Proposal for the Creation of the

# Alaska Center for Unmanned Aircraft Systems Integration - Research, Development, Test and Evaluation (ACUASI - RDT&E)

26 November 2012

**Background:**

The State of Alaska has an abundance of natural resources, but its vast size — over twice that of Texas — has provided significant challenges for the management and exploitation of those resources. Alaska has few roads, making aviation the only year-round way to access the farthest reaches of the state, including almost 200 rural villages. Alaska has become an aviation-centric state with six times more pilots per capita than the rest of the nation. For the past two decades the Department of Defense has driven the extremely rapid expansion and deployment of unmanned aircraft systems (UAS) for military applications. The race to transition these systems for civil commercial and scientific applications provides an enormous opportunity for Alaska to develop and exploit the benefits of this new technology; and Alaska is the best place in the country to work out the issues of separating and integrating the emerging UAS airspace from the existing National Airspace System (NAS).

Anticipating the importance of these unmanned systems for Alaska, the Geophysical Institute of the University of Alaska Fairbanks (UAF-GI) began aggressively experimenting with these technologies several years ago and is rapidly becoming a world leader in UASs. Most of the UAS development work has been carried out at the UAF-GI

eliminates the need for pilots in the cockpit and UAS are especially well suited to applications that are dirty, dull or dangerous.

The 2012 Federal Aviation Administration Modernization and Reform Act addresses the issue of creating a UAS airspace and integrating it into the NAS and provides for the establishment of six separate UAS Test Ranges around the country aimed at safe implementation of these new technologies for commercial and scientific applications.

Recognizing the important future benefits of UASs for Alaska, in 2012, the State of Alaska appropriated $5M in the Capital Budget for the UAF-GI for “Research and Development of Unmanned Aerial Systems” and to help position to the UAF-GI to compete for one of the new UAS Test Ranges. This appropriation supplements the significant external funding received by UAF-GI from a variety of federal and non-federal sources that currently supports the core efforts and personnel of the proposed center.

**Discussion:**

The UAF-GI has aggressively expanded its UAS hardware and software procurements, flight operations, educational outreach activities and is actively seeking industry partners and opportunities to create new economic opportunities for UAS in Alaska. Previous funding for this activity had been solely customer based, primarily government agencies, the fishing industry, and the oil industry. With the new State

capital funding, economic and social growth leading to a sustainable high-tech industry in Alaska is becoming a major element of the program. In response, Atkinson Aeronautics has established an office in Alaska and is partnering with the UAF-GI. A second company, Concurrent Technologies Corporation, is recruiting an employee to reside in Alaska and help them establish an office in Alaska to capitalize on the growth opportunities for unmanned aviation in Alaska led by the UAF/GIUAF-GI program. Additionally, three former graduates from the UAF's Electrical and Computer Engineering have launched a company, Northern Embedded Solutions LLC, supporting some of the programs hardware needs.

The GI is working with the College of Engineering and Mines (CEM) and the Community and Technical College (CTC) to integrate UAS engineering, science and technology into UAF's teaching, reseach and service activities. The State legislature funded two additional, full-time tenure track engineering faculty positions at UAF beginning in FY13, and the UAF-GI is working with CEM to fi9( est)-3(s(k e)-13(nDi5ny)( t)-3(.id3(nn)

and utilize military airspace throughout Alaska, including Eielson's, for UAS testing and evaluation. This collaboration will make Eielson AFB a hub of arctic and sub-arctic UAS activities and support the USAF's ongoing operations at Eielson AFB. The UAF-GI is poised to lead the nation in safely developing UAS for a variety of commercial applications and to integrate them into the national airspace to meet growing economic demand. The collaboration with Eielson AFB is an excellent opportunity for UAF in the foreseeable future. Opportunities in the UAS field are very broad, however, and extend well beyond this specific collaboration. Small UAS can operate almost anywhere, and larger ones can operate from a variety of other aeronautical facilities around Alaska.

We respectfully request that the University of Alaska President and Board of Regents approve the establishment of the Alaska Center for Unmanned Aircraft Systems Integration - Research, Development, Test and Evaluation (ACUASI-RDT&E ) within the Geophysical Institute of the University of Alaska Fairbanks.

## Alaska Center for Unmanned Aircraft Systems Integration - Research, Development, Test and Evaluation (ACUASI-RDT&E): Organizational Structure and Budget

**Overall Structure:**

The Center's organization will be flat, reflecting the amount of interaction between the different positions,

Director, support ACUASI-RDT&E team members' professional growth. The Principal Advisors are responsible for training and education initiatives, and will actively support successful contact and relationship management of high-priority, high visibility programs and/or clients. The Principal Advisors may act as the Program Managers for selected programs.

**Chief of Operations:**

The Chief of Operations is responsible to the Director for day-to-day ACUASI-RDT&E operations. The Chief of Operations ensures operational missions are scheduled, resourced, and successfully executed. The Chief of Operations is responsible for the overall scheduling and de-confliction of operational activities, and works with fellow leadership team members to prioritize and resource all activities, including flight operations, training, business capture, engineering, and logistics.

**Chief of Plans and Test:**

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The Science Advisors support ACUASI-RDT&E in collaboration with the Director and act as principal investigators on specific projects they secure that leverage the ACUASI-RDT&E infrastructure. These individuals are the discipline lead scientists for ACUASI-RDT&E . The Science Advisors support keeping ACUASI-RDT&E in a leading position as it relates to the use of UAS in university research and educational programs.

**Financial Manager:**

The Financial Manager is responsible for the financial planning and execution for the organization. This includes analysis of existing contracts for fiscal compliance and projecting program costs for ACUASI-RDT&E activity. The Financial Manager will work with the Leadership Team to establish budgets for their respective areas of responsibility, and supports the financial review and accountability efforts of ACUASI-RDT&E.

**Administration:**

This individual is responsible for working with the Leadership Team in the development of documents for the organization. The Administration office provides guidance for interfacing within the University and is responsible for tracking documents within the University and the organization.

**Budget:**

The following budget reflects the recent history of the unmanned aircraft program and projects the consequences of the growth provided by the recent legislative appropriation. Any further State appropriation directed at the ACUASI-RDT&E will likewise be converted into further economic potential for the State. The intent for the legislative appropriation was not to grow the University but rather use the University's increased capacity to catalyze and grow the economy of Alaska. The legislative appropriation provided the funding that grants and contracts cannot provide to plan and build the infrastructure and formalize the connections needed for a successful expansion of the UAS efforts to businesses and agencies across the State. As a consequence, the growth created by the legislative appropriation is sustainable because the University program is growing as a consequence of increased capacity and capability, along with an increased recognized need and value within the Sate.

The years 2010 through 2012 were selected to document the unmanned aircraft program's funding

Of the many Science Advisors that are affiliated and work with ACUASI-RDT&E the only one whose funding is included in this budget is the new Electrical and Computer Engineering (ECE) faculty. This position was explicitly budgeted in the legislative appropriation and ACUASI-RDT&E has covered 100% of the position's research load for the first three years to allow the new faculty member time to establish their own funding opportunities.

The spike in the 2012 Total Program Revenue/FTE is a consequence of the lag between receiving the legislative appropriation and increasing the staffing level to deliver an increased capacity. The ACUASI-RDT&E staffing level has and will remain roughly tied to the program's total revenue as more funded projects requires more staffing to implement.