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About OIPC

As research and development conducted in private industry continues to decrease, more businesses are looking to universities as a source of new products and technologies. The Office of Intellectual Property and Commercialization (OIPC) at the University of Alaska Fairbanks (UAF) commercializes technologies developed through university research.

Faculty, staff and students at UAF are continually creating new inventions. OIPC commercializes and licenses the intellectual property and markets the invention in keeping with the university's core themes: educate, research, prepare, connect and engage.

The office promotes innovation by sponsoring educational sessions for faculty, staff and students quarterly related to intellectual property. Inventors’ forums bring researchers, potential industry and agency partners, and investors together to discuss new technology, funding opportunities and collaboration.

OIPC formed Nanook Innovation Corp. (NIC) in December 2012. NIC is a nonprofit UAF-supporting organization that focuses on commercializing inventions generated from research conducted at UAF.

The university assigns intellectual property to NIC, which licenses the technology to companies. OIPC then works with NIC to return the licensing royalties received from these companies to the inventors within UAF.

OIPC also assists entrepreneurial faculty, staff and students wishing to start up businesses to commercialize their technology by working with University of Alaska general counsel to prepare conflict of interest plans and commercialization plans for university employees.

OIPC works in conjunction with Nanook Tech Ventures (NTV), a for-profit company organized in 2013 to create start-up companies based on university technology. NTV supports Alaska startup businesses by licensing the UAF-generated intellectual property, providing start-up advice and connecting founders with investors. Two such companies are V-ADAPT and ArcticFire Development Corp.

OIPC saw increased involvement from staff, faculty and students in fiscal year 2014. Inventions reported to OIPC increased to 75 in 2004 from 73 in the previous year. OIPC also filed two copyrights on software code and more than 50 technologies were assigned to NIC for licensing to existing companies or to NTV for start-up company commercialization.

In FY14, a start-up company was formed: ArcticFire Development Corp. This company is a web based business for unmanned aerial vehicles (UAV) whose pre-programmed apps will enable professionals and scientists to make decisions based on data gathered from UAV’s. ArcticFire utilizes open-source platforms to ensure maximal integration of mission-specific software.

Also in FY14, a royalty payment was received from V-ADAPT Inc, the first startup company based upon UAF intellectual property. Those funds were distributed to the authors of the commercialized software during the fall of 2014.

"More UAF staff and faculty are seeing an opportunity to get their inventions out of the lab and into the private sector" said Keith Cunningham, a University of Alaska Fairbanks researcher.
A Letter From the Associate Vice Chancellor for Research

The University of Alaska Fairbanks Office of Intellectual Property and Commercialization has a dedicated staff that is giving 110 percent to make UAF’s commercialization enterprise a success. Many units, organizations and individuals have been instrumental in supporting the OIPC staff in their endeavors. Please join me in recognizing the University of Alaska, UAF and local community supporters. I sincerely appreciate their efforts.

Within the UA system, many units and individuals have gone the extra mile to help the commercialization effort. These include the UA Office of the General Counsel and the UAF Office of Grants and Contracts, along with the deans and directors, whose faculty, staff, and students are constantly innovating. Growth in numbers recorded for UAF inventions, non-disclosure agreements, copyrights, patents and licenses all indicate that the enterprise is gaining momentum.

Two key components to the innovation infrastructure are the Nanook Innovation Corp. and Nanook Tech Ventures. Each has a board of directors responsible for the commercialization of UAF’s intellectual property. The members of these boards commit their time and talents to get UAF technologies commercialized. Board members featured in this annual report, are key members of the Fairbanks and Anchorage communities. They generously give their time to serve in these roles because they are dedicated to success for both the university and their community.

The commercialization enterprise at UAF receives strong support from community partner organizations. The Fairbanks Economic Development Corp., for example, is committed to finding innovative ways to create new economic opportunities in our community. Their support of UAF and technology commercialization brings to bear a set of skills to leverage our efforts. In addition, the mayors of the Fairbanks North Star Borough, City of Fairbanks and City of North Pole have all committed their time to developing ideas based on commercialization.

As you read the 2014 annual report, please chalk up our accomplishments to the great support we receive from the boards of directors of NIC and NTV, community partner organizations, internal UA and UAF support organizations, and, most of all, the inventors. If you are interested in working with one or more of UAF’s commercialization entities, please give me a call. We all benefit from greater engagement both inside and outside the university.

Thank you for supporting OIPC and UAF inventors. I look forward to our continuing success in years to come.

Daniel M. White
Associate Vice Chancellor for Research
Office of Intellectual Property and Commercialization Staff

Adam Krynicki
Business Development Director

Adam joined OIPC in May 2011. He graduated with his law degree from Duquesne University and is admitted to the bar in the State of Pennsylvania.

Shelby Mathis
Intellectual Property Director

Shelby joined OIPC in February 2013. She has her bachelor’s degree in chemical engineering, is a licensed attorney in Alaska, the District of Columbia, Florida and Washington, and is admitted to the patent bar.

Nickole Conley
Business Director

Nickole began working for UAF in 2003. She is the financial officer for the College of Engineering and Mines, deputy director of operations for the Alaska Center for Energy and Power and business director for OIPC. She is currently finishing her degree in business administration at UAF.

Melissa McCumby
Office Manager

Melissa joined OIPC as a part-time employee in November 2013. She attended UAF her freshman year before completing her bachelor’s degree in advertising at Northern Arizona University.

Jane Smith
Student Intern

Jane joined OIPC in August 2014 as a student assistant. She worked as a legal assistant for 3 1/2 years at a local law firm and is currently pursuing a degree at UAF.
Inventors’ Forums

Inventors’ Forums bring researchers, industry and agency partners, and potential investors together to discuss new technology, funding opportunities and future collaboration.

The Office of Intellectual Property and Commercialization has hosted a variety of Inventors’ Forums in the past few years. These quarterly events have highlighted such varied topics as hydrokinetic systems, big data, biotechnology, unmanned aircraft systems, and the oil and gas industry. The forum topics are varied to accommodate the diverse needs of the inventors at UAF.

Coker is currently working on two nutraceutical blend projects. One blend helps elderly obese individuals maintain muscle mass while losing significant body fat. The other formulation maintains liver health during alcohol rehabilitation. To fund his work, Coker is preparing National Institutes of Health (NIH) Small Business Innovation Research (SBIR) and Small Business Technology Transfer grant proposals.

On Jan. 17, 2014, OIPC convened the fifth Inventors’ Forum in the Akasofu Building on the UAF campus. Presenting were innovators Robert Coker, Cheng-fu Chen and Kelly Drew. Guests included industry partners in the biomedical field and regional health care providers.

Chen presented on a semi-permeable membrane sampling technique that he is developing that analyzes the effects of outside influences on tissue samples. Presently, Chen is preparing an NIH SBIR grant proposal.
Drew shared her research on a therapeutic hypothermia technique that places the body in a state of hibernation to minimize the effects of ischemic brain injury. OIPC recently filed a non-provisional application to obtain a U.S. patent on the technique.

**UNMANNED AIRCRAFT VEHICLE**

On May 7, 2014, the sixth and largest Inventors’ Forum to date assembled in the Butrovich Building to discuss unmanned aircraft systems. The forum featured key presenters Ro Bailey, deputy director of UAF’s Alaska Center for Unmanned Aircraft Systems Integration (ACUASI); Bruce Crevensten and Rajan Wilson, co-founders of ArcticFire Development Corp., a start-up company formed to develop UAF intellectual property; and UAF alumnus Sam Vanderwaal, founder of Northern Embedded Solutions LLC.

Bailey’s talk, “Growing the Alaskan Economy based on Unmanned Aircraft Systems Research at UAF,” provided an overview of ACUASI’s background, past and anticipated future missions and risk management. Bailey also discussed how the interest in unmanned aerial systems might impact the Alaska economy.

The founders of ArcticFire Development Corp., Crevensten and Wilson, presented on the unmanned aircraft support system that they are developing. Their vision is to become the iTunes of UAV missions, complete with hardware, software and mission templates. They plan to sell, process payments and fill orders for unmanned aerial vehicles through their web-based storefront.

Vanderwaal, from Northern Embedded Solutions, showcased the work his engineering design firm is doing with ACUASI. The firm develops unmanned aircraft payloads, control systems communication systems and user interfaces for the burgeoning unmanned aircraft systems market.

Inventors’ Forums are a platform for University of Alaska Fairbanks inventors to share their research and for potential investors to engage the inventors.
On Sept. 27, 2012, the University of Alaska Board of Regents voted to establish the University of Alaska Fairbanks Research Foundation to assist in the commercialization of intellectual property and the creation of startup companies.

On Dec. 3, 2012, the UAF Office of Intellectual Property and Commercialization formed Nanook Innovation Corp., an IRS 501(c)(3) nonprofit university-supporting organization geared towards commercializing intellectual property developed from research conducted at the university.

The first board meeting was held on Jan. 9, 2013, and NIC subsequently formed and acquired a majority shareholder interest in Nanook Tech Ventures, a for-profit company designed to take equity in startup companies commercializing university-generated intellectual property.

NIC presently holds title to 51 pieces of intellectual property received through assignments from the university.

In late 2013, NIC executed its first technology license for the pin bone removal machine, which was licensed to Freeman-Bell Machine Shop in Juneau, Alaska. During the summer of 2014, a suite of infrasound detection and monitoring software was licensed to Northrop Grumman, and pipeline mapping technology was licensed to CR Inspection. Currently, NIC is negotiating licenses for a freeze-dried fish process and property valuation software.

NIC has also introduced a new way to get cutting-edge research to the marketplace. The initiative, named UAF Launchpad, provides university software programmers with an easier way to develop and distribute their software by using an e-commerce platform. This online marketplace allows an interested user to purchase and download any of the software programs available on Launchpad.
Nanook Innovation Corporation Board of Directors

Daniel M. White, President
Daniel White is the associate vice chancellor for research and the director of the Institute of Northern Engineering at the University of Alaska Fairbanks. White joined UAF in 1995 as a professor of civil and environmental engineering. He earned bachelor’s degrees from Colorado College and Washington University, and a doctorate from the University of Notre Dame.

Lorna Shaw, Vice President
Lorna Shaw serves as the external affairs manager for Sumitomo Metal Mining Pogo LLC where she oversees community, public and government affairs for Pogo Mine. She also serves on the boards of directors for several industry and business organizations, including Alaska Miners Association and the Resource Development Council. She graduated from UAF in 1996 with her BBA and again in 2005 with her MBA.

Mike Powers, Secretary
Mike Powers was appointed in 2011 to serve as secretary of the UA Board of Regents and serves as chief executive officer for Fairbanks Memorial Hospital and Denali Center. Powers serves on the Executive Committee of the Fairbanks Concert Association, the Executive Committee of the Alaska Hospital and Nursing Home Association, and the Region 9 Policy Board of the American Hospital Association, and is former co-chair of the United Way of the Tanana Valley board. He earned his master’s degree in health care services administration from the University of Wisconsin at Madison.

John Zarling, Treasurer
John Zarling has served as an engineering educator and researcher for nearly a half-century, the better part of that at the University of Alaska Fairbanks. He formally retired in 1997 but has remained an important contributor to UAF, to industry in the state, and to arctic and cold-climate research. Zarling has received multiple awards for his excellence as an educator, including the 1993 Emil Usibelli Distinguished Teaching Award, one of the university’s most prestigious awards and the Meritorious Service Award in 2013.

John Burns, Board Member
John Burns, former Alaska attorney general, is a Fairbanks attorney and the owner of the law firm Burns & Associates PC. Burns received a bachelor’s degree in history from UAF and a juris doctorate from the University of Puget Sound School of Law in Tacoma, Washington. He serves as an adjunct faculty member at UAF, teaching graduate and undergraduate business law courses. Burns also serves as chairman of the Alaska Gasline Development Corp.
Nanook Tech Ventures

Nanook Tech Ventures supports Alaska startups by licensing intellectual property, providing startup advice and connecting founders with investors.

Nanook Tech Ventures was created in spring 2013 as a for-profit company to facilitate development of startup companies commercializing UAF-generated intellectual property. When these startup companies are managed or partially owned by UAF employees, NTV works with these entrepreneurs to create viable businesses based on their research.

Currently, the corporation has two new startup companies in its portfolio and is working with other companies pursuing small business innovation research grants in the community. Instead of requiring an up-front licensing fee, NTV usually licenses UAF technology in exchange for equity in the new company.

NTV is a subsidiary of Nanook Innovation Corp. NIC ensures that licensing revenue received from NTV as a result of start-up company success is returned to the inventors and the university.

Since NTV’s inception, the focus has been on growing new companies and building a strategic portfolio of investment opportunities. Currently, the portfolio is comprised of two companies. V-ADAPT is a web-based software company whose tools help airline, shipping and insurance industries manage the risks of airborne hazards. ArcticFire Development Corp. doing business as Fly Routinely, is a web-based company who makes unmanned aerial vehicle flight routine by creating interoperable piloting software and hardware.

A variety of other high-tech companies are pursuing grants or developing new inventions in conjunction with the university. These prospects for NTV include mobile mapping, nutritional formulations and forecasting software for grant-funded projects.
Scott Bell, President
Scott Bell has more than 30 years of experience as a mechanical engineer with various Alaska architecture and engineering firms, and 14 years of experience as an investor in startup companies as the owner of a small, early-stage investing company. He also serves as UAF associate vice chancellor for facilities services and chairs the Greater Fairbanks Community Hospital Foundation's construction committee.

Adam Krynicki, Vice President
Adam Krynicki is the business development director for OIPC. Previously, Adam designed a micro-finance program for entrepreneurs and worked for a software company incubator. He is a graduate of Duquesne University and is admitted to the Pennsylvania state bar.

Randy Weaver, Secretary
Randy Weaver, CPA, is executive vice president and chief financial officer for Denali State Bank. Weaver serves as vice chair of the Alaska Commission on Postsecondary Education and as board chair of the Alaska Student Loan Corp. He also serves as president of the Fairbanks Pioneer Home Foundation Board of Directors and is an active member of Zion Lutheran Church. Weaver received his bachelor's degree from UAF in 1983.

Michelle Rizk, Treasurer
Michelle Rizk serves as the UA associate vice president of budget. Rizk received her BA in international business and master’s degree in business management from UAF. In 2013, Rizk was named as one of Alaska's Top Forty Under 40 by the Alaska Journal of Commerce.

Doug Johnson, Board Member
Doug Johnson is the executive vice-president of Professional Growth Systems. Johnson received his BA in geological engineering from UAF and is a graduate of the Burklyn Business School. Johnson is a member of the Project Management Institute in Alaska, a board member of the Renewable Energy Alaska Project and an advisory board member for the Alaska Accelerator Fund and for the Alaska Center for Energy and Power.

Bill St. Pierre, Board Member
Bill St. Pierre graduated from Kent State University in 1981. He has since led or participated in multiple startup companies and early acquisition investments, including Tanana Valley Television Company, Internet Plus LLC, Rogers Software Development Inc., Digital America, Restaurant Concepts and Tanana Valley Holdings.

Pita Benz, Board Member
Pita Benz is vice president of social enterprise at Cook Inlet Tribal Council and chief operating officer of CITC’s for-profit subsidiary, CITC Enterprises Inc. Benz is active in the Anchorage Rotary Club and Nordic Skiing Association of Anchorage and serves on the Board of Directors of Alaska Public Media.
Chancellor Brian Rogers, centered behind the check, is joined by UAF inventors, including, from left in the back, Donavan Kienenberger, James Long, Martin Harrild, Franz Meyer and William Ross, and, from left front, Ken Dean, Peter Webley, John Dehn and Laura Bickmeier. UAF Photo by JR Ancheta.
V-ADAPT

The University of Alaska Fairbanks disbursed the first round of royalty checks to the 31 named contributors whose software is being commercialized by V-ADAPT Inc., the first startup company commercializing UAF-generated intellectual property.

On July 2, 2014, nine of the 31 named contributors of Volcanic Ash Software joined Chancellor Brian Rogers and Associate Vice Chancellor for Research Daniel M. White in the lobby of IARC for a royalty check presentation ceremony.

V-ADAPT, which stands for Volcanic Ash Detection, Avoidance and Preparedness for Transportation, offers online services geared toward the airline, shipping and insurance industries which need to detect and track ash following a volcanic event. The company’s tools allow a user to browse near-real time satellite images, receive thermal and ash alerts, and forecast future ash locations. The company also provides scenarios planning and data analysis services for risk management.

V-ADAPT Inc. is based on more than 20 years of the founder’s experience in mitigating hundreds of eruptions in the North Pacific. Jon Dehn and Peter Webley of the remote sensing group at the Geophysical Institute at UAF, along with several additional inventors and entrepreneur Keith Cunningham, founded the company to provide software and proprietary tools to the transportation community worldwide.

“We’re looking forward to the success of this ready-made software in the private sector,” said Daniel M. White, associate vice chancellor for research at UAF.

“Right now, we can forecast where an ash cloud will go based on simulations made before the eruptive event, and we can predict how ash will impact an airport, city or oil platform,” Webley said. “This helps engineers and risk analysts plan for a major event and means that when an eruption occurs, decisions can be made quicker.”

For more information, visit the V-ADAPT website at www.vadapt.net.
Available Technologies

During the past three fiscal years, University of Alaska Fairbanks, inventors have reported more than 180 inventions. These inventions have applications in biotech, signal processing, decision support, mapping, mineral exploration and surveillance. To read more about the available technologies, please visit the Nanook Innovation Corp. Available Technology page at www.nanookinnovation.org.

Therapeutic Hibernation

About 795,000 people annually suffer strokes that reduce blood flow to the brain below the amount needed to meet metabolic demand. This is known as cerebral ischemia, and, if blood flow is not restored in a short period of time, it can ultimately lead to the death of brain tissue.

Kelly Drew’s laboratory at UAF has developed a novel pharmacological technique that induces therapeutic hypothermia to circumvent the problematic side effects of shivering and helps medical professionals mitigate neurological damage in conscious patients following cerebral ischemia.

Processing, Detection, Estimation and Classification of Signals

The software, named PDECS, consists of three sets of software: the filter, the locator and a set of trackers. This suite of software works in conjunction with microphones to filter, track and locate signals.

The software can be used to: enhance a microphone’s effectiveness in filtering background noise; monitor natural phenomena such as volcanic eruptions, seismic events, and avalanches; conduct surveillance, monitor heavy vehicles; detect explosives; and to detect and locate rocket launches.

OIPC is looking for licensees who want to use and sell these technologies in their businesses. For more information, please contact our office.
Course Stacker

Course Stacker allows instructors and administrators to combine course sections in Blackboard Learn. An instructor can upload a syllabus or other course materials for several different course sections at one time, saving hours of the instructor’s time during a semester.

The tool may be purchased at www.nanookinnovation.org.

Timesheet Planner

University faculty and staff spend hours each week tracking their time spent working on individually funded projects. UAF inventors have developed a lean, web-based software that makes time tracking and financial planning for grants easy.

The tool is interoperable with Ellucian’s Banner system and Microsoft Excel, which means it can work with many university and private-sector billing systems.

A demo video is available at www.nanookinnovation.org.

Portable Noise Reduction Infrasound Microphone

Researchers at the University of Alaska Fairbanks have developed a more powerful infrasound sensor that is reduced in size to the size of a hockey puck.

The new design removes the impact on infrasound measurement caused by changes in altitude. Therefore, the invention can be mounted on platforms that move, such as buoys, unmanned vehicles or high-rise buildings.

This sensor is the subject of a pending U.S. non-provisional patent application entitled Noise Reduction in Infrasound Detection, U.S. patent application number 14,057,704.