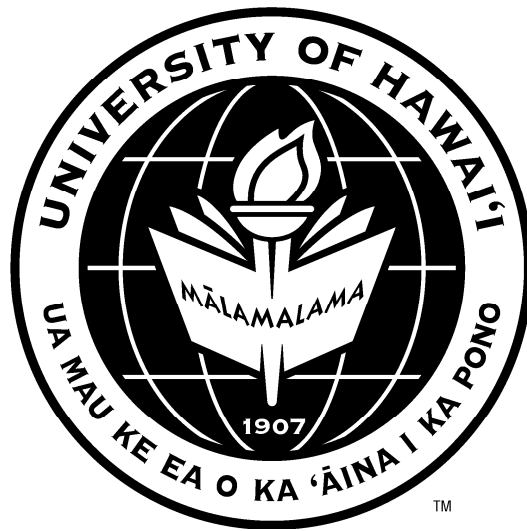


UNIVERSITY OF HAWAI‘I SYSTEM REPORT



REPORT TO THE 2021 LEGISLATURE

Biennial Report on University Innovation
and Commercialization Program

HRS 304A-1959

December 2020

Biennial Report on University Innovation and Commercialization Program HRS § 304A-1959

Pursuant to HRS § 304A-1959, the University of Hawai'i (UH) respectfully submits this report describing (1) the coordinated efforts between the UH's Innovation and Commercialization Initiative program and other state agencies to move the state's technology innovation and commercialization goals forward; and (2) the revenue and expenditure activity in the UH's innovation and commercialization initiative special fund (established at HRS § 304A-1953).

This report covers the period from December 2018 to October 2020.

This biennial report should be read in conjunction with the annual University Report on Technology Transfer Activities, submitted pursuant to HRS § 304A-121, to have a more complete description of UH's commercialization and innovation activity.

Coordinated efforts with other state agencies regarding innovation and commercialization

The University of Hawai'i occupies a pivotal niche in Hawai'i's "ecosystem" of organizations who are engaged in innovation and commercialization in the state.

First, as the state's only institution of public higher education, UH has been entrusted with public funds to generate ideas and discoveries, invent devices and discover new processes. These products, if successfully commercialized, have tremendous potential to increase public benefit. Act 39, Session Laws of Hawai'i 2017, recognized that just as basic research and teaching are part of the traditional core mission of UH, so too is it a proper use of public resources to support and encourage the commercialization of UH-developed inventions and discoveries.

Under Act 39, UH is provided broad statutory authority to engage in activities to support UH-based startup companies. These activities include participating financially directly or indirectly in start-ups, providing strategic marketing and networking resources, and offering hands on instruction and mentoring to the new entrepreneurs. It provides more express authority for certain programs, like its accelerator, and is patterned after a similar law for the state's department of business, economic development and tourism. Combined with Act 38, Session Laws of Hawai'i 2017, these two legislative measures aim to facilitate the transformation of discoveries and inventions generated by UH research into commercially viable enterprises to help broaden workforce opportunities for the state, diversify the economy, and deliver innovative and useful products to the public. These laws also help to keep UH competitive with its peer research institutions that have similar technology transfer and commercialization programs.

Unfortunately, Act 39 has a sunset provision of June 30, 2021. Because of its importance to the success of University of Hawai'i's current and future commercialization efforts to help diversify and bolster the state's economy, now even more important during the current COVID-19 pandemic, UH and its supporters from the local business and innovation community will be working with the Legislature in the upcoming session to remove or extend the "sunset."

Second, in addition to being a generator of new technology, UH is also a “state actor” among other state agencies and other incubators and accelerators that are also similarly engaged in economic development and diversifying employment opportunities and commercializing new technology. The University of Hawai‘i recognizes that to have the most long-lasting effect, it must coordinate its activities with other state agencies and work synergistically so that its efforts are not at cross-purpose or duplicate programs and initiatives of other state agencies or non-profits.

Not only must the efforts of various players be coordinated, but their joint efforts should also be focused in areas and technologies where Hawai‘i has a natural advantage and ready resources. For the near term, UH has identified health sciences, energy, agriculture/aqua, computer science and engineering, data science, cybersecurity, Artificial Intelligence (AI) and Machine Learning (ML), ocean sciences, astronomy and space sciences, and disaster management as the fields most likely to generate innovation and commercialization opportunities.

The following sections describe UH’s efforts during this reporting period to coordinate projects and programs with other state agencies and others in the ecosystem of innovation.

Joint effort with Natural Energy Laboratory of Hawai‘i Authority (NELHA) to establish EDA- funded accelerator program at Hawai‘i Ocean Science & Technology Park

The partnership between UH, NELHA, and HATCH to operate an accelerator site located at NELHA’s technology park in Kona, Hawai‘i resulted in HATCH putting an investment fund together and launching its inaugural accelerator program in Fall 2019. The objectives of the partnership are to assist proof-of-concept development and provide commercialization services as well as lab, testing, and office space to start-up companies working in Hawai‘i marine aquaculture. These companies aim to service global markets, develop new cultured species, explore new feed sources or develop related technologies to support aquaculture. The project also hopes to attract investment funds and follow-on funding to support these companies. The first cohort of the HATCH accelerator program at NELHA kicked off in August 2019 with 13 teams, with one Hawai‘i company participating in the program.

More Engaged Coordination with Hawai‘i accelerators

The UH regularly consults with the local accelerators, including HATCH, Purple Maia, Elemental Excelerator, BlueStartups and ManaUp, to discuss the startup pipeline and ecosystem resources. Many of these programs, along with other innovation and entrepreneurship ecosystem partners were invited to participate in UH’s *Hacking 4 Recovery* – a 5-day boot camp based on Stanford University’s successful economic recovery program. UH’s OIC/OTT and Pacific Asian Center for Entrepreneurship (PACE) also collaborated with HATCH and Purple Maia for two accelerator information sessions.

University Stewardship of the Mānoa Innovation Center

Effective July 1, 2018, the University of Hawai‘i (UH) through its Office of the Vice

President for Research and Innovation assumed stewardship over the land and building complex commonly known as the Mānoa Innovation Center (MIC) from the Hawai'i Technology Development Corporation (HTDC). Located a short distance from the main UH Mānoa campus, MIC provides incubator space for several local startup companies.

The MIC also houses state agencies that promote state-supported research or technology development, including HTDC and the Research Corporation of the University of Hawai'i (RCUH). The University of Hawai'i's STEM Pre-Academy program and its Applied Research Laboratory are also long-standing tenants at MIC.

For the near term, to minimize disruption during the transition, rents and suite allocations were kept to the status quo as much as possible. In the long term, UH intends to more sharply focus MIC facilities to assist and incubate companies that are commercializing intellectual property generated by or affiliated with its research.

Outreach Efforts to the Broader Innovation Community

The University of Hawai'i continues to create networks and sponsor annual conferences focusing on commercialization and innovation efforts in theme-based substantive areas.

Future Focus Conferences (2015-2019): The inaugural *Future Focus* conference was held in September 2015 and focused on energy, cybersecurity and entrepreneurship. The following year's conference focused on medical research, cybersecurity and entrepreneurship. In 2017, the conference covered astronomy, space exploration, cybersecurity and disaster management. Other subtopics for discussion included the future of innovation in Hawai'i, small satellite launches, big data and workforce development. The conference also served as the official launch of CyberHawai'i, a partnership of local, federal, state, county, private industry, professional organizations and academia to establish a "cybersecurity-ecosystem" to defend Hawai'i against cyberattacks. In 2018, the conference covered the topics of sustainable agriculture, food security and cybersecurity. The 2019 conference focused on sustainability and resiliency with an emphasis on combating sea level rise.

New Innovation Conference: In response to the current COVID-19 pandemic, the University of Hawai'i Office of the Vice President for Research and Innovation presented *Innovations for the New Normal*, a virtual innovation conference in November 2020 that highlighted UH efforts in the areas of resilient food systems, health care and digital infrastructure - vital areas for the state in its recovery and economic diversification efforts. Over 600 registered for the 4-day conference.

Research and Innovation Magazine of the UH System: In July 2016, OVPRI published the inaugural issue of its research and innovation magazine entitled, *Noelo*, which means to "delve, seek out or verify." As an annual publication, *Noelo* captures the essence of UH researchers and the broad scope of their work in one of the most geographically diverse locations in the world. It is used as a marketing tool to share and promote UH research to the community, fellow higher education institutions and other constituents - as well as define UH's commitment to the Hawai'i Innovation Initiative.

Office of Innovation and Commercialization (OIC) Strategic Initiatives

The Office of Innovation and Commercialization, within OVPRI, launched a number of new strategic initiatives and continued to offer innovation and entrepreneurship support and resources.

Office of Indigenous Innovation (OII): In Spring 2020, the OII was established and launched its first program, the (K)new Futures Challenge, in collaboration with the UH Office of Sustainability, the UH Mānoa Native Hawaiian Place of Learning Advancement Office, and the Purple Maia Foundation. The 8-week co-curricular program was open to students at all campuses and focused on supporting the deployment of ancestral frameworks to solve pressing contemporary issues related to our changing climate. The program seeks inspiration from indigenous ancestral knowledge systems to develop solutions for contemporary contexts, with an explicit focus on developing enterprises optimized for the repair, restoration and regeneration of peoples and places.

Lab Ambassadors: The Office of Technology Transfer (OTT) has started a program to connect directly with productive laboratories which are the source of innovations. Specifically, OTT works with the Lab Ambassadors who will help UH in 1) identifying promising innovations and discoveries; 2) filling out invention disclosures (instead of relying on the PIs to do so); 3) working with the office in subsequent patenting and marketing processes. With more than 10 large and productive labs being the target, OTT has already visited and obtained support from four of them to launch this program, which should ease the process and build a robust ecosystem to support the innovation base. The Lab Ambassadors are also integral in assisting with promoting OTT initiatives, programs and events.

Bio Materials Licensing: OTT has engaged an outside expert company, Kerafast, to identify research bio-materials created by UH (such as antibodies, cell lines, proteins, compounds, etc.) that are needed by other researchers, and assist in the marketing, selling and distribution of such life science research products through its e-commerce website to academic and industrial research laboratories worldwide. Such assistance is not only appreciated by UH researchers who are often too busy to deal with external requests for such materials, but is a good way to generate royalty payments to scientists and UH when their materials are purchased. More importantly, the office will help disseminate the research outcome and encourage further research to achieve a higher impact.

Hi-Touch Technology Marketing: UH continues active “push- marketing,” to expand UH’s reach to the worldwide market. OTT continues its contract with IN-PART, an international service based in the United Kingdom, to distribute UH research results direct to relevant industry contacts for commercialization opportunities. Through IN-PART, UH has made contact with various companies in Europe as well as the U.S. interested in UH innovations.

HI-END (Hawai‘i Entrepreneurial Network Developers): HI-END is an informal network of people and programs involved in Hawai‘i entrepreneurship, innovation, tech investment

and start-ups. Since the inaugural meeting in April 2018 at MIC, monthly meetings have been held at the John A. Burns School of Medicine, which is a convenient location for downtown participants. The idea is to facilitate the sharing of community resources and information of the separately managed entities in this great community of innovation and entrepreneurship.

Participants include the Hawai'i Department of Business, Economic Development & Tourism (DBEDT), HTDC, UH Mānoa's Pacific Asian Center for Entrepreneurship (PACE), UH Mānoa's Outreach College, ManaUp, Blue Startups, Hawai'i Business and Entrepreneur Acceleration Mentors (HIBEAM), Hawai'i Tourism Authority (HTA), and individuals interested in Hawai'i's high-tech community whom are working towards similar industry development and economic growth opportunity goals. Leaders from other university, government and private sector organizations are included as well. The monthly collaboration meetings allow different organizations to jointly coordinate community events, share ideas, contacts and referrals, and leverage resources to collectively build and foster Hawai'i's entrepreneurship and innovation ecosystem.

Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Pipeline: The Office of Innovation and Commercialization (OIC) partnered with HTDC Innovate Hawai'i to expand the Hawai'i SBIR/STTR pipeline. Through this partnership, OIC established a program to encourage UH affiliated startups and researchers to participate in the SBIR/STTR programs. OIC also joined a western regional technology transfer accelerator hub (ASCEND) that provides resources to help build an entrepreneurial culture at member institutions and support, educate and encourage researchers to commercialize their research in the biomedical area. The goal of this National Institutes of Health (NIH) sponsored program is to bridge the gap between NIH-funded research and improved healthcare solutions.

Innovation Impact Challenge: The UH launched its Innovation Impact Challenge (IIC) program with Hawaiian Electric (HE) in Fall 2019. This University + Industry collaboration is designed to inspire cross-disciplinary teams to develop novel ideas that will further the State of Hawai'i's energy goals and have potential broader impacts and applications to utilities across the country. This program is focused on finding solutions to identified challenges and building a business around those solutions. UH's partner for 2020 is Hawaiian Telcom.

Hacking 4 Recovery Hawai'i (H4R Hawai'i): OIC/OTT, in partnership with Maui Economic Development Board STEMworks, launched a demonstration project - the Hacking 4 Recovery Hawai'i program, in Summer 2020, modeled after Stanford's H4R program, to spread knowledge, develop and instill an innovation and entrepreneurial mindset, and engage our community during this time of crisis to develop and build an idea to support our recovery or reinvent an existing business. Additional "Hacking 4" programs will be offered in Spring 2021.

National Security Innovation Network (NSIN): UH is partnering with NSIN to offer innovation and entrepreneurship resources and programming in collaboration with the various defense agencies. As part of this collaboration, NSIN is onboarding a university

program director that will be resident on UH Mānoa campus to facilitate these efforts.

Revenue and Expenditure Activity in the University Innovation and Commercialization Initiative special fund.

Overview of the special fund

Act 39, Session Laws of Hawai'i 2017 (HB No. 847) established a special fund at UH called the "University Innovation and Commercialization Initiative" special fund, codified at HRS § 304A-1953 ("ICI Special Fund").

This special fund supports transparency and accountability for UH's Innovation and Commercial Initiative Program ("Program") (codified at Subpart P, Chapter 304A, HRS sections 304A-1951 through 304A-1959). Revenues generated by the Program and expenditures to support the mission can be isolated from and not be comingled with other UH funds. A separate fiscal structure also enables UH to better identify, isolate and manage any conflicts of financial interest.

Revenues that may be deposited into the ICI Special Fund include funds specifically appropriated by the Legislature, and in general, any commercial revenues generated by the commercialization of UH technology. These commercial revenues include, for example, any royalties or license fees received from commercial developers who licensed a UH patent. Any investment income generated by equity held by UH in a start-up company may also be deposited into the ICI Special Fund.

Funds in the ICI Special Fund may be used for costs and expenses associated with the operation of the Program. To provide flexibility to UH, and allow it to respond rapidly to this fast-paced, dynamic environment of technology transfer, expenditures can be made without regard to the State's Procurement Code and personnel statutes.

Activity for reporting period December 2018 through October 2020.

Financial activity of this special fund has consisted of:

(1) deposits of rental income, common area assessments and other fees generated from tenants occupying office suites at Mānoa Innovation Center. As of October 2020, revenues from these sources totaled approximately \$2,139,317.00.

(2) expenditures to pay the operating costs for Mānoa Innovation Center (utilities, property management fees, custodial services, etc.). For this period, expenditures totaled approximately \$1,748,421.00.