United States Senate

WASHINGTON, DC 20510

May 14, 2009

The Honorable Daniel K. Inouye
Chairman
Senate Committee on Appropriations
Subcommittee on Defense
122 Dirksen Senate Office Building
Washington, DC 20510

The Honorable Thad Cochran
Ranking Member
Senate Committee on Appropriations
Subcommittee on Defense
122 Dirksen Senate Office Building
Washington, DC 20510

Dear Chairman Inouye and Senator Cochran:

As the Committee begins its consideration of the fiscal year 2010 Department of Defense Appropriations bill and report, we are writing to request support for the following projects. **The projects are listed in no particular order.**

Item Name: Center for Aircraft Development (UAVs) as a Sensor Platform
Request: $4,985,000
Account: Research, Development, Test & Evaluation, Air Force
Line: 218
PE: 0708011F
Suggested Recipient: National Composite Center (on behalf of Windward Performance, Bend, OR)
Suggested Location of Performance (major portion of the work): Dayton, OH
Purpose/Project Description: The purpose of the project is to develop alternatives for sensor platforms to enhance the warfighter's capabilities away from the lethal zone, thereby reducing casualties in the field. The project will drive down costs for Unmanned Air Vehicles.

Item Name: SiC – RF Power for Airborne Avionics Systems
Request: $2,160,000
Account: Research, Development, Test & Evaluation, Air Force
Line: 18
PE: 0603112F
Suggested Recipient: Microsemi Corporation – Power Products Group
Suggested Location of Performance (major portion of the work): Bend, OR
Purpose/Project Description: This funding would continue the development of critical components for data communication systems on new and upgraded Air Force platforms (such as the F-22 aircraft or the F-35 Joint Strike Fighter) into Phase II of this project. The components, Radio Frequency (RF) transistors for power amplifiers, use silicon carbide (SiC) semiconductor technology in order to shrink the physical size and weight of avionics systems (such as LINK 16) while expanding system bandwidth. The components being developed are expected to be available for F-22 and F-35 aircraft programs by 2010 to 2011. These new RF transistors also

have significant potential to improve RADAR applications, most specifically with regard to the new 3-D ELRR system, now in development.

This project adheres closely to "The DoD RF Modules Strategic Roadmap" developed at the direction of Congress. The "2006 Defense Science Board Critical Technologies Report" also recommended investment in semiconductor manufacturing capability in this area of research. Federal funding is justified to support this project because the products resulting from the development are specifically designed for insertion into Department of Defense data communication and radar systems. Microsemi-PPG has already contributed equipment, facilities, and operating cost, in excess of $15M to date, for SiC components.

The funds will go toward a research program aimed at perfecting silicon carbide-based transistor chips, as follows:

- Material & Process Improvement: 50%
- Design & Simulation: 20%
- Defining & Refining Application Requirements: 10%
- Performance Evaluation: 10%
- Program Management: 10%

Item Name: National Guard Critical Backup Power Fuel Cell Pilot Program
Request: $4,160,000
Account: National Guard and Reserve Equipment
Line: 2
PE: N/A
Suggested Recipient: Oregon Military Department
Suggested Location of Performance (major portion of the work): Salem, OR
Purpose/Project Description: The Oregon Military Department (OMD) has critical backup power requirements that respond to communications infrastructure, emergency and consequence management. Currently diesel generators and lead acid battery power backup solutions are employed. These systems are maintenance intensive, expensive, have reliability issues, and have adverse environmental impacts. Fuel cell systems are now available for power backup missions providing flexible quality power with competitive capital investment, significantly reduced life-cycle cost, minimal maintenance, and no harmful environmental emissions. Fuel cell systems are a new technology for OMD applications and National Guard applications nationwide; thus, there is no practical experience history with their use for critical backup functions within OMD. The proposed project will enable real-world experience needed to prove operational, cost and environmental benefits of these power systems.

FY2010 funding is being requested to site and operate fuel cell systems at OMD Army National Guard sites. Fifty Fuel Cell Power Plants will be acquired, installed and operated for the life of the plants. The plants will be fueled with commercially-available methanol/water and renewable "green" fuels. Fuel Cell technology is ideally suited for backup power missions in remote and urban geographies. These power plants will be evaluated for military backup power applications wherein high availability for on-site service is a critical requirement. The project will release a Final Project Report wherein the experience history will be documented, and a cost-benefit

analysis provided for potential broader implementation of these fuel cell systems in Oregon and throughout the U.S. National Guard (together, essentially a "How To" Manual).

Item: Forward Osmosis Water Purification
Request: $4,000,000
Account: Procurement, Defense Wide
Line: 84
PE: N/A
Suggested Recipient: Hydration Technologies, Inc.
Suggested Location of Performance (major portion of the work): Albany, OR
Purpose/Project Description: There is an immediate need to provide low cost, safe, reliable, simple-to-operate water purification equipment to enable the individual soldier to produce potable fluids at point-of-use, from available water sources.

This request will ensure that US special operations forces have the capability to generate safe beverages during remote deployments, emergencies, or during the disruption of the supply train. In addition to reducing the logistical burden these systems will also provide tactical benefits.

Because water is often the limiting factor in mission length, this request will give commanders new capabilities for mission planning by extending mission duration, thereby enhancing force projection. Dehydration and water borne illness are removed, resulting in improved unit health and force multiplication benefits.

Essential to maximize effectiveness in the battlefield, a personal water filtration device must have the ability to universally handle any water source, no matter how heavily contaminated, from a river to a mud puddle to while guaranteeing safe fluids. Forward osmosis is the only personal water technology that can reliably work with the very cloudy, contaminated waters typically found in the current theaters of operations. As a result of these benefits, a number of Army, Air Force and Marine Corps units, from battalions to divisions have evaluated and requested forward osmosis devices in the Middle East and East Africa and in training operations at home.

Item Name: Permanent Magnet Generator – Wave Energy Buoy
Request: $2,400,000
Account: Research, Development, Test & Evaluation, Navy
Line: 59
PE: 0603725N
Suggested Recipient: Columbia Power Technologies
Suggested Location of Performance (major portion of the work): Corvallis, OR
Purpose/Project Description: There is an increasing need for diverse, reliable, non-polluting sources of low-cost electrical power for DoD facilities. In 2005, the United States enacted a new energy policy that sent a clear signal that renewable energy is an important element of our national energy strategy. Since 2006, the federal government is required to purchase at least 2.5% of their electricity from renewable sources; which will incrementally increase to at least

7.5% by 2013. Additionally, Congress has mandated that the Department of Defense procure 25% of its energy needs from renewable sources by 2025. In conjunction with Oregon State University, Columbia Power is currently designing and engineering an ocean-tested wave power electricity generating unit to be deployed at Navy sites worldwide. Funds are needed to continue to develop, fabricate, install and operate a multi-buoy system with a cumulative capacity of up to 1 megawatt.

Item Name: Brain Safety Net
Request: $1,920,000
Account: Research, Development, Test & Evaluation, Army
Line: 30
PE: 0603002A
Suggested Recipient: University of Oregon
Suggested Location of Performance (major portion of the work): Eugene, OR
Purpose/Project Description: This project is focused on neuro-rehabilitation and associated medical applications. The University seeks to develop and optimize evidence-based treatments of soldiers and civilians suffering from amputations, traumatic brain injuries (TBI) and neurological disorders such as epilepsy. A distinguishing feature of this interdisciplinary project is the use of techniques ranging from state-of-the-art brain imaging (functional and structural MRI and dense array EEG) to genetic and behavioral analyses, to advanced computational modeling. These combined capabilities are the foundation of a consolidated effort to increase their ability to harness the brain's remarkable capacity to respond adaptively to change (neuroplasticity). These include responses to bodily (e.g., amputation) or brain (e.g., TBI or stroke) injuries, as well as to stimulation provided by effective therapeutic interventions.

University of Oregon researchers are working with victims of spinal cord injury (SCI), limb amputees and those with brain injuries (including soldiers and veterans with mild traumatic brain injuries that often go undiagnosed and under-treated) as well as those with other forms of brain malfunction such as epilepsy. SCI, limb amputation and mild traumatic brain injuries have impacts on the organization of brain sensory and motor functions. Understanding the brain's neuroplasticity is critical to successful rehabilitation. This work is of particular interest to the Army's Office of Telemedicine.

Most importantly, the project has the potential to improve the lives of many Americans including veterans injured during service in Iraq and Afghanistan. An individual's ability to effectively use a prosthetic device or manage the consequences of a traumatic brain injury means a higher quality of life and better opportunities for employment.

Item Name: ONAMI Safer Nanomaterials and Nanomanufacturing
Request: $4,800,000
Account: Research, Development, Test & Evaluation, Air Force
Line: 7
PE: 0602102F
Suggested Recipient: University of Oregon

Suggested Location of Performance (major portion of the work): Eugene, OR
Purpose/Project Description: This activity uses proactive strategies to develop inherently safer and greener nanomaterials and nanomanufacturing methods impacting the Department of Defense's need for high performance materials. Recent achievements include development of a library of greener engineered nanomaterials with widely tunable properties, concomitant assays for biological testing of nanomaterials to ensure safety, creation of a nanomaterials-biological interactions knowledge-base designed to collect data on nanomaterials and predict potential biological impacts, and development of nanomanufacturing methods (e.g. parallel microchannel reactors) to scale quantities for high volume production of nanomaterials.

Three general areas of activity included are: rational design of inherently safer and greener materials based upon unique properties found at the nanoscale, systematic assessment of the biological impacts of engineered nanomaterials, and development of technology for high volume manufacturing of high-performance nanomaterials. The application of this research facilitates application of nanomaterials and manufacturing in important defense technologies including energy production and storage, nanoelectronics and nanophotonics, medical diagnostics and therapeutics, drinking water purification and environmental monitoring & remediation systems. The initiative has increased focus on energy because of the essential role that nanotechnology will play in addressing the Nation's energy problems. The SNNI's activities are essential because technological solutions that promise clean energy need to employ safe/green nanomaterials and processes.

Item Name: ONAMI Nanoelectronics, Nanometrology and Nanobiotechnology Initative
Request: $4,800,000
Account: Research, Development, Test & Evaluation, Navy
Line: 3
PE: 0601153N
Suggested Recipient: Portland State University
Suggested Location of Performance (major portion of the work): Portland, OR
Purpose/Project Description: This project focuses on important applications of nanotechnology in three nanoscale areas: measurement/imaging, electronics, and biomedicine. The respective challenges in these three areas are: providing a "window" into the nanoscale world, evaluating nanoelectronics devices that will extend the "Moore's Law" scaling of integrated circuits, and providing tools that will enable discoveries and clinical applications in molecular-based medicine of the future. The integrating theme for these specific applications is that discoveries in one discipline may have a major impact on other disciplines. Examples include nanoscale chemical imaging at electronic device interfaces, nanoelectronic-based biosensors for point-of-care health management, nanoscale imaging of protein molecules in cells such as pluripotent embryonic stem cells, and nanoparticle-based diagnosis and drug delivery systems.

Item Name: ONAMI Miniaturized Tactical Energy Systems Development

Request: $3,000,000
Account: Research, Development, Test & Evaluation, Army
Line: 18
PE: 0602705A
Suggested Recipient: Oregon State University
Suggested Location of Performance (major portion of the work): Corvallis, OR
Purpose/Project Description: The funding will support the development of miniaturized tactical energy systems for a wide range of military and subsequent commercial applications. The research initiative is affiliated with the Oregon Nanoscience and Microtechnology Institute (ONAMI) and will use capabilities being established at ONAMI to miniaturize a wide range of important tactical energy systems including soldier power systems and advanced cooling units for forward deployed operations. ONAMI is a joint research institute of Oregon State University, University of Oregon, Portland State University and Department of Energy's Pacific Northwest National Laboratory focused on the applications of mixed nanoscale and microscale systems to develop advanced technology such as miniaturized tactical energy systems. ONAMI will work with Fort Belvoir (Army) to provide tactical energy systems for a range of Army applications.

Item Name: ARL-ONAMI Center for Nanoarchitectures for Enhanced Performance
Request: $960,000
Account: Research, Development, Test & Evaluation, Army
Line: 4
PE: 0601104A
Suggested Recipient: University of Oregon
Suggested Location of Performance (major portion of the work): Eugene, OR
Purpose/Project Description: The ARL-ONAMI nanotechnology center is a collaborative grant agreement seeking three-year Phase II funding to build on the first three years' success creating early-stage technology for future Army sensing, communications, portable energy storage and generation and thermal management requirements based on breakthroughs in nanomaterials, nanostructured films and surfaces, micro-scale reaction engineering and ultra-lower power mixed signal electronics. Physical lab collaborations and postdoctoral assignments at ARL have been increasingly emphasized to ensure technology transitions and a supply of US citizen talent for ARL-SEDD. Four general areas of activity (power and energy management and generation, thermal management, nanoelectronics, electromagnetic structures) are now being augmented by more specific focuses identified by ARL scientists

Item Name: Precision Integrated Laser Warning System
Request: $3,900,000
Account: Research, Development, Test & Evaluation, Navy
Line: 19
PE: 062709A
Suggested Recipient: nLight Corporation
Suggested Location of Performance (major portion of the work): Hillsboro, OR
Purpose/Project Description: nLIGHT will focus on a Precision Intergrated Laser System (PILS) device that will combine a non-lethal escalation of force green laser with laser range

finding for precision targeting control. Benefits of such a device include improving mission effectiveness, decreasing collateral damage and, most importantly, increasing soldier survivability. Through superior precision integrated laser systems (PILS) soldiers will be better prepared to operate within new hostile and yet civilian battlefield.

nLIGHT has partnered with the US Army on such technology over the last five years. Specifically within the last two years nLight has entered into a deep technical partnership with Night Vision and Electronic Sensors Directorate. The goal of this partnership has been to quickly address the demanding precision targeting needs of our soldiers and engineer a high performing and reliable solution that can be rapidly deployed.

Item Name: Trusted Services Engine (TSE) for Cross-Domain Information Awareness
Request: $2,100,000
Account: Research, Development, Test & Evaluation, Defense Wide
Line: 184
PE: 0303140G
Suggested Recipient: Galois, Inc.
Suggested Location of Performance (major portion of the work): Portland, OR
Purpose/Project Description: Both the Department of Defense and the Intelligence Community have critical, ongoing requirements both to protect and to share data across multiple security levels. In recognition of this need, the Navy and the NSA funded Galois to develop the Trusted Services Engine (TSE), a robust and flexible solution to the challenge of controlled information sharing across multiple security levels. Various operational programs have shown great interest in the TSE, and the Unified Cross-Domain Management Office (UCDMO) has indicated that a certified TSE is considered a likely candidate for their upcoming "baseline" – a list of preferred technologies recommended for widespread adoption across the Department of Defense and the Intelligence Community (DoD/IC).

Operational deployment of any cross-domain technology (like the TSE) has long been a challenge for the DoD/IC. Certifications apply on a site-by-site basis, and a solution cannot be deployed until it has been certified.

A proposal for accelerating the certification of the TSE was submitted by the NSA Information Assurance Research Lab (NSA R2) for funding through the DoD Technology Transition Initiative (TTI) program, created by Congress in 2002 specifically to help technologies move from R&D to operational deployment. The TSE certification project was a finalist for receiving funding under the TTI program in FY2008.

Funds would be used to certify the TSE. As a secure, multi-level network file server, the TSE is a robust and flexible building block of a dependable network-based infrastructure. Certifying the TSE is a valuable use of taxpayer funds through its significant, positive impact on our information infrastructure.

Item Name: Advanced Airship Flying Laboratory Phase 2

Request: $4,571,000
Account: Research, Development, Test & Evaluation, Navy
Line: 198
PE: O305205
Suggested Recipient: American Blimp Corporation
Suggested Location of Performance (major portion of the work): Hillsboro, OR
Purpose/Project Description: This program is a continuation of the U.S. Navy's only airship program that is being developed to assist in providing advanced 24/7 persistent surveillance capabilities for fleet and force protection of troops deployed throughout various conflicts throughout the globe. Unlike UAVs, helicopters or fixed-wing aircraft which are expensive to operate and have limited air time, airships offer similar solutions and capabilities for a fraction of operational costs, stay in the air for longer periods of time and, ultimately, achieve the same objectives. To-date, several demonstrations for CENTCOM have shown promise and several other Service branches are in initial phases of developing their own airship programs for the same reasons. However, in order for the Navy program to become flight-ready and operational, the Navy needs to develop and integrate new power sources for operating heavy fuel engines and for integrating additional autonomous unmanned flight controls aboard the MZ-3A airship. Further, for the airship to carry out its surveillance activities in-theater, additional funding will be used to integrate various sensors capabilities and equipment on-board the MZ-3A. Overall, the airship's design and capabilities must be tested in various conditions before it is ready for full deployment.

Item: Reinforcement HMMWV Repair Hood Kits
Request: $990,000
Account: Other Procurement, Army
Line: 15
PE: N/A
Suggested Recipient: Miles Fiberglass & Composites, Inc.
Suggested Location of Performance (major portion of the work): Happy Valley, OR
Purpose/Project Description: This project would purchase 3,300 hood repair and reinforcement kits for the HMMWV. Current practice is to replace the entire hood unit when fractures and/or cracks develop. Due to design and manufacturing factors, replacement hoods may break again. In addition to preventing new cracks from developing, the reinforcement kit effectively reinforces the existing hood and prevents expansion/extension of pre-existing cracks. This is a savings to the military in terms of hood cost (66%) and vehicle down time as the reinforcing kits can also be installed in the field.

The funds would be used for the main RSMS unit located in Maine which is responsible for refurbishing HMMWV. The RSMS unit has stated they would need 100 a month. Kits would also be supplied at TACOMM, the main facility for repairing HMMWV vehicles, about 800 a month. Other maintenance depots around the country would also install kits as they repair cracked hoods. Kits could also be sent abroad to be installed at on site saving down time of the vehicle. The kits have been approved by TACCOM and an NSN number has been established NSN 2510-01-547-7220.

Item Name: Optimization of Lightweight High Performance Direct-Sintered Silicon Carbide Optics for Space and Aerial Sensors
Request: $3,500,000
Account: Research, Development, Test & Evaluation, Army
Line: 8
PE: 0602102F
Suggested Recipient: CoorsTek
Suggested Location of Performance (major portion of the work): Hillsboro, OR
Purpose/Project Description: CoorsTek's Hillsboro, OR facility is known for precision machining of ceramics and the facility has leveraged this know-how to manufacture lightweight mirrors out of silicon carbide, a ceramic also used by the US Department of Defense for body and vehicle armor. It is known that silicon carbide would be an ideal material for many aerial and space optics, due to its excellent stiffness and light weight. The primary issue with using silicon carbide is the expense of the final polish.

Although CoorsTek is successful in producing individual mirrors and assemblies in many sizes and shapes, the relatively high cost has prevented the transition to high volume optics projects. The primary cost driver is the expense of polishing the ceramic to a final prescribed figure. CoorsTek has developed an in-house a process to reduce the cost of the final polish by more than 33% -- a huge cost saver to the federal government. CoorsTek would be well positioned to manufacture optics for programs run by the US Air Force and the Missile Defense Agency at the sorts of volumes required, as CoorsTek demonstrates volume ceramic manufacturing on a daily basis.

Funding would enable CoorsTek to complete and prove out the grinder that has been designed by our development team. CoorsTek would purchase the required services to complete the control and motion systems, and then demonstrate the improved capability. It would also enable CoorsTek to expand conventional machining in silicon carbide to meet the expected demand of the Department of Defense.

Item Name: Transportable Transponder Landing System
Request: $4,800,000
Account: Research, Development, Test & Evaluation, Air Force
Line: 186
PE: 0305114F
Suggested Recipient: Advanced Navigation & Positioning Corporation
Suggested Location of Performance (major portion of the work): Hood River, OR
Purpose/Project Description: The Transportable Transponder Landing System (TTLS) is a precision approach landing and surveillance system designed to for rapid deployment to establish a remote Air Traffic Control and precision landing aid that enables all types of military aircraft (fixed, rotary-wing and Unmanned Air Vehicles) to recover efficiently and safely in any terrain and in severe weather conditions day or night.

The TTLS does not require upgrades to the existing aircraft of the Air Force, provides a Precision Approach Radar (PAR) capability, and it can be rapidly deployed in mountainous landing areas where most current landing technologies aren't able to be deployed.

Item Name: U.S. Marine Corps Installation Access Enterprise Solution Project
Request: $960,000
Account: OMMCR
BA: 1
Subactivity: BSM1
Suggested Recipient: Eid Passport, Inc.
Suggested Location of Performance (major portion of the work): Tigard, Oregon
Purpose/Project Description: The USMC Enterprise Installation Access Control Solution Project will provide security personnel at 14 USMC installations a cost-effective and operationally efficient solution to manage the identities and installation access privileges of uniform military personnel, DoD civilian employees, military dependants and retirees, certain contractors and other individuals who possess DoD-issued CAC and Teslin credentials and who are authorized to access secure DoD installations.

For persons who do not hold CAC, Teslin or other approved DoD credentials, but who require access to DoD installations, the Project will provide the ability to scan, validate and authenticate state-issued driver's licenses and other government-issued credentials against "no-entry and debarment lists" and other Government databases. This process can identify suspected terrorists, convicted felons, sexual predators, individuals with outstanding warrants and other factors that may disqualify persons from unescorted access onto secure installations.

The Project is intended to integrate with, support and expand on a base access program currently implemented and being enhanced at Marine Corps Base Camp Pendleton, CA. The existing base access program and capability enhancements have been funded through: MCB Camp Pendleton; Headquarters, Marine Corps; and the Biometric Fusion Center.

Item Name: SmartData SOCOM Small UAV Integration
Request: $2,600,000
Account: Research, Development, Test & Evaluation, Army
Line: 6
PE: 0602120A
Suggested Recipient: Digimarc
Suggested Location of Performance (major portion of the work): Beaverton, OR
Purpose/Project Description: Small unit-level UAV systems flown by Special Operations Forces (SOF) send only raw video, which contains no reference to GPS coordinates or a time and date stamp for streaming frames. This not only forces soldiers to employ best-guess judgments of the precise location of potential targets identified in streaming UAV video, but it also precludes soldiers from capturing the video and forwarding it to others.

This program would incorporate a micro hardware component into SOCOM's most utilized UAV system and provide a software application for the UAV's video viewing device. Together, these solutions would dramatically improve battlefield awareness and intelligence sharing.

The hardware component would embed mission-critical intelligence (GPS coordinates, target information, time, date, etc) into the streaming video frames. The video receiver's software application would then extract this information from each frame allowing the soldier to identify the precise location of items of interest. Because the video now has embedded tags, it also enables soldiers to store, search, retrieve and forward video intelligence from the unit level.

Item Name: Controlled Humidity Protection for Oregon Air National Guard 116th Air Control Squandron Equipment and Facilities
Request: $2,700,000
Account: Operations & Maintenance, Air Force
BA: 1
Sub-activity Group: 020
Suggested Recipient: 116th Air Control Squadron, Oregon Air National Guard
Suggested Location of Performance (major portion of the work): Camp Rilea, OR
Purpose/Project Description: Corrosion is one of the highest cost factors in operating and maintaining valuable US military equipment. Controlled Humidity Protection (CHP) dramatically reduces or eliminates corrosion in critical electronic components in 116th Air Control Squadron (ACS) equipment by sustaining relative humidity levels below 50% in Oregon Army National Guard facilities that house 116th ACS testing, maintenance, and vehicles. The mission equipment operated by the 116th ACS must be available for rapid deployment to assist in overseas contingency operations or humanitarian relief operations in Oregon and throughout the country. Therefore, maintaining equipment in a high state of readiness is absolutely essential to completing the mission and complying with commanders' directives. Additionally, if equipment is not mission capable, the part-time Guardsman will be unable to train during their normal drill periods once a month or during their annual two week active duty tour, a significant impact to a volunteer force who leave their civilian jobs and families to serve their country. Returns on CHP is at least 9:1, cutting costs while increasing readiness. All planning has already been funded and completed. The only remaining action is installation.

Item Name: High Altitude Shuttle System (HASS)
Request: $4,160,000
Account: Research, Development, Test & Evaluation, Army
Line: 54
PE: 063308A
Suggested Recipient: GSSL, Inc doing business as Near Space Corporation
Suggested Location of Performance (major portion of the work): Tillamook, OR
Purpose/Project Description: HASS is an affordable, integrated, high altitude (65-100kft) shuttle system that provides persistent battle space coverage using NSC's revolutionary tactical balloon and autonomous payload return vehicle technologies.

With increasing focus on Afghanistan, there will be new challenges for troops and their ability to communicate effectively. Specifically, troops comprised of small units located in highly complex natural terrain currently need the ability to maintain situational awareness enabled by reliable communications. The rugged terrain of Afghanistan reduces our troop's ability to use traditional line of sight communication systems as well as their ability to fly lower tier UAV's. A new solution is essential and among the candidate technologies, HASS is one of the most promising near term options. The ability to provide focused communications, imaging, and signal intelligence from a highly covert yet accessible platform can be a significant combat multiplier. The additional capability to launch and recover these high altitude assets from distances outside the main operational area reduces the ability of the threat to determine our intent and thus thwart our efforts.

These same capabilities would make HASS an invaluable tool for supporting first responders in dealing with natural and manmade disasters that desperately need extended communications and situational awareness to save lives. The purpose of this request is to mature the HASS technology so that it can be quickly deployed in support of troops in Iraq and Afghanistan.

Item Name: Coupled Integration of Communications, Health Monitoring and Chem-Bio Threat Stopping Technology for Warfighters
Request: $3,125,000
Account: Research, Development, Test & Evaluation, Army
Line: 29
PE: 0603001A
Suggested Recipient: High Impact Technology
Suggested Location of Performance (major portion of the work): Salem, OR
Purpose/Project Description: Successful technology development in this program will provide the US military and first responders with a domestic source of lightweight, inexpensive self-decontaminating breathable garments capable of defeating chemical and biological threats while monitoring both the combat environment as well as the wearer's physiological status and enable additional technology enhancements without the logistics interface burden. The suit architecture integrates protection, detection, interconnectivity and communication into a collective protection garment. The technology development for sensitivity (threshold detection level), detection response time and temperature range will adhere to the US Department of Defense requirements for a Joint Chemical Agent Detector (JCAD).

Item Name: Assessment of Alternative Energy for Aircraft Ground Equipment (AGE)
Request: $2,400,000
Account: Research, Development, Test & Evaluation, Air Force
Line: 233
PE: 0708611F
Suggested Recipient: Lektro, Inc.
Suggested Location of Performance (major portion of the work): Warrenton, OR
Purpose/Project Description: The requested funding would be used to assess new power technology applied to Aircraft Ground Equipment (AGE), and field test the integration of a

hydrogen-powered PEM fuel cell into an existing diesel powered aircraft tow tug. The requested funds will be used for the following:

- Complete the development of an AGE database to identify and capture detailed emission, electrical power, and logistics footprint information for all AF ground equipment.
- Design, develop and deploy narrow body aircraft tugs. Convert standard tugs for fighter and cargo aircraft to alternative energy source configurations. Field tugs to active or reserve bases for operational test and evaluation. Use these tugs to validate the methodology and populate the AGE database comparing the emissions, energy and logistics footprints of these vehicles.
- Develop alternative methods of power conversion on ground support equipment. Assess current and future flight line operational electrical power requirements. Analyze technologies that meet those requirements.
- Assess the impact on Air Force readiness of the employment of the current and projected fleets of ground support equipment, evaluating the impact of deployable technologies on maintenance, logistical footprint, energy usage and enhanced safety. Establish a baseline of potential technology enhancements, retrofits, or drop-in substation technologies (focusing on fuel cells) and establish costs, by category, for each technology
- Compare costs of reconfiguring or replacing each category of ground support equipment based on a detailed Life Cycle Analysis (LCA) approach

Item Name: Recoil UH-60 Blackhawk Helicopter Wild Land Fire-Fighting Tank System
Request: $4,160,000
Account: National Guard and Reserve Equipment
Line: 5
PE: N/A
Suggested Recipient: Recoil Suppression Systems, LLC
Suggested Location of Performance (major portion of the work): Merlin, OR
Purpose/Project Description: The Recoil R60 System is a 900 gallon wildland fire suppression fixed belly tank for the UH-60A, L & M Blackhawk helicopter. This project provides the Army National Guard Aviation the proper equipment and the ability to respond quickly, safely and efficiently to the wildfire threat that is of national importance. This wildfire threat continues to grow as urban sprawl pushes into areas that have traditionally been wild lands and requires the National Guard to have the capability to respond to this wildfire threat where needed. The fixed tank Recoil ensures a safer and more direct flight path for the Blackhawk and other helicopters equipped with these tanks for fire-suppression activities. Because the tank is fixed, and there is no bucket that might break loose, the risk to residential neighborhoods and populated areas is significantly reduced, creating a more direct flight path and quicker response times during fire emergencies.

Funding would be used for engineering, evaluation and procurement of the Recoil UH-60 Blackhawk Helicopter R60 Wildland Fire-Fighting Tank System (900 gallon) for the Army National Guard (ARNG). This is in an aim to make R60 tanks become organic equipment of the ARNG be distributed nationwide to State Army National Guard to support and respond to wildland fires.

Item Name: WaterSentinel Safe Water Anywhere
Request: $1,500,000
Account: Research, Development, Test & Evaluation, Navy
Line: 152
PE: 0605873M
Suggested Recipient: ICx Technologies
Suggested Location of Performance (major portion of the work): Grants Pass, OR
Purpose/Project Description: The WaterSentinel - Safe Water Anywhere program will enhance the capability of users to monitor water used for drinking or industrial processing for hazardous biological and chemical content.

Real time monitoring of drinking water is currently a costly and time consuming process requiring reagents, other consumables, and on-site laboratory capabilities. Executing the program as requested will:

- Provide users with a low-cost sensor of biological and chemical contaminants common to drinking and industrial process water
- An early warning system of potential terrorist threats to municipal water systems, and
- Provide users with prototype sensors ready for field deployment.

WaterSentinel would provide a low-cost tool to monitor water quality and facility operation for signs of contamination and equipment failure. In addition to providing information critical to water quality, WaterSentinel can be employed by the agricultural industry to detect premature rot in fruits and vegetable. This capability would improve product safety, increase shelf-life, and decrease operating costs.

Item Name: Treatment of Battlefield Spinal Cord and Burn Injuries
Request: $4,500,000
Account: Research, Development, Test & Evaluation, Army
Line: 30
PE: 0603002A
Suggested Recipient: Oregon Biomedical Engineering Institute
Suggested Location of Performance (major portion of the work): Portland, OR
Purpose/Project Description: This program would fund medical research into two tragic injuries which victimize soldiers as well as civilians -- spinal trauma and burns.

Spinal cord injury is normally the result of trauma resulting in swelling which cuts blood supply, leading to cell death and paralysis. But in NIH models of spinal injury in animals, a laminectomy – where the spinal cord is exposed within a three-hour window, allowing the tissue to freely expand without compression – universally resulted in prevention of permanent paralysis. Clinical trials in multi center military and civilian settings are required to demonstrate efficacy and safety of this approach. Animal studies of adjunctive therapies such as local cooling or administration of anti-inflammatory drugs should also be undertaken.

Severe burns are highly prevalent in current military conflicts. Normal skin healing following burn injuries produces inflexible collagen scars which contain little or no elastin, the matrix protein which gives human tissue its flexibility. Severe burns to extremities are particularly disabling as the soldier is left with severely limited mobility and the prospect of frequent surgeries to treat scar contracture.

Preliminary data indicates that human skin cells, though incapable of producing elastin in burn scars, when given human recombinant elastin proteins, can construct normal appearing and functional skin matrices. Thus, the potential exists to allow the skin to heal itself if given the raw protein material, potentially achieving a flexible and functional skin replacement. A prototype device has already been developed which may serve as a highly precise delivery device.

Item: Helping our Heroes – Preventing Suicide Among Oregon Soldiers and Providing Support to Military Families
Request: $1,200,000
Account: Defense Health Program
Line: N/A
PE: N/A
Suggested Recipient: Oregon Partnership
Suggested Location of Performance (major portion of the work): Portland, OR
Purpose/Project Description: "Helping Our Heroes" addresses the escalating occurrence of suicide and addiction among returning soldiers and veterans, and the stress it causes their families. The "Helping Our Heroes" project will create a dedicated Oregon Line at Oregon Partnership's LifeLine Call Center for returning soldiers and their families dealing with mental health, suicide, and alcohol and drug problems--providing hands-on support to military children and families prior to, during, and after the deployment of a parent or loved one. Oregon Partnership would recruit and train war veterans as staff to answer calls from military members and their families.

Item Name: Northwest Manufacturing Initiative
Request: $2,500,000
Account: Research, Development, Test & Evaluation, Defense Wide
Line: 238
PE: 0708011S
Suggested Recipient: Manufacturing 21 Coalition
Suggested Location of Performance (major portion of the work): Portland, OR
Purpose/Project Description: The Northwest Manufacturing Initiative represents the combined efforts of over 100 companies and five participating research institutions across the region. This is part of a long-term investment strategy designed by industry leaders to concentrate federal, state, public and private resources to serve the needs of the Department of Defense by building the capacity of an entire region's manufacturing cluster to respond to immediate and long term national needs. The areas targeted for investment in this request are:

- Weld Surface Engineering technologies for repair, optimization, and life cycle enhancement of life limiting components in defense systems.

- Manufacturability of metal matrix composite materials, including the impact of tool wear, in drilling of composite/metal stacks.
- Energy efficiency/savings technologies designed to reduce costs in the manufacturing process.
- Technical innovation leading to the further development and application of friction stir welding for materials, in particular used in aerospace.
- Develop and individualize new approaches to improved supply chain management and the greening of supply chain systems for defense applications.
- Expand the reach of this program to even more manufacturers in the Pacific Northwest.
- Upgrade skills of the defense workforce to support the implementation and integration of new applied technologies and processes in the manufacturing environment.

Item Name: Portable Ultrasound Finger Probe
Request: $2,400,000
Account: Research, Development, Test & Evaluation, Army
Line: 30
PE: 0603002A
Suggested Recipient: Blacktoe Medical, Inc.
Suggested Location of Performance (major portion of the work): Portland, OR
Purpose/Project Description: Blacktoe Medical, working with the Army Medical Research and Materiel Command has developed proof-of-concept prototypes, which would allow diagnostic images to be viewed on the frontline, quickly and accurately. This request provides for additional development efforts that would allow the probes to meet military specifications for placing central lines for resuscitation, cleansing wounds against infection, imaging deeply imbedded foreign objects, identifying sources of internal bleeding and blood pooling, and aiding in vital signs monitoring during crucial evacuation of wounded service members. Funding will also allow clinical testing of prototype units as the final step for fielding the technology. Funds would be used for labor, materials, equipment, and travel. This technology will directly benefit the well being of American service members serving in combat.

Item Name: F-16C (ANG) Improved Voice/Data Communications
Request: $6,480,000
Account: Aircraft Procurement, Air Force
Line: 32
PE: N/A
Suggested Recipient: Rockwell Collins, Inc.
Suggested Location of Performance (major portion of the work): Wilsonville, OR
Purpose/Project Description: The ANG F-16C communications suite is currently being upgraded with an ARC-210 radio that provides an improved, Secure Line-of-Sight (SLOS) communications capability with ground forces and Beyond Line-of-Sight (BLOS) satellite communications capability. Additionally, a second ARC-210 radio is required in the suite in order for the pilot to conduct simultaneous SLOS and BLOS communications. If this capability is unfunded, the ANG F-16C aircraft will be unable to conduct simultaneous time sensitive, mission critical communications with ground units, C2 agencies in support of homeland defense, and in-

theater operations. The ARC-210 radio is a standard multiband/multimode radio which is flexible enough to satisfy both SLOS and BLOS capability with slight modifications to the aircraft. The ANG has identified the SLOS and BLOS capability for its F-16C "must do" Critical Combat Capabilities List" in its FY10 Weapons Systems Modernization Requirements Document. The ANG will benefit from life cycle cost savings in terms of training, maintainability and supportability because the ARC-210 radio is widely proliferated within DoD.

Item Name: Casualty Evacuation Safety and Securing Upgrade
Request: $3,000,000
Account: Operations and Maintenance, Army
BA: 01
Sub-activity Group: 122
Suggested Recipient: Skedco, Inc.
Suggested Location of Performance (major portion of the work): Tualatin, OR
Purpose/Project Description: Since there are a limited number of dedicated Medical Evacuations (MEDEVAC) aircraft, each cargo or utility helicopter designed to transport combat troops or equipment onto the battlefield may be regarded as a potential platform to transport combat casualties off the battlefield to a higher level of Combat Health Support (CHS). This can be accomplished by ensuring that each helicopter designed to carry combat troops includes the organic capability to safely secure one approved military litter, whether it be a NATO standard pole litter or a SKED® stretcher, to the floor of the vehicle using rated D-ring type attachment points similar to those that are standard on the floors of cargo or utility fixed and rotary wing aircraft.

The CASEVAC Evacuation Satety and Securing upgrade (or Conversion Kit) provides all necessary components for an "aircraft of opportunity" to carry and safely secure one approved military litter to the floor of any cargo or utility aircraft, safely secure the casualty to the litter IAW doctrine, provide environmental protection to the casualty and identify and mark the casualty and pick-up zone (PZ).

Item Name: Oregon National Guard Reintegration Program
Request: $350,000
Account: Operations and Maintenance, Army National Guard
BA: 1
Sub-activity Group: 135
Suggested Recipient: Oregon National Guard Reintegration Program
Suggested Location of Performance (major portion of the work): Salem, OR
Purpose/Project Description: The Yellow Ribbon Reintegration Program – created by fiscal year 2008 National Defense Authorization Act – was created to address the needs specific to National Guardsmen, Reserve members, and their families. This project would fulfill those aimed objectives, specifically in Oregon which is facing its largest deployment since World War II.

Funding will be used to provide a continuum of support for service and family members throughout the deployment cycle by organization facilitation, and conducting of "off site" events. These events serve to educate the warriors and their families on social service issues such as employment and healthcare.

Item: Future Medical Shelter System (FMSS)
Request: $2,880,000
Account: Other Procurement, Army
Line: 146
PE: N/A
Suggested Recipient: Mobile Medical International Corporation (MMIC)
Suggested Location of Performance (major portion of the work): St. Johnsbury, VT
Purpose/Project Description: The Army's Medical Research & Materiel Command ("MRMC") at Fort Detrick, Maryland, has worked with MMIC over the past seven years to develop a new field hospital, which MMIC calls the 21st Century Military Hospital System (FMSS - 21CMHS). As part of this effort, MMIC developed at the Army's request a smaller mobile shelter called the Mobile Single Pallet Unit (MSPU). Both systems represent a great leap forward in innovation, quality and mobility. This Low Rate Initial Production (LRIP) will yield seven to eight field hospitals and two to four MSPUs. It will support testing in theater and sustain forward hospital operations, while confirming specifications prior to large scale procurement decisions.

Each FMSS-21CMHS is comprised of one 20-foot ISO container and three smaller ISO TRICON modules. The 20-foot ISO expands into an operating theater with HEPA filtration and 25 air exchanges per hour. One TRICON houses two integrated air-beam soft-wall shelters that provide 1000ft^2 of floor space for a recovery room, with built-in lighting and power access. The second TRICON houses power, environmental controls, and NBC filtration. The third TRICON serves as storage. The entire system fits into a C-130, and can be deployed by a 4 soldiers in ½ hour. Additional units, configured for lab, kitchen or auxiliary shelter, can be easily added to create a scalable hospital.

Item Name: UH-60 MEDEVAC Thermal Imaging Upgrades
Request: $5,400,000
Account: Aircraft Procurement, Army
Line: 26
PE: N/A
Suggested Recipient: FLIR Systems, Inc.
Suggested Location of Performance (major portion of the work): Wilsonville, OR
Purpose/Project Description: The Army is pursuing product improvements to include thermal imaging systems on UH-60 aircraft to achieve a standard fleet configuration. The additional sensors and extended optics of this new configuration will permit aircrews performing MEDEVAC missions to more effectively detect and identify targets and/or survivors, significantly improve flight safety and provide critical intelligence for the aircrew to evaluate the situation prior to arriving on the scene. These upgrades will provide an electro-optical/infrared

(EO/IR) suite with the latest hardware and software enhancements to safely and successfully accomplish the mission in both domestic and combat scenarios during the day, at night and in reduced visibility conditions.

Item Name: U.S. Navy Shipboard Protection System (SPS)
Request: Support President's Budget
Account: Other Procurement, Navy
Line: 28
PE: N/A
Suggested Recipient: FLIR Systems, Inc.
Suggested Location of Performance (major portion of the work): Wilsonville, OR
Purpose/Project Description: The U.S. Navy has initiated a program to deliver an integrated suite of thermal imaging equipment designed to allow the crew to successfully complete its mission profile safely and effectively by detecting, identifying and countering asymmetric threats. The use of an electro-optical/infrared (EO/IR) system on these craft reduces risk to combat personnel and provides a surveillance and capability at night and in conditions of obscured or reduced visibility. The EO/IR systems are also valuable in a ship's normal underway operations independent from those functions described as part of the SPS system as video is available to underway watch standers for situational awareness and safe navigation. The surface surveillance system integrates EO/IR sensors and radar into a common tactical surveillance system. These systems enable the ships' crews to detect threats that might otherwise remain undetected. The use of an EO/IR system enhances the crew's ability to operate in conditions of obscured or reduced visibility or in total darkness, providing greater force protection.

Item Name: U.S. Marine Corps UH-1N Helicopter Navigation Thermal Imaging Systems (NTIS)
Request: $5,000,000 above the President's request
Account: Aircraft Procurement, Navy
Line: 35
PE: N/A
Suggested Recipient: FLIR Systems, Inc.
Suggested Location of Performance (major portion of the work): Wilsonville, OR
Purpose/Project Description: The U.S. Marine Corps is conducting an upgrade program to provide additional capability and significantly improve the performance of the AN/AAQ-22 Navigation Thermal Imaging Systems (NTIS) currently in use on their fleet of UH-1N helicopters. This upgrade permits USMC aircrews to detect, recognize, identify and designate targets for precision-guided munitions.

Item Name: Listen While Jamming Software Radio – IED Detection System
Request: $700,000
Account: Research, Development, Test & Evaluation, Navy
Line: 10
PE: 0602271N

Suggested Recipient: Maxtek Components Corporation
Suggested Location of Performance (major portion of the work): Beaverton, OR
Purpose/Project Description: In collaboration with a team of companies across the United States, this request will fund a portion of the development and demonstration costs of a listen-while- jamming system, using a combination of existing digital receiver technology and appropriate computer interconnect technology to provide a SiGe based radio receiver to enable validation of technical approaches and to enable rapid software development. A Listen-while-jamming system could permit location and identification of Improvised Explosive Devices (IEDs) and other threats, while preventing their detonation. Funds will be used to develop and purchase requisite receivers and interconnect technology for the system.

We also support the following national programs funded by the Department of Defense which provide vital support to the readiness of the nation. These programs include the Metals Affordability Initiative, F-15 Radar Warning Receiver (RWR)/Eagle Passive and Active Warning and Survivability System, F-15 Digital Video Recorder, F-15 BOL Upgrade, F-15 Beyond Line of Sight (BLOS) Secure Communications, and F-15 Active Electronically Scanned Array (AESA) Radar.

Additionally, we certify that neither ourselves' nor our immediate family have a pecuniary interest, consistent with the requirements of Paragraph 9 of rule XLIV of the Standing Rules of the Senate, in any congressionally directed spending item that we requested in this letter.

Thank you for your consideration of these worthy projects. We appreciate your strong and continued leadership and look forward to working with you this year on funding vital to our nation. If you have any questions, please contact Mr. Isaiah Akin in Senator Wyden's office at 224-5244, or Ms. Courtney Thompson in Senator Merkley's office at 224-3753.

Sincerely,

Ron Wyden
United States Senator

Jeff Merkley
United States Senator