



# Advanced Industries Accelerator Grant Program

## Annual Report Fiscal Year 2022-2023

Advanced industries (AI) are key drivers of the U.S. and Colorado economies. They are engineering and R&D-intensive companies, and deliver products and services in a wide range of markets, from aerospace to robotics to medical devices. Colorado's AIs include aerospace, advanced manufacturing, bioscience, electronics, energy and natural resources (including cleantech), infrastructure engineering, and technology and information. Together, they account for nearly 30% of the state's total wage earnings, around 30% of total sales revenue, and almost 35% of the state's total exports.

To ensure the progression of this vital aspect of Colorado's economy, the AI Accelerator Program was created in 2013. This initiative promotes growth and sustainability in these industries by driving innovation, commercialization, and public-private partnerships while also increasing access to early-stage capital and creating a strong infrastructure that enhances the state's capacity to be globally competitive.

The AI Accelerator Program offers five funding assistance opportunities to support AI companies in their various phases of growth. They include the Proof of Concept Grant, Early-Stage Capital and Retention Grant, Collaborative Infrastructure Grant, Export Accelerator Grant, and the Global Consultant Network.

## Proof of Concept Grants

Proof of Concept (POC) grants fund research with a commercial application at Colorado research universities, federal labs located in Colorado, and other Colorado labs with valid technology transfer offices. Funding helps pull technologies from the research institutions where they were discovered and connect them to the private sector where they can be developed into commercialized products. This acceleration of applied research leads to the rapid commercialization of products and services and provides significant economic impact and competitive advantage for Colorado and the Advanced Industries.

Grants support the commercialization of technologies at research institutions at two distinct stages along the commercialization pathway: pre-commercial research and commercialization preparation. Pre-commercial research includes proof of principle studies and other studies on intellectual property and resulting prototypes that demonstrate the utility of a technology for a specific application. Commercialization preparation includes the process of creating a commercial opportunity assessment for a technology and the development of a commercialization plan.

In FY 22-23, 46 POC grants were awarded to researchers at Colorado research institutions, bringing cutting-edge technologies closer to market. Since the program's inception, 370 POC grants have been funded. Below are examples of two success stories.

### University of Colorado Denver, COVID-19 Nudge Chatbot

This project, led by the University of Colorado Denver Professor Sheana Bull, was awarded a \$90,139 Proof of Concept Grant in FY 21-22. The aim of the project was to develop a COVID-19 artificially intelligent Chatbot text message system. With the deployment of COVID-19 vaccination efforts, reports emerged of vaccine hesitancy. Text messaging is nearly universally available and was identified as one way to widely reduce vaccine hesitancy and increase vaccine access.

Today the chatbot has been developed and Clinic Chat LLC was created to deploy the technology with an exclusive license. The chatbot was developed to be agile and adaptable for annual reminders for various public health priorities, including COVID-19, diabetes, hypertension and cholesterol, cancer screening, and sexual and reproductive health. The chatbot has been adopted by the STRIDE Community Health Center and can be accessed on its website.

## Colorado School of Mines, Ammonia/Hydrogen for Clean Combustion

This project, led by Colorado School of Mines Professor Colin Wolden, was awarded a \$26,250 POC Grant in FY 22-23. The aim of the project is to utilize ammonia to develop an alternative hydrogen fuel. Ammonia has emerged as the leading vector for the distribution of green hydrogen due to its high storage density and existing infrastructure. This fuel is energy efficient, emits less air pollution, and is flexible and scalable.

Since receiving the grant funding a patent has been filed. Additionally, the technology has been licensed to the newly created Blaze Energy Technologies LLC. The project has received \$600,000 in federal funding for continued development, including funding from the U.S. Advanced Research Projects Agency-Energy (ARPA-E).

## Early Stage Capital and Retention

Early Stage Capital and Retention (ESCR) grants fund companies commercializing proven, disruptive technologies that meet a market need. Grants support technology commercialization by funding product development in preparation for a product launch or the advancement of a product or technology to achieve a commercial milestone that significantly increases the company's value and stability and better positions the company for follow-on investment, including through the federal Small Business Innovation Research program, angel funding, or venture capital. The resulting product or service must be manufactured or performed in Colorado.

Grant funding does not compete with existing marketplace funding opportunities, but rather supplements and fills an existing void for capital as the market's tendency is to under-invest in early stage technologies. ESCR grants allow early stage businesses to complete commercial activity such as production, sales and distribution, and business growth. Funds can be used to support direct project expenses.

In FY 22-23, 69 ESCR grants helped Colorado companies further advance their commercialization efforts. Since the program's inception, 415 Colorado companies have been funded. Below are examples of two success stories.

### Advanced Space, Westminster, Colorado

Advanced Space was awarded a \$250,000 Early Stage Capital and Retention Grant in FY 17-18

to commercialize the Cislunar Autonomous Positioning System or (CAPS™). This is a peer-to-peer lunar navigation solution that provides critical navigation capability for space cislunar space missions. CAPS™ improves existing navigation products, reduces the need for ground-based tracking expenses, and permits autonomous, absolute navigation of all vehicles involved.

Advanced Space is currently demonstrating the flight version of CAPS™ in real-time. It was installed on the CAPSTONE™ spacecraft, which launched to the Moon in June 2022. Additionally, the company has over 55 employees, has received over \$22 million in follow-on federal grant funding, and recently secured a \$72 million contract to support the U.S. Air Force Research Laboratory's Oracle spacecraft program.

## EsoTerra Inc., Dolores, Colorado

EsoTerra was awarded a \$250,000 Early Stage Capital and Retention Grant in FY 21-22 to increase production of its ciders made from feral trees and historic orchards of Colorado's southwest. Trees are analyzed and selected using liquid mass spectrometry, and the ciders are crafted using a proprietary production line.

Using the grant funding, EsoTerra purchased equipment to expand its production line and increase efficiency. This equipment has since doubled EsoTerra's production capacity and increased its efficiency by 40%. The company has also increased its team with seven new FTEs and has opened a new tasting room.

## Collaborative Infrastructure Grants

In order to align private industry and Colorado Research Institutes, Collaborative Infrastructure Grants help fund projects that substantially build or utilize existing infrastructure to support or enhance the commercialization of AI products, assist AI start-ups with mentoring or access to outside capital, or contribute to the development of an AI workforce.

Collaborative Infrastructure grants are used to assist in the implementation and execution of action items identified in Advanced Industries Strategic Plans, as developed through the Colorado Blueprint Key Industry Network initiatives in 2013. Collaborative Infrastructure Grants may also be used to assist the implementation of newly identified action items that are needed to accelerate such advanced industries, and to leverage federal funding opportunities that address a specific need or gap in the industry.

In FY 22-23, one Collaborative Infrastructure grant was awarded. Since the program's inception, 45 Collaborative Infrastructure grants have been funded. Below is an example of a success story.

## Colorado Longitudinal Study, Boulder, Colorado

The Colorado Longitudinal Study (COLS) was awarded a \$500,000 Collaborative Infrastructure Grant in FY 18-19 to develop a longitudinal repository of biological specimens and

accompanying personal health information. This biobank will collect and store biological samples annually from up to a million Coloradoans for at least 10 years, and link them to comprehensive personal and community health information. This information will allow researchers to study interactions between biology, behavior, lifestyle and environment.

With the grant funding, COLS has set up its first site at the Columbine Health Systems Center for Healthy Aging at Colorado State University in Fort Collins. Since opening this site COLS has recruited almost 100 participants. In the next calendar year COLS expects to hire an additional two Full Time Employees (FTE) to support the site operations and recruit 500 participants.

## Grants Awarded

The AI Accelerator Program's statute requires an allocation of at least 15% of funds to POC grants, 15% of the funds to ESCR grants, and up to 15% of the funds to Collaborative Infrastructure grants. The table below summarizes all grants awarded in FY 22-23.

Grant	# of Awards	\$ Awarded	Jobs Created	Jobs Retained	New Companies Created	Follow- On Capital	IP	Projected Annual Revenue	Capital Investments
Proof of Concept	46	\$4,638,356	15	33	8	\$22,065,000	18	\$0	\$755,611
Early Stage Capital and Retention	69	\$17,628,899	60	145	0	\$14,426,545	10	\$29,294,000	\$1,035,220
Collaborative Infrastructure	1*	\$500,000	0	0	0	\$0	0	\$0	\$0
<b>Total</b>	<b>116</b>	<b>\$22,767,255</b>	<b>75</b>	<b>178</b>	<b>8</b>	<b>\$36,491,545</b>	<b>28</b>	<b>\$29,294,000</b>	<b>\$1,790,831</b>

\*This grant was not executed in FY 22-23, therefore there is no data for the FY 22-23 report.

Since the program's inception in 2013, \$150,884,425 in Advanced Industries grants have been funded. To date, the program successes include the creation of 5,036 new jobs and approximately 5,223 jobs retained. Additionally, these funds have helped the technologies acquire an additional \$2,934,996,355 in grants and investments to commercialize further.

## Advanced Industry Export Accelerator

The Advanced Industry (AI) Export Grant provides financial assistance for aspiring (new to export) and current (market expansion) Colorado exporters. The grant program supports small and medium-sized AI businesses through funds to offset international business development and marketing costs. Qualified expenditures include:

- Conducting due diligence or credit reviews on potential buyers or distributors;
- Costs for exhibiting at an international trade show;
- Legal fees related to intellectual property protection abroad and compliance/regulatory issues;

- Travel-related costs for international sales trips and trade shows; and
- Translation services for contracts;

International business development grants provide expense reimbursements to businesses that are new to exporting or are expanding into new export markets, helping them to grow and accelerate their businesses. OEDIT reimburses up to \$15,000, and Colorado businesses provide a 1:1 match for specific international export development needs.

Additionally, AI Export funding is used to support the Global Consultant Network (GCN). GCN provides a network of international consultants who connect Colorado companies to global opportunities. Colorado companies have access to international consultants that provide valuable in-country market research for major strategic markets, including Australia, Brazil, Canada, France, Germany, India, Indonesia, Japan, Malaysia, Mexico, the Netherlands, Philippines, Spain, Thailand, and the United Kingdom. These consultants can assist Colorado companies to:

- Identify potential in-market partners
- Navigate the local regulatory and business environment
- Set meetings with potential partners and attend meetings upon request
- Understand the opportunity for a product or service in the international market

AI Export funding offsets the cost of the services for eligible Colorado companies.

AI Export grants and GCN services were awarded to 31 Colorado companies to advance Colorado exporting in FY 22-23. Since the program's inception in 2013, 178 Colorado companies have been funded. The table below summarizes all grants awarded in FY 22-23.

## Grants Awarded

Status	Program	# of Awards	\$ Awarded	Jobs Created	Jobs Retained	Immediate Export Sales	Projected Export Sales after 1 year
Active Grants	Export Accelerator	31	\$152,924.77	24	125	\$2,768,571	\$33,222,000

OEDIT tracks companies' export sales, jobs created, and the nature of the jobs created resulting from the AI Export Acceleration Program grants. Return on investment (ROI) for the state is calculated by tracking total actual export sales and dividing this by every dollar the state spends on international business development grants. As of September 2023, the program had an initial ROI of 1-18. The three stories below show successful international activity leading to job creation and business growth.

## Sulfatrap, Arvada, Colorado

SulfaTrap LLC is a leading supplier of deep desulfurization products and purification systems for oil and gas processing, chemical synthesis, and refinery applications. The proprietary sorbent products eliminate sulfur contaminants ranging from simple sulfides (e.g., hydrogen

sulfide, carbonyl sulfide) to highly complex thiophenes from a wide range of fuel gasses and process streams. They also offer a full suite of purification products that can remove trace metal contaminants (such as mercury and arsenic), halides and moisture to ultra-low concentrations.

The Global Consultant Network was utilized to enlist the help of a consultant to create a business agenda while attending the Hannover Messe trade show where they made contact with several solid-oxide fuel cell technology companies from Europe and Asia. These meetings directly resulted in multiple sales for Sulfatrap and opened up much larger future markets in the clean fuel cell technology landscape.

Sulfatrap's actual sales from utilizing the Global Consultant Network were \$100,000 with a projected figure of \$200,000 in the next year.

### **Ageto LLC, Fort Collins, Colorado**

Ageto LLC provides tailored renewable energy control systems that enable owners and operators of behind-the-meter and off-grid power systems to integrate high-levels of renewable energy sources into their power systems. With extensive experience in generator controls, Ageto Energy is able to seamlessly integrate traditional fossil-fueled generation with renewable energy resources.

Ageto utilized the AI Export grant to attend the SmarterE, Intersolar EU trade show in Munich, Germany. This is the largest Clean Energy conference in the world with over 250,000 attendees over the show. Ageto had approximately a dozen meetings with different vendors and partners, including Energy Storage integrators and project developers. One meeting with a project developer from South Africa has led to three new projects in South Africa with more potential in the future. Ageto met new potential partners at Intersolar Europe and strengthened their position as a leader in the microgrid market.

Ageto's actual sales from this AI Export funded activity were \$450,000 with a projected figure of \$750,000 in the next year.

### **Mucha Brothers, Inc., Steamboat Springs, Colorado**

Moots Cycles is a titanium bicycle manufacturer located in Steamboat Springs, Colorado. The company is known for handcrafting bicycle frames for road, mountain, cross, and specialty bicycles.

Moots Cycles used funding from the AI Export grant for production of a video to be played in European Markets to increase awareness of the brand abroad. Moots Cycles is constantly making international sales trips and attending small international events. Additionally, they have another video in the works to continue their marketing abroad. By investing in digital marketing abroad, the company has increased their international sales.

Moots Cycles' actual sales from this AI Export funded activity were \$500,000 with a projected figure of \$4,000,000 in the next year.