

at a glance

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## 4 Transform UAF's intellectual property development and commercialization

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### Who do we want to be?

In 2025, University of Alaska Fairbanks will be a champion for innovation and a leadership voice for entrepreneurship in Alaska, as the “U.S. Arctic Innovative and Entrepreneurial University.” UAF will support the development of social, cultural and technological entrepreneurs, in partnership with the local community, and foster local and scalable innovative companies from commercializable research developed at the university and in the community. The university goals are to: (1) be the driver of Alaska’s innovation economy and a leadership voice in focus for U.S. Arctic innovation and entrepreneurship; (2) produce graduates with an entrepreneurial mindset and skilled in the processes necessary to bring research to commercialization and grow viable businesses; and (3) deliver economic, societal, cultural and educational impact to Fairbanks, Alaska, and people of the circumpolar North.

UAF will foster and cultivate its innovative individuals to demonstrate, validate and execute high-caliber value propositions from university and community resources and, in conjunction with local partnerships, leverage its position to provide entry points for all levels of entrepreneurship from concept validation to execution, for anyone who is able to pitch and drive a commercializable idea. The university will maintain a strong online presence to highlight its innovation and entrepreneurship opportunities and activities, including but not limited to invention disclosures and value-added technologies available for licensure, with details and contact information for university- and community-based startup companies in addition to connections to its entrepreneurship and business development programs. The innovation ecosystem will focus on all forms of entrepreneurial development — teaching educators an innovation and entrepreneurship curriculum, teaching entrepreneurial skills and practices, encouraging the development of commercializable research and service opportunities, holding ideation events and competitions, and creating opportunities for nondilutive startup capital. UAF will build an innovation and broader impacts (research-to-impact) component into its graduate programs and lead the charge to embed entrepreneurship as an integral part of the school system from K-12 to university and integrate into a statewide innovation ecosystem.

UAF will grow its facilities and provide the tools for innovation, commercialization and entrepreneurship across its campuses. The university will maintain a mentorship program where innovative companies and faculty are working with junior faculty, postdoctoral researchers and students on their entrepreneurial

projects in Alaska and with those companies wanting to come to Alaska. UAF will grow its current ambassador program and, where appropriate, increase the program to represent the full breadth of its teaching, research and service/engagement, as well as attract and engage its alumni to return to Alaska with their own intellectual property (IP) to grow new businesses and industry in Fairbanks and across the state.

UAF will develop transdisciplinary teams to build solutions to the challenges and needs of the local community and the state of Alaska, as well as the Arctic and circumpolar North, and form agreements with the greater community to realize this in Fairbanks. The university will implement effective processes and terms to transfer developed intellectual property from the university to the community as we all together aim to develop new economic opportunities.

As UAF builds towards 2025, the vision is to:

- Develop and support a culture of innovation and entrepreneurship on campus and in the greater community through reciprocal partnerships.
- Provide the resources to foster creative, social and technological entrepreneurship.
- Build innovative communities to develop solutions to focused challenges and needs.
- Create opportunities to grow today's and tomorrow's innovators and entrepreneurs.

### **Who are we now?**

The University of Alaska Fairbanks faculty, staff, and students are currently supported by the Office of Intellectual Property and Commercialization (OIPC) along with the Center for Innovation, Commercialization, and Entrepreneurship (Center ICE). OIPC connects the intellectual property (IP), declared through invention disclosures, to Nanook Innovation Corporation (NIC), which assists inventors in getting technologies into the hands of businesses. NIC can assign IP to Nanook Tech Ventures (NTV), which works with entrepreneurial faculty, staff and students at UAF to create businesses based on new discoveries.

OIPC is supported by faculty ambassadors who focus on interactions with innovative faculty, staff, and students and provide advice to budding entrepreneurs on the process from invention disclosure to commercialization. Inventions disclosed through OIPC are recognized at the end of each academic year through the Innovative Disclosures and Entrepreneurial Activities (IDEAs) awards. These awards highlight the best inventions and all aspects of UAF from faculty, staff, students and postdoctoral researchers, as well as the best across UAF and best overall with greatest commercial potential. There are 13 active U.S. patents that have a university-based lead, as well as five startup companies formed or co-formed by UAF personnel and that are connected to Center ICE and/or licensing technology. UAF has 24 of the 50 members in the Alaska Northern Innovators Hall of Fame, since its inaugural class in 2014-2015. This highlights the innovative nature of its academics and how the state recognizes the contribution that they and the university have made to the development of Alaska and its future.

OIPC and Center ICE support the ideation process through a variety of events, resources, programs and workshops. These include the Center ICE seed fund, the Lean Launchpad workshop, the Community Challenge, a National Science Foundation I-Corps site, and the Hacking for Defense course. Additionally, since 2009, the School of Management (SOM) has been responsible for and hosted the Arctic Innovation Competition, a great opportunity for innovators and entrepreneurs of all ages. UAF has been the co-lead with Fairbanks Economic Development Corp. (FEDC) on Fairbanks events during Techstars Alaska Startup Week, which brings entrepreneurs, local leaders, and friends together to build momentum around Alaska's entrepreneurial opportunities. OIPC, in conjunction with Center ICE and FEDC, co-organized and co-hosted the 2018 Fairbanks Alaska Startup Weekend, a 54-hour event to develop a commercial product from an initial idea.

There are several innovative, transdisciplinary projects that are fostering new ideas and building the next entrepreneurs. These include but are not limited to eCampus, which builds an online presence for UAF's classes to complement and enhance face-to-face opportunities and provide a richer experience for our students.

Additionally, the Geophysical Institute's (GI) status as a University Affiliated Research Center recognizes the university's accomplishments and growing stature in nuclear treaty monitoring support. The Alaska Center for Unmanned Aircraft Systems Integration is positioned as a leader in unmanned aircraft system (UAS) research, development and integration as a Federal Aviation Administration test site operator. The Biomedical Learning and Student Training program enhances capacity for undergraduate biomedical research and efficacy for engaging students in education and training for biomedical careers. The One Health Initiative recognizes the interdependence of human, animal and environmental health and takes a holistic approach to the well-being for all. Finally, the College of Fisheries and Ocean Sciences' Alaska Blue Economy Center serves as a resource and support center for research, instruction and outreach related to Alaska's vast aquatic resources and ecosystems.

## Items In Progress

### Innovative culture

Ideation and entrepreneurship: Design Thinking events, like the [Nook Tank](#), have fostered ideation skills with UAF students to develop solutions to some of Alaska's needs and challenges. Collaborations have occurred between the College of Engineering and Mines (CEM), GI, OIPC, C-ICE, SOM, Honors, UAF's learning-living communities (LLCs) and the Office of Residence Life. These events are new approaches to develop intellectual entrepreneurs who have the skills and capabilities to be effective members of the Alaska workforce of tomorrow.

Social, creative, cultural and technological entrepreneurs: Highlighted topics under the UAF Center for Innovation, Commercialization, and Entrepreneurship in-conjunction with UAF's technology transfer office (OIPC) have focused on timely needs and challenges such as [IICP](#) under COVID-19 and Climate Action and Sustainable Communities [RFP](#). These opportunities have driven ideas and products with a direct impact for today to support us all for tomorrow.

Building the next generation: Center ICE developed a summer-based experiential learning program for University of Alaska students, called Students to Startups ([S2S](#)). Here students are paired with startup companies to work on innovative projects for the startups as well as learn technical and entrepreneurial skills. Students also learn about the world of startups and innovation and the statewide ecosystem. The S2S program builds resilient students that experience the day-to-day operations and innovation culture of the startup environment.

### Resources to foster innovation

Recognition of our entrepreneurs: UAF academic researchers have continued to be recognized across the university, within Alaska and nationally. The [IDEAs](#) awards for best invention disclosures recognize UAF, University of Alaska Southeast (UAS), faculty, staff and students/postdocs. Two UAF faculty members were inducted into the State of Alaska Northern Innovators Hall of Fame class of [2020](#), while six UAF researchers and collaborators were inducted into the class of [2021](#). UAF is researching the steps needed to form a National Academies of Inventors ([NAI](#)) chapter and had its first senior member [[Peter Webley](#)] and first fellow [[Jerome Johnson](#)] inducted in 2020. UAF through OIPC was a partner institution in a National Science Foundation funded project to develop promotion and tenure criteria focused on innovation and entrepreneurship, [OSU-PTI&E](#).

Continued growth of tools: The university is a member of the Accelerating Solutions for Commercialization and Entrepreneurial Development ([ASCEND](#)) Hub and is an [NSF I-Corps site](#) to support and provide customer discovery learning/training. Through these two programs, UAF-based researchers can discover the commercial potential of basic medical science and gain funding and increase their capacity to understand the viability of their research concepts to adapt and develop products with a direct impact on their market.

Promoting and marketing IP: UAF joined the [I-Bridge network](#) and Association of University Technology Managers (AUTM) Innovation Marketplace ([AIM](#)) to promote the research, invention disclosures, technologies and innovative approaches to solve the needs and challenges of Alaska and the Arctic. These environments support the discovery of university-based innovations and provide the opportunity to connect with a wider

pool of entrepreneurs interested in the university's faculty, staff and student discoveries. UAF OIPC has also promoted recent technologies on its [website](#) along with relevant contact information for the inventors.

## **Engage with community, Alaska and circumpolar North**

Open innovation; build projects in academic programs: There has been a growth in the number of opportunities proposed for the [Center ICE Community Challenges](#). More community and industry challenges have been integrated into capstone/senior design projects, for example in CEM mechanical engineering with the [Avy Pouch](#). In addition, the UAF Honors College has partnered with OIPC to cultivate collaborations with the Eielson Air Force Base innovation cell, Iceman Spark. This has led to [Eielson AFB](#) problem sets being integrated into honors student research projects as the students work to foster solutions through a co-creation process.

### **How do we get there?**

To be the driver of Alaska's innovation and entrepreneur economy and produce graduates that are skilled in the processes and tools to bring research to commercialization, UAF will focus on five strategies to deliver an economic, societal, cultural and educational impact to Alaska and the circumpolar North.

#### **1. Innovative culture across the university**

Supporting innovative researchers: UAF will focus on innovative teaching, research and service/engagement activities such: working with faculty, through college and institute senators, to integrate entrepreneurial activity into promotion and tenure unit criteria; support and recognition for innovative staff; and sustaining an entrepreneurial mindset in student research. UAF will integrate faculty with significant experience in innovation and entrepreneurship (I&E) into the review process to highlight the broader impact of innovations in annual evaluations. The university will support students pursuing innovative research and demonstrating broader impacts in their entrepreneurial activities. UAF will evaluate effective processes for outside activities disclosures to rapidly respond to commercialization opportunities at a speed commensurate to the speed of business and improve UAF readiness and responsiveness to industry needs.

Ideation and entrepreneurship: UAF entrepreneurs and innovators given opportunities to develop an entrepreneurial mindset as well as innovators and alumni highlighted who have focused on entrepreneurial activities in their careers since graduation. Mutually beneficial reciprocal partnerships and agreements developed with community organizations will support a culture of innovation and entrepreneurship at the university and the community for a direct impact to local needs and challenges.

Recognizing our entrepreneurs: UAF will celebrate innovative individuals and will continue with its yearly awards to highlight the best innovation discoveries. Promoting Alaska, Arctic-wide, U.S. and international innovation challenges to university researchers will reveal new opportunities for funding and recognition of their entrepreneurial activities. There will be support for a UAF presence at local, regional, national and international entrepreneur-focused events. The university will support external recognition of entrepreneurial staff, students, and faculty and for proposing members into national and international innovation programs.

Social, creative, cultural and technological entrepreneurs: Support innovative and creative projects that focus on the greater well-being. Support innovative projects that demonstrate to students the relevance and impact of their research endeavors. Support the development of diverse entrepreneurship programs such as, but not limited to, Alaska and Indigenous entrepreneurs, and first-generation college student entrepreneurs.

Evaluating impact of entrepreneurial activities: UAF will shift to dynamic metrics to measure innovative broader impacts on society and entrepreneurial and innovation success from all aspects of the university. Metrics include, but are not limited to, new/unique ecosystem members engaged; value propositions pitched; number of innovators engaged in development programs; and startup investments made that led to licenses.

Building the next generation: UAF will lead the charge to embed entrepreneurship as an integral part of the Alaska school system, from K-12 to the university, and to integrate it into a statewide entrepreneur/innovation ecosystem. The university will support the growth of a virtual middle college approach, building upon the North Star College, and will develop a process to bring eCampus into the Alaska schools so it is for Alaskans, developed by Alaskans.

## **2. Engage local community, Alaska and the circumpolar North to develop solutions to focused challenges and needs**

Build projects into academic programs: UAF will build challenges into capstone projects and independent study classes and research projects as well as support students to work in teams to develop a solution to real-world challenges. Students will go through the lean launch process and perform customer discovery, as well as follow the design-and-build process from a prototype to a minimum viable product and the final solution.

Engage with the local community: There will be active communication with the community, including local government, mayor's offices, economic development and small business development programs. To effectively engage community and industry to address their challenges in mutually beneficial ways, UAF will seek reciprocal collaborations with, and help from, the broader community. UAF will be open to collaborations from the community, including building and sustaining collaborative co-creation programs that integrate the needs and capabilities of the community with the intellectual entrepreneurship of the university's faculty, staff and students.

Open innovation: UAF will work on solutions to the challenges and needs of its local community and the state of Alaska, as well as the Arctic and circumpolar North. UAF will develop mutually beneficial partnerships with the local community to develop solutions that support economic growth and local needs and further increase the impact of UAF's world-leading research. UAF will evaluate the process of moving from exploration (basic research) to innovation (applied research) to commercialization (entrepreneurship), as it applies to the university. Developing solutions through rapid ideation sprints will increase the capacity and capabilities of university researchers. More work is needed to evaluate and streamline the process to follow these opportunities.

Entrepreneurial funding: UAF will diversify its support for entrepreneurial activities and apply for external funding programs from local industry and large multinational companies. UAF will provide assistance for research and training and connect its academics with the leading entrepreneurs across the country. This will build more entrepreneurially resilient researchers and drive the university toward Tier 1 research status while supporting economic development.

Industry liaison program: Liaisons will focus on the industries that connect to UAF's strengths. The University will build a mechanism to develop more industry-sponsored research, as well as be an advocate for innovations that connect to industry challenges and needs. Existing research partnerships, connections and collaborations will be utilized through a systematic approach to increase internships as well as intra-preneurships both in and out of state.

Business brand: UAF will develop online content and physical presence with engagement officers or industry liaisons so that development and alumni relations are versed in the newest technologies and discoveries. This will go hand in hand with UAF's academic teaching, research, and engagement mission as a mechanism to bring companies to work alongside those at UAF.

## **3. Resources to foster innovative, creative culture and entrepreneurship**

Mentorship program: Innovative and entrepreneurial faculty will be partnered with budding entrepreneurial students, connecting them to companies in Alaska and those wanting to come to Alaska. UAF will connect its faculty, staff and students to its alumni to provide entrepreneurial mentorship and develop a pool of advocates and mentors centered on our high-profile disciplines that our innovators can contact for advice and mentorship. Building I&E tracks into faculty development programs will also recognize those who pursue entrepreneurial activities and at the same time provide professional development opportunities to future their academic careers.

Ambassador program: UAF will sustain and grow its current program to represent its full breadth of teaching, research and service/engagement. Ambassadors will also come from university staff and students to represent the breadth of innovative academics. In addition, a larger ambassador/fellow's program can support the development of new metrics for innovative success, PTIE processes and year-on-year recognition for faculty, staff and students.

Promoting and marketing: UAF will build a stronger online presence to provide key information on available discoveries and points of contact for its startup companies. The university will support a portal for current entrepreneurs to highlight their work, including using newer marketing tools, and provide a one-stop shop for all things entrepreneurship. UAF will develop a process to regularly review and identify growth opportunities for current discoveries locally, regionally, nationally and internationally.

Facilities to develop a broad-minded design thinking approach: Faculty, staff and students will be given the time and space to develop their grand-scale ideas so UAF can develop new innovative solutions to the grand challenges of Alaska, the Arctic and the circumpolar North and build an innovatively minded campus. Focusing on the generation of applied research and research-minded entrepreneurs helps to create a broader spectrum and contribute to the commercial activity, which together make up a more sustainable Alaska economic base.

Continued growth of tools: The university's technology transfer services will support all areas of UAF work from invention disclosures to patents and from copyrights to trademarks. UAF will support its faculty, staff and students to be trained on how to talk to businesses, including the capacity to pitch ideas and perform customer discovery.

#### **4. Interdisciplinary innovative communities across the university, Alaska and the Arctic**

UAF-wide design challenge: Integration will occur across its colleges, schools and institutes, following the approach developed under the UA Community Challenge. These teams could move on to further opportunities, such as the federally supported Innovation Corps (I-Corps) program, the Arctic Innovation Challenge (AIC), local and regional startup accelerators, and the Alaska Innovation Summit. Building challenges focused on UAF-wide needs as well as those of the community, developed through mutually beneficial partnerships, would support interdisciplinary teams to build solutions that incorporate all aspects of the university.

Interdisciplinary research themes: UAF will build a theme-based approach to foster transdisciplinary collaborations. Aligning like-minded researchers under a similar theme will build inter- and transdisciplinary collaborations. Together these themes can meet the grand challenges for today and tomorrow. A theme's approach has been practiced by other high-profile research-focused institutions and would provide the university with the tools to the broader impact on society of its innovative research and entrepreneurial activities. Further work is needed to develop these themes through a coordinated approach with all aspects of the university involved.

#### **5. Adaptable to the Alaska and Arctic of tomorrow**

Adaptable resources: UAF will ensure it has a full-time director for its technology transfer office, as well as intellectual property specialists, ambassadors and industrial liaisons. It will support an innovation space for startup companies and budding entrepreneurs so Fairbanks-based startups and companies can come and work with the university. UAF will develop focused activities with local community members, and organizations will work on the big ideas and major challenges for Alaska.

**Design thinking focus on growth sectors**: UAF will apply design thinking to the next growth sectors for the Alaska, Arctic, U.S. and world economies. It will evaluate the major growth areas and economic sectors for Alaska to ensure that its research and commercial technology transfer stay at the forefront and its graduating students are the innovators of tomorrow.

## Concluding remarks

Transforming UAF's intellectual property development and commercialization enterprise will drive the university to be the "U.S. Arctic Innovative and Entrepreneurial University." UAF needs to move forward together and connect to Fairbanks, Interior Alaska and the state to drive Alaska's innovation economy, produce skilled graduates to bring research to commercialization, and deliver an impact to Alaska and the people of the circumpolar North. The mechanisms defined here will sustain and grow the innovation culture while continuing to educate, prepare and engage its students, connecting with the local community and flourishing as the leading U.S. Arctic university.

UAF's sustainability and future growth is driven by the creativity and passion of its faculty, staff and students. In building outcomes with metrics for success, UAF can adapt to the needs of society, its students and the capabilities of its community members while integrating new targets in the areas of future growth and opportunity. UAF will foster and support all innovation activities and entrepreneurship and build interdisciplinary teams to work with the local community to provide solutions to their greatest challenges. As students engage with tomorrow's technologies, they will become the innovators of tomorrow and build the Alaska economy as the state and the university look to 2025 and beyond.

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