collision and design thinking space where composite and textile focused people convene
- Support applied research and proof of concept through programmatic and location-based interactions
- Host sessions on industry trends and forums on in demand topics
- Develop a program that engages college students in the region to allow for textiles and composites exploration
- Utilize specifically designed programming to educate and encourage a culturally diverse population of students and faculty to explore industries supported by materials, textiles and composites
- Collaborate with local STEAM initiatives
- Support a robust marketing strategy that engages with
 - NIST
 - University Communications
 - Product Vertical markets
 - National trade associations

We believe that this integrated set of activities will create a pathway for innovation transfer and economic benefits in Rhode Island.

Rhode Island Innovation Campus Proposed by Rhode Island School of Design

Executive Summary



Rhode Island School of Design (RISD) is one of the nation's premier art and design schools, with an unmatched history of educating leading fine artists, designers, and architects.

A primary motivation in the founding of the School was the need for well-trained industrial designers to advance Rhode Island's manufacturing industries. In keeping with its original mission, RISD today plays a significant role in the economy of Providence and the state.

The Innovation Campus initiative represents an important opportunity for RISD to engage with The University of Rhode Island and industry partners to continue its legacy of producing the innovative products and ideas that will drive Rhode Island's economy forward.

Rhode Island School of Design (RISD) proposes to engage in the planning, design and construction of a Rhode Island Innovation Campus in partnership with The University of Rhode Island (URI), Rhode Island Executive Office of Commerce, and with the support of Saint Gobain, S.A. and Tiffany & Co. among its corporate partners, for the purpose of collaborative, interdisciplinary applied materials research and innovation.

RISD's Academic Strategic Plan calls for the development of a series of interdisciplinary labs, woven through its central campus on North Main Street and extending to its southern perimeter on S. Water Street. The project represents the first phase in the planning, design and renovation of space for one to two labs, focused on applied materials research. This focus builds on the institution's long-standing association with textiles, jewelry and metalsmithing, industrial design and other areas of manufacture and innovation in Rhode Island and supports RISD's current range of materials research and experimentation, including textiles and fabric applications, color reproduction and delivery, sustainable building materials, and smart materials and bioplastics. URI's strengths in composites and textiles research, materials testing and application are highly complementary to the processes of making at the core of RISD practice and research.

The proposed Innovation Campus would complement other targeted areas for growth such as healthcare, advanced manufacturing and human-centered design. It would serve as a shared working space for innovation in materials research resulting from collaboration with industry in an academic and industrial setting.

The site of the physical facility leverages the porous nature of the urban campus setting, in close proximity to the I-195 lands and the "Innovation and Design District," making the Innovation Campus and its activities highly visible. Planning, programming and renovation activities would yield approximately 100 jobs in the near term, and several technical positions in the long term.

RISD's interaction with corporate partners helps to prepare our students for 21st-century careers that perhaps have not yet been imagined. This proposal will increase student engagement with industry, as students are typically involved at all stages of the ideation process and guide faculty and students innovating the design to manufacturing process (Industry 4.0).

An example of recent academic industry partnership with Saint-Gobain, S.A. - identified in the Consortium -

- Saint-Gobain, is the worldwide leader in sustainable habitat solutions and designs, they manufacture and distribute building materials and high performance materials as well as provide innovative solutions to the challenges of growth, energy efficiency and environmental protection. They also were large contributors and co-sponsors to the RISD-Brown Tech-Style Haus. Risd Research and the Architecture Department and Saint Gobain enacted a research studio intended to explore day-lighting applications for buildings as a critical component of energy-efficient design.
<http://architecture.risd.edu/work-in-progress/techstyle-haus-update/>
<http://www.risd.edu/press-releases/2013/RISD/Brown/Erfurt-team-designs-Techstyle->

About RISD

RISD is a mission driven institution, focused on the role of art and design in industrial innovation and economic development. This focus has been at the core of RISD's mission since its founding in 1877. The Innovation Campus provides the opportunity to introduce new, creative approaches to materials and methods that may benefit our local manufacturing partners to help advance manufacturing in Rhode Island.

RISD's role as an economic engine and a cultural institution of international prominence is its ability to attract talent from around the world to Providence. A significant number of alumni are actively employed in Rhode Island, and some 460, or 33% are business owners, entrepreneurs or otherwise self-employed. This high "entrepreneurship rate" highlights the creativity and adaptive nature of RISD graduates, and the fact that RISD is a vital source of new businesses for Rhode Island's economy. Among the high-profile Rhode Island-based firms headed by RISD alumni are:

- Ximedica (Stephen Lane '85, Aidan Petrie '85)
- Ecolect (Matt Grigsby '05, Joseph Gebbia '05)
- Tellart LLC (Matthew Cottam '00, Nicholas M. Scappaticci '00, Joshua Backer '99)
- The Steel Yard (Nicolas Bauta '99)

The Innovation Campus competition provides a singular opportunity to bring together some of the state's greatest assets and network their capabilities for the shared goal of increasing the commercialization of academic research, business growth and the benefit of a healthy state economy.

As the Respondent, RISD would manage the development of the Innovation Campus based on its extensive experience with similar, successful renovation projects:

- Co-Works: opened in 2014, Co-Works is RISD's first cross-departmental research and making lab. The facility offers research support for interdisciplinary making; non-credit training sessions on equipment and processes; walk-in tutoring for software, coding, physical computing, sewing, etc.; and teaching opportunities for RISD faculty and graduate students.
- Illustration Studies Building (ISB): a three-year, multi-phased renovation which revitalized the ISB's 43,500-sf of studio, classroom, gallery, and home space to support the academic vision outlined in RISD's 2012–17 strategic plan and provided one of the College's largest undergraduate departments with a facility that meets the current and anticipated needs of its rapidly evolving curriculum. Formerly a 19th-century chemical and dye plant and home to RISD Illustration since 1979, the ISB was last renovated in 1967.

The heart of the ISB renovation was enabled by a new 5,600-sf addition. The five-story add-on to the east elevation of the building, which houses seminar rooms, a code-compliant stairway, elevators and restrooms, made the building fully accessible and allowed each floor to be reconfigured. Through reconfiguration, the ISB now features fully updated teaching and making spaces, two galleries and new mechanical systems. Designed by award-winning alumnus Ed Wojcik [RISD BFA '88], the \$12.1 million renovation was managed by Shawmut Construction.

- **Fleet Library (15 Westminister Street):** a conversion of three floors of the historic (1917) Rhode Island Hospital Trust Bank into a new library. This historic building was designed in 1917 by the architectural firm York & Sawyer. It was listed on the National Register of Historic Places in 1976. The renovation covered 56,000 sf and took 10 months to complete. It was designed by Office dA, Inc., and the project received the AIA NY/BSA Education Facility Design Honor Awards / Building Design + Construction Special Recognition Award. Federal assistance was provided to match RISD's financial commitment.

The RISD Team assembled to manage the development of the Innovation Campus includes:

- **Team Lead:** Professor Daniel Cavicchi, Associate Provost for Research|Global|Practice and Professor of History, Philosophy, and the Social Sciences - Cavicchi oversees all externally-engaged academic initiatives. Previously, he served as Dean of the Division of Liberal Arts.
- **Facilities Lead:** Jack Silva, VP of Campus Services, Silva oversees campus facilities, along with safety and auxiliary services. His work has been integral to RISD's expansion into downtown Providence over the past decade, with his extensive involvement especially crucial to the complex construction of the Chace Center project, the renovation of Memorial Hall and the redesign and renovation of the award-winning Fleet Library at RISD in a former banking hall.
- **Real Estate / Architecture Partner:** will be determined through RISD's process outlined in Campus Planning, Design and Construction (PDC) .
- **Finance Lead:** David Proulx: SVP of Finance and Administration - Proulx manages the finance division along with overseeing Information Technology, Integrated Planning, and Campus Services.

RISD is committed to exceeding the state's investment in the project with existing capital funds. This project is a component of a larger strategic plan that will be implemented in the coming years.



RHODE ISLAND AG TECHNOLOGIES

INNOVATION CAMPUS PROPOSAL



Submitted to: Rhode Island Executive Office of Commerce

Friday, March 2, 2018

SUBMITTED BY: RHODE ISLAND AG TECHNOLOGIES
AND ITS OWNERS

RHODE ISLAND MUSHROOM CO. AND AMERICAN AG ENERGY, INC.

Executive Summary

Respondent

The Rhode Island Ag Technologies (“RIAT”) proposal includes several components: 20 acres to grow vegetables, 7.5 acres to grow mushrooms, 5 acres for seed development, 1.5 acres for plant and fungus genomic research, and 0.5 acres to be used by the University of Rhode Island (“URI”) as an agricultural innovation center (“AIC”). The proposed facility (“Facility”) will be built on the Peckham Farm site with the layout shown on the final page of the Executive Summary. The site has already been investigated and faculty members from URI have determined its suitability for the proposed project. Several firms are participating in this project development. The project participants will include:

- Rhode Island Mushroom Co., the fastest growing agricultural entity in the state of Rhode Island;
- American Ag Energy, a developer of large-scale controlled environment agriculture facilities;
- A major international seed company (“MISC”), a hybridizer and distributor of vegetable seeds;
- Verinomics, a world-renowned firm specializing in plant and mushroom genomic development; and
- URI, a large land-grant institution in the state of Rhode Island.

The total project cost is estimated to be \$115 million.

People

The key personnel who will operate the RIAT site and engage in design, permitting, construction, and startup have many years of experience in the creation of similar activities. The group possesses experience interacting with a variety of government entities in the state of Rhode Island and has successfully operated a major agricultural firm in the state. Michael Hallock, with his partner Robert DiPietro, has created a rapidly growing company in the field of growing and distributing mushrooms – both exotic and conventional. Richard Rosen and Marguerite Piret have developed a number of firms in their careers including several in the energy/combined heat and power area as well as a large controlled environment agriculture facility in Berlin, New Hampshire. MISC is a \$50 million revenue seed developer and grower with facilities throughout the world. Verinomics, a company developed at Yale University, is a leader in genomics with the capabilities of developing new plant and mushroom varieties.

This project also includes the resources and efforts of firms with specialized capabilities such as:

- Sasaki Associates, a world-renowned architecture, landscape architecture, and civil engineer firm;
- Vanderweil Engineers, a large engineering firm with experience in combined heat and power and electricity distribution; and

- Resource Systems Group, an important firm in the northeastern United States engaged in the business of obtaining air quality permits and supervising power generation systems.

Additionally, Service Credit Union (“SCU”), the largest financial lending institution in the state of New Hampshire with assets in excess of \$3 billion, proposes, subject to due diligence, to replicate its loan position that American Ag Energy has already received, on behalf of RIAT. A major sustainability fund has similarly expressed a desire to provide whatever equity capital may be required for the project.

Proposed Plan

The proposed project is to be built on the Peckham Farm site and will occupy 59 acres of that location. The Facility is designed not only to provide space for the aforementioned activities, but the Combined Heat and Power installation will enable the use of waste heat from the power generation to heat the greenhouses. Workers will be screened and they will utilize an employee changing facility where they will acquire sterile uniforms, preventing fugitive introduction of bacterial, viral, or fungal disease. Visitors to the Facility will be required to participate in a similar screening procedure if they require entrance into the operations aspect of the Facility. Less stringent entry requirements will be applied to visitors of the AIC. The Facility will employ 274 people directly and will lead to the employment of 415 people indirectly and provide significant economic benefits to the state of Rhode Island directly from new full-time jobs and increased tax receipts.

Financing Plan

The project is intended to be financed in the same manner American Ag Energy has financed its project in Berlin, New Hampshire. For that project, SCU provided the debt financing for 2/3 of the project value through a 17-year loan. The remaining equity has been supplied by a major sustainability fund with \$2 billion in assets: \$800 million of which are directly in agriculture, and \$1.2 billion in sustainable electric power generation. The total project cost of \$115 million is expected to be provided for with not less than \$50 million from SCU, \$11.5 million from the state of RI, and the remaining balance from the sustainability fund.

The proposed Facility is likely to succeed because the financial projections indicate sufficient cash flow to allow operation without any public subsidies. The project will receive not only revenues from the sale of mushrooms and vegetables, but will also receive rent payments from MISC and Verinomics, as indicated in the financial projections. The recently passed Tax Cuts and Job Act (Public Law No. 115-97) provides an incentive for continuing project operations with high economic returns because if the project is operated longer than 10 years, then the owners can pay no tax on future gains.

Operating Plan

The operation of the project will involve continuous interaction with URI, who will be able to influence the design, function, and operation of the proposed Facility. A Board of Directors will supervise the project and the Board will include a member appointed by URI’s President, David Dooley. Initial design, permitting, and financing activities will be undertaken within 60 days of project commencement. A design, including function and layout, will be circulated. The design will be revised in the next 30 days and RIAT will apply for permits, including those mandated by state law or South Kingstown. It is expected that this process will take approximately five

additional months. Also, during this time permanent financing will be addressed. This activity includes the receipt of purchase commitments from a variety of customers who will be buying the expected facility output.

Contractors will be selected to both build the facility and supply all internal equipment. If required, prospective vendors will be bonded to ensure their performance and payment obligations, unless the nature of their contract provides for proper work completion prior to payment.

When each operating unit is complete, a staff will be trained to begin operations in what will be known as the startup phase of the proposed effort. Training will occur on site whenever possible. Each operating area will have test run-throughs that will assure its successful, continuous operation. It is expected that the Facility as a whole will be complete and in full operation by the first quarter of 2020.

Requests for Rhode Island

Rhode Island is expected to provide the Peckham Farm site and \$11.5 million in the form of bond proceeds. Additionally, URI is expected to support the participation of various faculties and professors who have expressed interest in research and work efforts at the RIAT project site. The URI Research Foundation is also expected to manage the AIC on a day-to-day basis, although the AIC building will be provided by RIAT. In addition, nomination for the provision of the law Tax Cuts and Job Act (Public Law No. 115-97) requires action by the state of Rhode Island and the town of South Kingstown prior to March 21, 2018.

RI-CDDC

RHODE ISLAND CAR-T DESIGN
AND DEVELOPMENT CENTER



Volume 1 of 2

Roger Williams Medical Center
Rhode Island Innovation Campus RFP



Executive Summary

Roger Williams Medical Center (RWMC) seeks Innovation Grant funding to enable the development of the Rhode Island CAR-T Design and Development Center (RI-CDDC) to serve as a national and international supplier of novel cancer immunotherapeutics in high demand. The RI-CDDC will also serve as a hub for development of new immunotherapy treatments, nidus for biotechnology job creation, and fulcrum for novel educational programs to support the career growth of University of Rhode Island and Community College of Rhode Island students.

The RI-CDDC will be housed at Roger Williams Medical Center (RWMC) in Providence, Rhode Island, which has become a global leader in a transformative new form of cancer treatment, called CAR-T cell immunotherapy. CAR-T are produced from a patient's own T cells through a genetic re-engineering process that enables personalized and targeted tumor killing. As an incubator for further CAR-T product development and immuno-oncology workforce training, the RI-CDDC will spur the creation of new therapeutics for patients with incurable cancers, provide skilled nurses and technicians capable of working in the CAR-T space, and will have an immediate and sustained positive economic impact on the Ocean State.

Immuno-Oncology (IO) and CAR-T

The inception of IO therapies can be traced back more than 100 years, when the surgical oncologist William Coley (also known as The Father of Immunotherapy) hypothesized that stimulating a patient's immune system could compel various forms of tumors to attain complete remission. Since then, oncology researchers have provided evidence that the immune system is critical in the fights against cancer. However, only with the past decade, have we made dramatic progress in applying IO agents toward meaningful clinical results in a wide range of tumor types. Today, IO has realized sufficient progress to become the 4th pillar of cancer care, along with surgery, chemotherapy, and radiation.

Recent immunotherapy clinical trials have demonstrated the feasibility of engineering a patient's T-cells with chimeric antigen receptors (CARs) to target malignant tumors. Rather than attempting to induce an immune response to cancer with a vaccine, CAR-T therapy allows one to manufacture an immune response that enables highly specific tumor killing (Figure 1). ***CAR therapy has the potential to fundamentally transform cancer treatment with specific and personalized targeting of tumor proteins.***

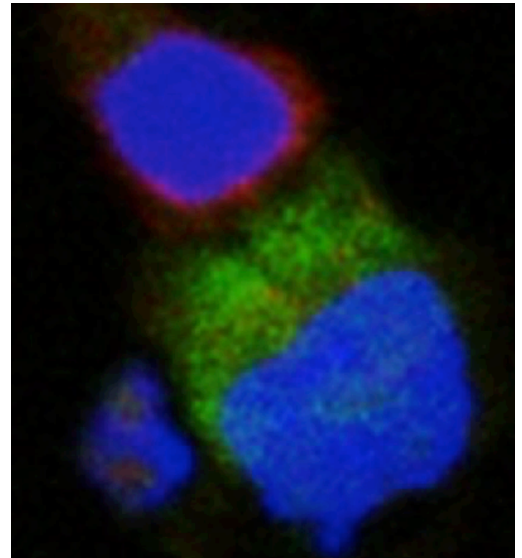


Figure 1 – Microscopic visualization of CAR-T cell produced at RWMC. A CAR-T cell (red fluorescent halo) is seen docking with and attacking a malignant tumor cell (green fluorescent front). The green staining on the tumor cell is indicative of active cell death. Our typical clinical trial patient receives 30 billion of such CAR-T cells manufactured at RWMC. One can imagine the clinical impact of this image, repeated billions of times within a patient's tumor.

However, before CARs become standard, first-line treatment modalities, critical issues regarding efficacy and delivery must be overcome. Simply delivering CAR-T via standard intravenous approaches will fail in most solid tumor patients. Our novel and proprietary delivery methods have enabled high impact CAR-T clinical trials and fostered partnerships with companies at the forefront of CAR-T development. RWMC has pioneered the use of CAR-T for treatment of solid tumors affecting the liver, which affects 150,000 patients each year. This has made RWMC an international hub for solid tumor CAR-T trials and manufacturing, with patients coming to Rhode Island for their cancer care from around the globe. *Thus, our proposal seeks to **grow an existing, proven center of excellence**, rather than attempting to create one de novo. Leveraging a proven entity substantially reduces the risk associated with use of public funds.*

It is important to note that CAR-T cells must be manufactured in a highly specialized facility with expert personnel if they are to be used in cancer treatment or clinical trials. It is equally important to appreciate that the demand for CAR-T cell production far exceeds the capacity of existing manufacturers. ***Insufficient or unavailable production capacity is the critical bottleneck in the CAR-T space at this time.*** This is the market opportunity that the RI-CDDC intends to exploit with its partners. Furthermore, companies will struggle to find CAR-T production sites and clinical facilities, and then create complicated logistical and programmatic links between the two entities. The RI-CDDC will offer the **entire spectrum of CAR-T clinical development capabilities**, managed by a tested and proven team of scientists and physicians.

An important element of the CAR-T production bottleneck is the limited availability of workers skilled in CAR-T production and patient care. To address this glaring need, our proposal also includes nursing and technician training programs in **partnership with URI and CCRI to build a workforce** for the RI-CDDC and beyond. Awarded funds will be used to both build the campus and develop the needed workforce through creation of training programs designed to benefit the State for the award period and well beyond.

The Market Opportunity

CAR-T production and the execution of CAR-T clinical trials are two critical elements challenging the majority of companies in the rapidly growing IO market segment, which is the largest growth area in medicine. The global immunotherapy drugs market reached \$108.41 billion in 2016 and is projected to reach over \$200 billion by 2021. CAR-T cell production is an integral part of this market segment and is projected to grow at a double-digit rate to meet the demands of the rapidly expanding and aging cancer patient population.

RWMC has well established and proven CAR-T production and clinical trial capabilities that are in operation at this very moment. The RI-CDDC will serve to provide these highly valued assets to additional businesses and academic partners, while creating transformative career opportunities for Rhode Islanders. We have an opportunity to put Rhode Island on the map as a center of excellence for CAR-T therapeutic development and innovation. ***Thus, RI-CDDC will serve as an innovation hub for the most promising new cancer therapies under development, nationally and globally.***

In addition to developing life saving cancer therapies for patients (Figure 2) in Rhode Island and around the world, the RI-CDDC will be a magnet for businesses focused on IO therapies who need CAR-T manufacturing capabilities. Through leveraging our existing program and intense focus on CAR-T therapy for solid tumors, we look forward to making Rhode Island home to a world-class IO Innovation and Development Center.

We are also capable of leveraging novel combination therapies based on CAR-T programs. Presently, we have a **collaboration with the Rowley Lab at URI** to test combinations of CAR-T with marine compounds. We have identified novel pathways in the liver to stimulate the immune system and several Rowley Lab molecules seem to be promising candidates to target these pathways. As such, these molecules are rational combination candidates for use with CAR-T therapy directed against liver tumors. The RI-CDDC would serve as an incubator for these combinations and springboard for clinical testing and commercialization of URI assets.

Roger Williams Medical Center Capabilities

Currently, Roger Williams has the only cellular product GMP facility in Rhode Island and with its partner, Sorrento Therapeutics, has seized a leading role in solid tumor immuno-oncology. Roger Williams also has the largest cancer surgery team and the only bone marrow transplant program in Rhode Island.

Two phase I clinical trials have been completed and a third is in progress. Patients have been attracted to these trials from China, India, England, Wyoming, Oregon, Utah, Maryland, California, Florida, New York, Colorado, Massachusetts and Rhode Island. The willingness of patients to travel long distances to Rhode Island for their healthcare speaks to the enormous potential and attractiveness of CAR-T therapy. Leveraging its strong and internationally recognized clinical oncology program, Roger Williams has become known for production of high quality CAR-T cell products made for in-human application. It has a unique capacity to rapidly and safely produce IO products and bring to patients for testing/treatment

Our Goal

Roger Williams intends to lead the creation of an IO innovation and development hub that is capable of driving CAR-T therapies successfully through the FDA approval process and toward commercialization. We will also create a platform for IO workforce development through URI and CCRI educational programs, coupled with availability of jobs within our hub.

Four more years

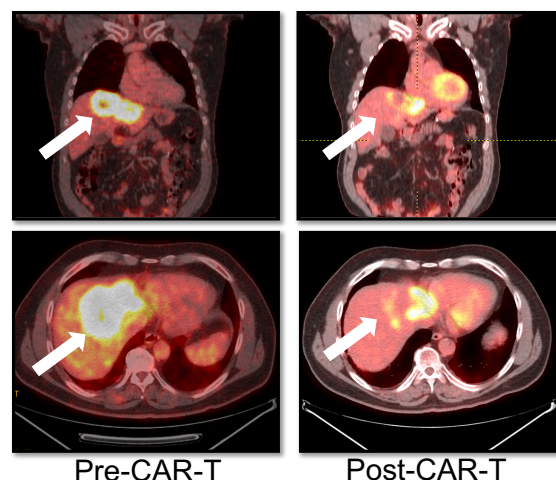


Figure 2 – Meaningful clinical response in RWMC patient. Following CAR-T infusion, the liver tumor in this stage IV cancer patient became markedly less active on a PET scan. More importantly, after failing many lines of standard treatment, the patient had over 4 years of quality time with family and friends. Results such as this provide patients with hope and drive our team to work tirelessly on their behalf.

The success to date and our proven IO development program has attracted numerous public and private companies to seek partnerships with RWMC in forming the new innovation and development hub. The Innovation Campus Bond matching funds would be used solely to create the RI-CDDC. All trials are funded by capital investments and additional contributions from our corporate partners, or funding RWMC obtains from other sources.

Our Proposal

- Brings \$5 million of private sector capital investment to Rhode Island
- Creates a world class CAR-T manufacturing facility and creates a foundation for an eventual world class Immuno-Oncology Innovation and Development Center.
- Collaborates with the University of Rhode Island's College of Pharmacy.
- Establishes critically important workforce development programs in nursing and bioscience technician training at URI and CCRI.
- Collaborates with two private sector immunotherapy companies.
- Generates more than \$12 million of positive economic impact.
- Serves as a magnet for immunotherapy companies to locate production in Rhode Island.
- Serves as a magnet for additional immuno-oncology clinical trials in Rhode Island.
- Aligns with the state's objective to develop bio-science and silver segments of the economy.
- Will stimulate medical tourism in Rhode Island through attraction of patients to our state for clinical trials and treatment.

The Distinct Advantages of Our Proposal

- The RI-CDDC will be built on the foundation of an existing, proven CAR-T production facility.
- The RI-CDDC is well positioned to become a major supplier to the immunotherapy industry.
- The RI-CDDC, by providing highly valued CAR-T production to businesses and academic partners, can provide unique leverage for Rhode Island's economic development efforts.
- The RI-CDDC will create transformative career opportunities for Rhode Islanders.
- The RI-CDDC will have an immediate and sustained positive economic impact for Rhode Island.
- The RI-CDDC will seamlessly integrate with the existing clinical programs of the Roger Williams Cancer Center, accelerating clinical development of IO assets.
- RI-CDDC will increase the bioscience and health professional education capabilities of URI and CCRI.
- The RI-CDDC will enable and accelerate development of URI marine biology assets for potential clinical use alongside CAR-T.
- The RI-CDDC will be a low-risk, high-return investment by Rhode Island.

March 2, 2018

Introducing the On-Demand Apparel Micro Factory in Peace Dale, Rhode Island

Located very close to URI campus, in the Peace Dale historic district, are the beautiful granite mill buildings of Palisades Mills. Our proposal for a small, yet very impactful Innovation Campus is to reside in Building 1. Recognizing the historic benefits of this location and the continuation of Rhode Island innovation heritage, we introduce the Peace Dale Design Center & Workforce Training Initiative.

The village of Peace Dale was founded in the 1800s by South Kingstown industrialist Rowland Hazard, who named the village in honor of his wife, Mary Peace Hazard. In 1804, the Quaker Hazard purchased a 1/3 interest in a small wool-carding mill at a water power privilege on the Saugatuck River. During the next few years, his involvement in the business grew. Hazard began putting out his carded wool to be spun in area homes, then taking the yarn produced and putting it out to be hand-woven into cloth by local weavers. Hazard purchased the mill privilege outright in 1812, and invested in *experimental* machinery including primitive power looms. By 1815, Hazard ran a small, fully integrated manufacturing operation, going from raw material to finished goods. It is said to have been one of the first such textile plants in America.

Hazard was one of the first American manufacturers to employ narrow-width power looms, and also the first woolen manufacturer to combine all manufacturing processes under one roof, from wool carding through spinning, weaving, and dyeing.

The financial commitment of the State of Rhode Island under the remit of the Rhode Island Executive Office of Commerce (EOC,) in partnership with the University of Rhode Island (URI) provides the consummate opportunity to transform an historically important heritage location into the first operating “On-Demand Apparel Micro-Factory”. A new form of *experimental* machinery, fully integrates Soft-Product manufacturing operation under one roof. Our Technology Partner, EFI/Optitex, is significant. This will be the 1st location in the USA and internationally, to showcase a condensed manufacturing system, for the regional production of Soft-Goods product.

Central to the micro-manufacturing center is the Design Studio for artwork development and product design. We are currently relocating printing and embroidery production from Los Angeles, CA and Europe, to Southern Rhode Island for our high-end Home Décor customers.

With regional manufacturing partners, we will support Screened and Rotary printed fabric, and on-site at the Peace Dale Design Center, we will produce Digitally Printed Fabric with the world's best printing systems currently available today. The collaboration between design, leading technology and industrial partners, coupled with academia and advanced manufacturing methods, provides this immediate opportunity to participate in the New South Coast Manufacturing story and the Rhode Island economy. We will bring many new customers to Rhode Island for this opportunity to effectually and efficiently, "make it here" with this new robust On-Demand, Just in Time Delivery, Manufacturing Technology.

Working with the existing EFI/Optitex customer base in Apparel, Home Furnishings and Auto, we will support all interested parties for well-designed soft-goods product, introducing new opportunities for surface artwork applications, eco-positive, sustainable product development. This new method of manufacturing revolutionizes the way we will design printed soft-goods products, by combining several separate tasks into one streamlined flow, with greater accuracy and less cost.

The term Soft-Product Engineering becomes even more important, introducing a new process of combining the sewing pattern, with the surface artwork, for automated fabric printing, cutting and eventually, sewing. This leads into one of the most important parts of this proposal, the need to support and sustain the workforce required to expand Rhode Island's economy.

PDDC Workforce Training Initiate: A Network of Manufacturers and Academia.

- URI Department of Textiles, Fashion Merchandising and Design
- URI Department of Engineering
- Center for Women and Enterprise
- FabNewport
- Partnering Manufacturers for on-site training and mentorship.
- Technology Partners for the micro-manufacturing system, other CAD software, Industrial Sewing, Embroidery and Knitting machines, and Wearable Technology.

A keystone development for this proposal was finding the Peace Dale heritage location near the URI campus. Offering digital fabric printing for URI students as well as specialized training for this new skill-set is a great opportunity for all. It is not easily possible for department budgets to afford taking on expensive equipment, maintain and operate it successfully. The skill required takes time to develop, and honestly, only a handful of matriculated students will be truly interested to pursue the path. Having facilities like this

near the URI campus will provide an introduction to new technology, an opportunity to collaborate with skill technicians and experienced professionals, supporting new findings and innovation.

The Peace Dale Design Center can be considered for the new home of the URI Master Seamstress Certificate Program and the RI Sewing Network. For 30 years Diane Martin has taught specialized skills in patternmaking and sewing construction to meet the challenges of fit, form and function, and hosts up 85 members attending monthly meetings for the RI Sewing Network. This skilled network of professionally talented individuals taking up residence in the Peace Dale Design Center, provides the opportunity for the Design Center to support an existing URI non-degree Certificate program and the potential for facilitating several others new URI programs: Certificates, Capstones, Co-Labs, Hackathons, Internships and Longer-term Residencies. The Peace Dale Design Center has 11,000 sq ft of design space, with several Design Studios for Entrepreneurial/Start-Up Mentorship and support.

Provide a foundation programing for Industrial Sewing and Pattern Drafting:

- Non-Digital methods for hand-crafted skill development
- Operation of Industrial Sewing and Embroidery Equipment
- Sewing Pattern Drafting and Cutting

CAD Technologies will include:

- Product Design
- Artwork Development: a combination of hand-illustration and CAD design
- 3D visualization
- Product Engineering – Structural, Construction and Electrical

The PDDC Workforce Training program will focus on industrial manufacturing of soft-goods product. Each practice requires specialized training once the fundamentals are achieved. Partnerships with Mentor Manufacturers will provide specialized on-site training.

Occupational Titles include:

Apparel Designer	Sample Maker	Home soft-goods for tabletop,
Soft Goods Accessories Designer	Patternmaker	bedding and kitchen
Wearable Technology Designer	Costume Designer	Sailmaking
Medical Soft-Product Designer	Home Furnishings Product	Boat Cover and Canvas
Soft Product Engineer	Designer	Manufacturing Machine Operator
Luggage Designer	Home Decor Designer	Manufacturing Project Manager
DOD Uniforms and Soft-Product	Interior Decorator	Manufacturing Production
Designer	Upholstery for Home Furnishings,	Manager
Tailor	Boat or Car	
Seamstress		

- Our Workforce Training Network will support regional satellite training programs, providing outreach to Middle School and High School as well as Post-High school programs, to identify talent and interest.
- At the Design Center we will also provide training to degreed students and matriculated students, looking for additional specialized training and access to equipment and software.
- This workforce training program helps supply new hires to Soft-Goods Manufacturers or a pathway to further certificates and degrees.
- We can provide new opportunities to a wider range of students, helping underserved communities find new income streams and dependable jobs.
- The PDDC will supply curriculum and resources for equipment and software to the PDDC Workforce Training Network. We will extend across MA and CT borders as a resource partner for regional manufacturing and training programs.
- URI TMD and URI Engineering will be identified as the Knowledge Center for this new approach to micro-manufacturing and workforce training. The URI TMD and Master Seamstress certificate programs are currently and have been recognized by Industry Manufacturers for successfully providing Technical Skills for Design & Manufacturing. URI continues to be recognized as a modern training center for all levels of interests, and with these new collaborations, help enrich a unique education and workforce train initiative we can all support.

We are in a crisis

- Another key realization in researching and developing this proposal was the very concerning realization that we have a sizeable void currently in supply of trained workforce, to support our current Soft-Goods Manufacturers.
- Other than URI, technical skills are not being developed in other Design Programs to the level needed by the manufacturers.
- The majority percentage of jobs requiring these skills – Patternmaking, Sewing Construction, Soft Product Engineering, are now Over-Seas. New Technology companies and existing long term manufactures are having a difficult time surviving this void, intense competition for skilled workers, and no resources for new hires.
- We can help with the “Aging-Out” concerns for our veteran master employees.
- We can help retain a knowledge base in specialized skill sets – these should not become “Dying Art Forms”

A Revolution in the way we design, engineer and manufacture Soft-Goods Product

- The PDDC Micro-Manufacturing center will revolutionize the way we think about product design and production, combining printing and cutting into one process.

- Sewing and Patternmaking skills as foundation to Design and Engineering of soft-goods product will be essential, as will the basic knowledge of Electrical Engineering, connectivity, and the instrumentation of soft-goods product.
- Regional micro-manufacturing will be essential for our future. Over-Seas Production is becoming a lot less appealing. Other countries like China are building micro- factories in America. Let's build our own!
- With the possibility of substantial funding and support, we have this great opportunity to be the 1st location in the USA and internationally, to begin this revolution in soft-product design, On-Demand Production, Just In Time Delivery, Small Run Manufacturing and Sample-making,
- "If we build it, they will come"
- By making use of this considerable funding opportunity, to provide Accessible Technology and Training, with a broad out-reach program, we can bring greater benefit to a wider range of individuals.

Manufacturing Scalability

The PDDC Workforce Training Network and Manufacturing Scalability Plan is an essential support network to create a real South Coast Manufacturing story. At the Peace Dale Design Center we will support workforce training curriculum and partner with URI in the supply of skilled new hires. The PDDC will also be active Design Center developing new prototypes and able to rely on the Manufacturing Network partners for regional small run production. A key contributing partner for this proposal is Frank and Sue Texiera, owners of a soft-goods manufacturing factory in Fall River and Accurate Services, a Design & Development Prototyping company. They are providing to the PDDC Workforce Training Network 5,000 sq ft factory floor space with the offer to scale up to 15,000 when needed. This space will be called the Dream Center and occupants of the space could be start-ups, residents, and manufacturing equipment for PDDC production. Partnerships with Mentor Manufacturers will provide specialized on-site training. Our Manufacturing network currently includes: Accurate Services, Merrow Manufacturing, Hasbro, TJX, Reebok, New Balance, LL Bean, Garnet Hill, J. Jill, Asics, DOD Lincoln Labs and DOD Natick Labs, Flex/Boston, AFFOA, WYS Lab, and MIT, Parsons School of Design, FIT, Drexell, Philadelphia College of Art, and UNC. Our South Coast regional manufacturing can scale up to manufacturing associates in Puerto Rico and Global Vendors.

Programing

Advanced product design capabilities will be applied to Activewear, Wearable Technology and Wearable Medicine. Along with initiating regional manufacturing, we will chart new ground with clients and in our R&D labs, for sensory, IoT, and nanotechnology “instrumented products. We believe there is enormous potential for IP and large manufacturing programs to develop for us in the sector. A partnership with URI will be mutually beneficial and potentially very successful.

Physical Facility

Please see initial floor plan layout for allocation of Lab Space, Design Studios, Stich Area, Design Library and Engineering Space. Several Design studios

SphereE EXECUTIVE SUMMARY

Why?

Through establishing one or more Innovation Campuses, the Rhode Island Executive Office of Commerce (EOC) wants to catalyze partnerships that aim to close the gap between the high level of academic research occurring in Rhode Island and the comparatively low level of subsequent commercialization, business growth and job creation.

What?

We have formed a consortium of eight established and entrepreneurial cutting-edge organizations who share a unique vision and strategy to meet the EOC goals: Introducing The Circular Economy. Transitioning to a circular economy represents a systemic shift that builds long-term resilience, generates business and economic opportunities, and provides environmental and societal benefits.

We are proposing a lively Innovation Campus - Center for Advancing a Circular Economy - in a downtown Providence space that is buzzing with entrepreneurial activity with advanced workshop and learning settings, as well as product and manufacturing focused multidisciplinary collaboration and research. When we say multidisciplinary, we mean it, as the table demonstrates.

Project	University Partners	Growth Area
Use of modern VR, AR, IoT, and serious games to disseminate circular economy system solutions and make people aware of potential innovations and jobs	URI, Harrington school. Brown, Computing and Inform. Systems	Interdisciplinary.
Circular economy and supply chain management	URI, Supply Chain management	Defense, Advanced manufacturing,
Materials design, natural materials	URI, Engineering RISD, Industrial Design	Advanced manufacturing, Food Tech (especially packaging), Silver Economy (wellness, health), Renewable Energy,
Data analytics associated with supply chain management, green procurement within Circular economy	URI, Brown, Computer Science	IT, IoT, Blockchain, Cyber & Data Analytics
Researching the application of Blockchain for tracking generation, storage and use from numerous suppliers and users of renewable energy.	URI, Brown Computer Science	Energy
Changing hearts and mind(sets). How to promote systems thinking	URI, Behavioral science Brown, Life Sciences	Interdisciplinary
Use of serious “war”games for non-combat purposes, e.g. logistics, resilient practices	URI	Defense
Consumer behavior related to changing ownership models, leasing.	URI, Behavioral science / psychology	Interdisciplinary
Business and Financial Models for the CE. Literature review. Develop financial CE models for the Rhode Island situation and the USA.	URI, BA Brown, BEO	Interdisciplinary

Project	University Partners	Growth Area
In depth market research to spread selected elements from the Center programs to other U.S. areas. Identify associated consulting, licensing and other potential revenue streams.	URI, BA Brown, BEO	Multiple growth areas, Interdisciplinary. State of Rhode Island
The state of our oceans is directly linked to supply chain, packaging and waste disposal and management. In 2050 it is predicted there will be more plastics than fish in the ocean by weight.	URI, Oceanography	Ocean Science

The Center will offer cutting-edge experiential engagement and learning activities, including serious games and visuals. Consortium members Focus Vision Media will be involved in creating VR and visual experiences, while partner Smart Game Systems, Inc. will focus on serious games, using an IT platform that includes blockchain capabilities. Also, the Center will actively organize training and workshops, as well as brainstorming sessions that forge new partnerships between manufacturing, academia and government. Congruently, we will develop a consulting practice that will be revenue generating. Furthermore, the Center will initiate and coordinate practical research (see table). Sphere E team member Dr. Scott Matthews at Carnegie Mellon University led development of EIO-LCA software used by thousands of enterprises around the world and has made this tool freely available to the Center and Rhode Island to determine where the greatest improvements in cost and environmental performance can be achieved.

Who?

The three companies organizing the Center for Advancing a Circular Economy – Sphere E, Smart Game Systems, and WishKnish – have a teaming agreement that will be transformed into formation of a new company called Circular Economy Partners. Richard Sellers, Chairman of Sphere E will serve as Chairman of the Board of the new company of Smart Game Systems as CEO and Michael Kapoor of WishKnish as Business Advisor.

Sphere E, Inc. – Provides innovative software tools that empowers private sector enterprises and public-sector agencies to transform their annual spend on products and services from a cost burden to an opportunity to reduce procurement operational costs while improving their environmental sustainability performance.

Smart Game Systems Inc. – Leverages the power of games, blockchain applications, analytics and behavioral science to reduce risk, motivate engagement, improve performance and inspire innovation. Provides experiential learning programs enabling diverse enterprises to overcome today's complex challenges in measuring, monitoring and reporting their economic and environmental sustainability performance.

WishKnish, Inc. - professionals are seasoned and out-of-the box thinkers and doers. Furthermore, they have rare top-level expertise on block chain technology and are, therefore, positioned to offer Rhode Island breakthrough support in tech and in attracting additional funds. <https://wishknish.com>

Some other consortium team members are Focus Vision Media: an innovative communications firm supporting enterprises with videos and augmented reality; Filarski Architects: a green building_architectural_firm_

How?

The Center for Advancing a Circular Economy will be requesting \$5M from the RICC for use of the Innovation Campus and for growth and development of products and services matched by private sector funds for profitability and economic growth in Rhode Island over a ten-year period. The total ten-year amount requested from RICC is \$5M, with \$2M to be used for business location development and operations. Matching funds will come from Shatterfund, Inc., an investment capital fund based in CA.

Revenues are expected to be achieved in three core areas:

Circular Economy Technology: Adapting the Sphere E tools and patented processes, Sustain E will combine processes from Smart Game Systems for participant engagement and ongoing experiential learning along with research and application of a pilot for a blockchain platform from Wishknish, Inc. The Center will charge fees and licenses to generate revenue.

Circular Economy Certifications: The Center will be adapting and developing an experiential learning academy based on innovative technology and contributions from global experts for certification in basic understanding and applied practices for Circular Economy. Certification for applications of blockchain in the circular economy will be developed and deployed as part of the initial research stages as well.

Circular Economy Professional Consulting: The Center will provide comprehensive process and leadership consulting for firms and institutions to practice closing loops and making effective transitions to a circular economy, possibly cooperating with URI.

Results

It is estimated that the Center will create around 128 direct jobs (high, and medium to low paid). Additionally, there will be jobs created associated with implementing the new technology, the certification programs and consulting. We estimate that this will comprise 20 jobs, 15 of which will be high-level and 5 medium.

The impact of implementation of circular economy principles on Rhode Island can be approximated by extrapolating from existing studies, mainly from Europe. For example, the Ellen MacArthur Foundation commissioned a comprehensive study by McKinsey that demonstrated that a Circular Economy approach could boost Europe's resource productivity by 3 percent by 2030, generating cost savings of €600 (\$660) billion a year and €1.8 (\$2) trillion more in other economic benefits. (McKinsey Center for Business and Environment, 2015, Growth within: A Circular Economy Vision for a Competitive Europe). See: <https://www.ellenmacarthurfoundation.org>

Our job estimates do not include additional jobs attracted to Rhode Island (and highly-skilled alumni staying in the State) as it becomes a hub for advanced circular economy practices. Nor does it take into account additional benefits such as strongly reduced solid waste volumes, reduced carbon emissions, and overall resiliency of the economy of the State because of localized activities and shortening or even elimination of supply chains and miles travelled.

Because 2018 will be a start-up period, the text below is focused on annual projections starting in 2019. As indicated in the section Personnel Requirements, the Center will have eight full-time staff for whom the average annual remuneration will average \$80,000 including benefits. Additionally, we will have at all times throughout the 10-year period, twelve half-time Project, senior students committed to doing a Master's Degree and to turn work conducted as an intern into a Master thesis.

Each Project Intern will earn \$15/hour, work for 500 hours, and be paid a total of \$7,500. These will be considered half time and high to medium skill jobs, as interns will spend approximately 1000 hours on their research and thesis development, considered a half-time job. For each of the 10 years, there will be 12 Project Interns, totaling 120 over the 10-year period.

There will be 10 Education Interns who each work six hours a week for a three months, considered a part-time job requiring low to medium skills. Each will be paid \$11 per hour for working 25 hours per month over three months. They will each be working 75 hours and each be paid a total of \$825. Each year there will be 10 Education Interns per quarter, 40 per year and 400 over the 10 -year full project period.

Of course, the purpose of the Center is to stimulate significant numbers of secondary new jobs (and elevate the skills level of many existing jobs) by engaging partner groups like ImpactHUB (focused on CSR activities) to help us make the public co-working space one which attracts emerging entrepreneurs, public agencies, and established companies to come frequently to the Center to engage in our training and education programs on how diverse companies and public agencies can benefit from and contribute to the Circular Economy. Rough estimates put these secondary job impacts in the range of 2,500 newly-trained workers per year at managerial and operational levels of the economy.



URI TRANSFORMATIVE INNOVATION GROUP

("UTIG")

LEAD BY

INFRALINX CAPITAL PARTNERS LLC

RFP SUBMISSION

To

**RHODE ISLAND COMMERCE
CORPORATION**

AND

**THE UNIVERSITY OF RHODE ISLAND
FOR THE PROPOSED URI INNOVATION
CAMPUS**

Executive Summary
Helicopter View
URI New Innovation Campus
Phase 1 and 2

UTIG Group for Phase 1 consists of: Infralinx Capital and IBM Security and Samach + SEO.

UTIG Group for Phase 2 consists of: All of the above and Gilbane or similar as a potential interested lead contractor and interested finance partners such as Meridam Infrastructure and J.P. Morgan.

Proposal in two phases

Phase 1 - \$10 - \$16 million operating Cyber Security Operations and Training Center at Kingston and serving the university, state and corporate community to protect data and transmission. This facility will also coordinate with The Narragansett Campus to train students and to protect URI oceanography data.

Phase 2 - \$100 - \$300 million build out of Kingston, Narragansett and Providence campuses for innovation facilitates across other core URI educational disciplines.

Key emphasis on education, as learned in Cornell Tech.

UTIG brings all of the financing. For Phase 1, we finance the entire project, available RFP State funding can be used for student scholarships and professorships. We are ready to do Phase 2 when the state can participate via a PPP in the project so as to enable repayment on a lease basis as in the precedent Long Beach Courthouse or Merced Campus projects over a long term.

Unparalleled combined market leadership in Education, Technology & Innovation, Financing, PPP, DBFMO, DBF, Living Architecture, Hands on Student and Professor education and Global Industrial Relationships and public private partnerships.

Term We propose this collaboration for a minimum term of 20 years.

There is no more qualified group to accomplish this important cutting edge, ground-breaking project

Security Operation Center – IBM Agile Pods



SOC Run Organization - Current State

- NASA style mission control setup
- Minimal interaction between analysts
- Command and control facility based setup
- Optimized for personal work and communications to central leader



SOC Run Organization – Future

- Pod style setup
- Maximize the interaction between analysts of different levels
- Process based command and control
- Optimized for pod collaboration, communications and decision making