



OTFSP 10-758

November 4, 2009

Ohio Department of Development
77 S. High St., PO Box 1001
Columbus, OH 43216-1001

Subject: 2010 Sensors Program LOI

To whom it may concern,

This letter is to confirm the intent of Traycer Diagnostic Systems, Inc. to submit a proposal under the 2010 Sensors Program. The requested information follows:

Lead Applicant: Traycer Diagnostic Systems, Inc.
Address: Suite 251, 1275 Kinnear Rd., Columbus, OH 43212
Telephone: 614-484-5027
Contact: Brad Beasecker, brad.beasecker@traycerdiagnostic.com
Project Title: Commercialization of Video Rate THz Cameras
Grant Funds Requested: \$1,000,000

Collaborators:

AnRad Corporation
Institute for the Development and Commercialization of Advanced Sensor Technologies (IDCAST)
Raytheon Company
Rensselaer Polytechnic Institute
TeraView Ltd
The Ohio State University
U.S. Air Force Research Labs (AFRL)
U.S. Air Force Office of Scientific Research (AFOSR)
University of Notre Dame
Valtronic Technologies

Project Summary:

Based upon its patented technology portfolio, Traycer Diagnostic Systems, Inc. (Traycer or "the Company") is leading the development of a breakthrough imaging technology in the terahertz (T-ray) spectrum. T-rays make visible 90% of the unique information that nature has assigned to the materials in the universe. Traycer has made the first ever T-ray sensor that can see and record this information in real-time at ambient temperature, providing information never before available in a cost-effective manner. This enables superior decision-making in a variety of applications including industrial, security and defense, and biomedical.

T-ray imaging is a billion dollar market opportunity, but there have been no cost-effective means to exploit it – until now with the Traycer sensors. Some examples of T-ray enhanced applications are in industrial markets - where active monitoring of quality control on the production line yields higher throughput; in security and defense - where the ability to "see"

thru walls to identify bad guys will save lives; and in biomedical - where T-rays have the unique ability to definitively identify and image the presence of cancer cells.

To enable these applications, Traycer will design and develop a family of components and systems centered around its T-ray sensor and incorporating its patent-protected technology. During its first two years of operations, the Company has developed and prototyped a T-ray sensor design and alpha system, has secured and developed intellectual property which will sustain a technological advantage versus competitors, and is on track for near-term (within two years) revenue opportunities for the Company's sensors through its extensive network of strategic partners. Traycer leads and leverages a world-class T-ray development effort spanning the Air Force, seven universities, and over 30 researchers.

Traycer will lead the production scale-up of the sensor into a camera system that will serve as a platform technology for the various applications described. Traycer has established multiple relationships to provide industry expertise and product distribution channels. The state of Ohio is uniquely positioned as a research leader in this field with world-class programs at The Ohio State University, Wright State University, the University of Dayton and Miami University. By coupling this strength with state-of-the-art sensor testing and development facilities at IDCAS and AFRL, as well as with strategic collaborations among industry leaders such that the path to market will be accelerated and result in:

1. Ohio becoming a global leader in a rapidly growing, high tech industry that will create significant new jobs as well as attract outside companies to the state;
2. Leverage private and federal resources to create a strong technology portfolio in Ohio for platform terahertz imaging technologies available for applications in additional new markets with sustainable long term growth.

This project will bring together important Ohio research institutions with collaborators with demonstrated expertise in all phases of product commercialization to quickly bring products to market and lay the foundation for the emergence of a dynamic new industry.

Sincerely,



Bradley G. Beasecker
President & CEO

Hansen, Andrew

From: Wendy Lawson Scott [scott@orbitalresearch.com]
Sent: Wednesday, November 04, 2009 12:49 PM
To: OTFSP2010
Cc: Fred Lisy; Joe Snyder; Dan Kalynchuk; Aaron Rood
Subject: 2010 OTFSP LOI

To Whom it May Concern:

Orbital Research is pleased to submit this letter of intent to state Orbital's intent to produce and file a full proposal entitled, "NONA - Non-invasive Observation of Natal Activity" in response to the Ohio Third Frontier Sensors Program released on October 7, 2009.

1. Lead Applicant:
Orbital Research Inc.
4415 Euclid Avenue, Suite 500
Cleveland, Ohio 44103
216-649-0399 phone
216-649-0347 fax
2. Contact Person:
Joseph T. Snyder, Ph.D.
snyder@orbitalresearch.com
3. Project Title:
NONA - Non-invasive Observation of Natal Activity
4. Estimated Grant Funds:
\$400,000
5. Known Collaborators:
Mindchild
Terrazign
IFW Consulting
6. Proposed Project Summary:

Named NONA after the Roman god of pregnancy, this innovative fetal ECG (FECG) monitoring system will mitigate the risk to the child during pregnancy and childbirth by non-invasively identifying signs of cardiac irregularity. The current non-invasive fetal monitoring equipment uses trans-abdominal Doppler ultrasound which is unreliable and subject to frequent signal loss due to maternal or fetal movement. The invasive alternative system (scalp-electrode) poses a health risk and provides limited information. The fetal scalp-electrode (current gold standard) is a problematic technology, because it can only be used in a very limited clinical scenario when a patient is in labor, has ruptured amniotic membranes and has a dilated cervix. Therefore, the fetal scalp-electrode cannot

be used for monitoring of the vast majority of pregnant and laboring patients. Since the electrode is screwed into the fetal scalp, this invasive fetal ECG monitoring system has risks, as rare cases of fetal scalp abscess have been reported after its use.

The proposed non-invasive fetal monitor will reliably acquire fetal ECG signals, and identify characteristic ECG patterns that predict impending fetal injury caused by inflammatory, hypoxic, or ischemic insults. Analysis of fetal ECG entropy (Society of Maternal-Fetal Medicine, abstract 2008) distinguished intrapartum fever better and earlier than beat-to-beat variability, and therefore we are optimistic that similar analyses made possible by the non-invasive NONA system device will provide relevant clinical information that will allow clinicians to predict intrapartum fever, and move toward delivery before chorioamnionitis develops. Chorioamnionitis is associated with a nine-fold risk of cerebral palsy.

Wendy Lawson Scott
Orbital Research Inc.
4415 Euclid Avenue, Suite 500
Cleveland, OH 44103
216-649-0399

OTFSP 10-760

Letter of Intent to Submit a Proposal for Funding

Fiscal Year 2010 Request for Proposals

Ohio Third Frontier Sensors Program

Lead Applicant: Center for Innovative Food Technologies / EISC, Inc. (CIFT)

Address: 5555 Airport Highway, Suite 100, Toledo, OH 43615

Contact Person: Stephanie A. Smith, Ph.D., Food Scientist

Phone Number: 419-535-6000; 419-708-5647 (direct)

E-mail: ssmith@eisc.org

Project Title: Remote Food Safety Monitoring System

Estimated Grant Funds: \$800,000

Collaborators: Rockwell Automation, Inc.
Advanced Technology
Mayfield Heights, Ohio

The Ohio State University
Department of Food Science & Technology
Columbus, Ohio

The Edison Materials Technology Center (EMTEC)
Dayton, Ohio

Project Summary

The ability to provide safe food is fundamental not only to the public health and confidence of consumers but to the economic health and survival of producers, processors, distributors, retailers and food service operators—the entire food supply chain and one of the State of Ohio's targeted industries. The proposed project will ready sensors and supporting technology for commercial use in the food service industry, an economically significant part of the value chain of Ohio's agriculture and food processing industry.

The ability to conduct chemical and biological sensing in food processing and preparation environments is critical to the ability to detect, monitor, control, and correct conditions that pose potential hazards to food consumers. These environments often have conditions of variable temperature and humidity and/or may be food contact surfaces posing unique challenges to sensing systems.

CIFT has collaborated successfully for many years with Rockwell Automation and the Department of Food Science and Technology at Ohio State, partners that have extensive technical expertise in detection and monitoring devices and communication systems critical to the project, and is pleased to have EMTEC involved.

Success of the proposed project will provide powerful new tools to facilitate the food industry's efforts to ensure the safety and security of the food supply and, thereby, will help strengthen Ohio's economic future.



Department of Biomedical Engineering
10900 Euclid Avenue, Cleveland, Ohio 44106

October 4, 2009

Ohio Third Frontier
Ohio Department of Development
Technology Division
77 South High Street, 25th Floor
Columbus, OH 43215-6130

Re: FY2010 Ohio Third Frontier Sensors Program

Ohio Department of Development:

This letter is to state the intent of the Case Western Reserve University, in conjunction with the partners listed below, to jointly produce and file a full proposal in response to the OTF Request for Proposal released on October 7, 2009.

1. Title: Biosensor Commercialization Platform
2. Contact Person: Christian A. Zorman, Ph.D
Department of Electrical Engineering and Computer Science
Department of Biomedical Engineering
Case Western Reserve University
Cleveland Ohio, 44106
216-368-6117 phone
216-368-6888 fax
email: caz@case.edu
3. Lead Organization: Case Western Reserve University
4. Legal Structure: Institution of Higher Education, Corporation for Non-Profit, State of Ohio
5. Estimated funds to be requested: \$1 million
6. Collaborating Organizations (as of 11/04/2009):

Invacare Corporation
Breath Measurement Technologies, Inc.
Orbital Research Corporation
Lorain County Community College

We look forward to submitting a full project proposal to the Third Frontier program in December.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Zorman".

Christian A. Zorman
Associate Professor
Department of Electrical Engineering and Computer Science
Department of Biomedical Engineering

Biosensor Commercialization Platform

Medical device product development frequently stalls immediately after the imagining stage of the product commercialization process. Despite excitement about the abundance of biomedical and related sensor activity within Ohio, from the investor perspective Ohio's biomedical commercialization "Achilles' heel" has remained the conspicuous absence of "technology platforms" such that product launches have manageable risk. The proposed BCP is a potential pathway in the solution to that problem.

This proposed commercialization platform capitalizes on the combined strength in medicine and engineering at CWRU and the business development focus of its collaborators. Micro scale concepts for molecular detection have been around since about 1990. The performance trade-offs continue to be between selectivity and sensitivity. Most products that exist now measure drastic shifts in relatively static or stable environments. Real-time breath measurements, for example, for in-home use of asthma monitoring or for COPD management require the extraction of data from a short, dynamic sample. Sensor technology is available to solve this unmet clinical need, but a modular, integrated system platform requires more than just research University input; this is where BCP collaborator strengths can be integrated into the platform development process.

Sensors and sensor systems are an enabling technology within four core Biomedical Engineering (BME) research foci: imaging, neural stimulation devices, tissue engineering, and biomems. Examples of specific applications of the proposed platform are:

1. Minimally invasive MEMS glucose sensor and optical sensor data processing for hospital intensive care unit applications.
2. Neural control and orthopedic devices to restore limb and organ function by sensing and activating neural tissue.
3. Infection monitoring and assessment for tissue engineering.
4. Sensor design and material surface property effects on cell proliferation and adhesion to implanted sensors.
5. Sleep disorder screening and monitoring for CVD patients in in-patient wards.
6. Exhaled breath molecular markers as a measure of physiological stability.

In many areas existing research challenges are compounded by, say, the emergence of wireless sensor technology as a critical interface pathway for communication with implantable sensors. This underscores the interdisciplinary advantage between CWRU and its collaborators, enabling a biosensor platform development relevant to market needs.

The proposed BCP is intended to integrate existing strengths into an OTF project capable of engaging the campus institutions and its partners to promote human health through technology. The metrics for success include an increased number of products launched for the BCP, the ability of the BCP to influence the workforce development efforts of Lorain County Community College, the jobs created for new product development at established biotech companies, and the number of new jobs created through start-up companies.

Hansen, Andrew

From: Thomas McCann [tmccann108@gmail.com]
Sent: Wednesday, November 04, 2009 1:16 PM
To: OTFSP2010
Cc: randerson; kgilmer; mmckinley
Subject: 2010 OTFSP LOI - Grid Sentry

Attachments: Letter of Interest Attach.doc



Letter of Interest
Attach.doc ...

This is to serve as our letter of intent to submit a proposal in response to the RFP from the Ohio Third Frontier Sensors Program.

Lead Applicant Name: Grid Sentry, LLC

Lead Applicant Address: 3915 Germany Lane, Beavercreek, OH 45431 Phone Number:

937-974-3838 Contact Person: Thomas M McCann

e-mail: tmccann108@gmail.com

Proposed Project Title: Grid Sentry Sensor Estimated Grant Funds to be Requested: \$600,000

Known Collaborators: Defense Research Associates, Beavercreek, OH; Dayton Power and Light Co., Dayton, OH One page summary: Attached Submitted by: Thomas M McCann

Summary of Proposed Project: The proposed project will be to complete the production design, production facility design and testing (especially environmental) of the Grid Sentry sensor. Initial proof of principle prototypes have been delivered to a local Utility company for on-line testing and the feedback from these tests is being used to support improvements and the initiation of the production design. The Grid Sentry product is designed to provide power companies with the ability to monitor the activity and dynamics of the distribution grid (from the sub-station to transformer) and take actions to improve the efficiency of the distribution system. Our sensors are mounted on the distribution lines and provide the following functionality: measure line current and direction, fault current, power factor, current harmonics and line temperature; and indicate line out condition. The unit utilizes a power core that inductively harvests power from the magnetic field around the power line. This unique capability avoids the need to replace batteries on a regular basis greatly reducing maintenance costs to the power companies. The Grid Sentry system takes the targeted measurements, stores the data with an internal processor and then transmits the data to a ground based Master Control Station for analysis and retransmission on a recurring basis to the power company's monitoring and control system and immediately forwards alerts as required.

The system also indicates line out conditions using power from high density capacitive storage to support a "last gasp" message. The frequency of transmission of the data is user selected and can be modified as required. In the installed condition, the status of the system can be verified by a ground observer viewing an infrared light emitting diode (LED) installed on the unit to confirm the line energized status and the radio status. Changes to the sensor operating parameters and firmware can be uploaded to the unit from the ground through a standard telemetry link without the need to physically interact with the unit. The initial units will communicate using cellular telephone technology which is one of the many optional communications methods that will be available in the production units. The communications module will also support power company selected protocols such as TCP/IP or other proprietary Radio Frequency links. The antenna is internally mounted in the case with an optional external antenna mount for remote area operation. The Grid Sentry will be installed using a "hot stick" from the ground. It will be compatible with line diameters from .398 to 1.14 inches.

Technical discussion with four power companies was the basis for the requirements for the sensor. (As an aside, all four indicated definite interest in obtaining test units for evaluation.) The data generated by the sensor would be used by the power company to identify outages, support decisions on power transfers and forecast line problems. Discussions with the power companies and the Electric Power Research Institute indicate that better control and management of the distribution grid would result in decreased need for power generation facilities and lower costs to the power industry. Future applications of the technology will be pursued to develop capabilities to lead to easily installed and virtually maintenance free platforms and communications systems for reading meters, controlling loads, distribution automation out to the user to include Automatic Meter Reading (AMR) and eventually even direct in-house load control within the "Smart Grid" paradigm.

CASE WESTERN RESERVE UNIVERSITY

November 3, 2009

Ohio Department of Development
Technology and Innovation Division
Attention: OTFSP
77 South High Street, 25th Floor
Columbus, Ohio 43215

Subject: 2010 OTFSP Letter of Intent
VIA: E-mail to OTFSP2010@development.ohio.gov

To Whom It May Concern:

Please let this letter serve as Case Western Reserve University notice of intent to apply for the fiscal year 2010 Ohio Third Frontier Sensors Program (OTFSP). Below is the information requested in Section 1.3.3 of the Request for Proposal for the OTFSP. The attached project summary provides additional details about our project.

Lead applicant: Case Western Reserve University
Contact: Mario Garcia-Sanz, Maltz Professor in Energy Innovation
Address: 10900 Euclid Ave. Olin 605, Cleveland, OH 44106-7071
Telephone: 216-368-5122
Fax: 216-368-6888
E-mail: mario@case.edu
Proposed project title: Advanced Sensors and Control Systems for the next generation of Multi-megawatt Offshore Wind Turbine Blades
Estimated grant funds to be requested: \$3 million
Target collaborators: Parker Hannifin, MT Energy USA

Thank you for your assistance. Please feel free to contact me if you need additional information.

Sincerely,

Prof. Mario Garcia-Sanz, Ph.D.
The Milton and Tamar Maltz Professor in Energy Innovation
EECS Department
Case Western Reserve University

Attachment: Project Summary

Advanced Sensors and Control Systems for the next generation of Multi-megawatt Offshore Wind Turbine Blades

Business Overview and Project Description

Two facts describe the frame for the business opportunity of this proposal: 1) The potential wind energy of Lake Erie is about 70 GigaWatts, which is similar to the 70% of the current wind power already installed in the planet; and 2) Ohio is the second largest manufacturing area in the country. The combination of these two facts will give the State the tremendous opportunity to create a new economy based on off-shore wind energy, creating new companies and jobs for the design, manufacturing, installation and exploitation of wind farms in Lake Erie.

The feasibility of any business plan in the wind energy area is related to 1) the cost of the units and 2) the energy efficiency and availability of the machines. One of the main barriers that offshore wind energy suffers nowadays is the high cost of the very large wind turbines that we need for offshore applications. In numbers, the current cost of offshore wind energy per Megawatt is about twice the cost of onshore applications. A second and also important barrier of offshore wind energy is, in cold climates, the loss of availability during the winter due to the growth of ice in the blades.

The main two objectives of this project are 1) to reduce the cost of the offshore wind turbines and 2) to improve their availability in winter. Both objectives will be addressed by combining advanced sensors, advanced control systems and de-icing devices for the blades: "The Smart Blade Project". This new concept a) will dramatically attenuate the mechanical loads and mechanical fatigue of the blades, tower and foundation, which will reduce the cost of the units, and b) will improve the energy generation of the units. As a consequence, the project will help the business models of offshore wind energy applications, and then will open the offshore market, including cold climate areas, first in Lake Erie and then in the rest of the World.

The project will expand the application and use of sensors in a new field: the wind energy area and the wind turbine design in particular. The methodology will require the fusion of multiple sensor platforms in an advanced control system, to obtain a complete picture of the blade dynamics (velocity, acceleration, mechanical stress, temperatures, humidity, etc) and to control the wind turbine so that 1) we will attenuate the mechanical loads and fatigue of the main components of the wind turbine (blades, tower and foundation), allowing cheaper and more cost-effective turbine designs and 2) we will improve the availability of the machine in winter by using appropriate de-icing systems.

The project will open the door to new significant employment in Ohio, because it will create a new methodology to use sensors, actuators and control systems to address significant barriers in offshore wind energy.

The project will combine the experience at Case Western Reserve University in advanced control, wind turbine design, structures, composites and sensors, at Parker Hannifin in sensors and de-icing systems, and at MT Energy USA in wind turbine and blade design and manufacturing. The three partners are based in Ohio.

The main concepts described in this project can make a significant impact in the aerospace industry. Additional US partners in the aerospace manufacturing field will be added to the project.



420 N. Main St.
East Peoria, Illinois 61611
(877) ENDOTRX (main)
(877) 287-8954 (fax)
(309) 282-3758 (direct)
harry.rowland@endotronix.com

OTFSP 10-764

SENT VIA E-MAIL

November 4, 2009

The Ohio Department of Development
Technology and Innovation Division
77 South High Street, 25th Floor
Columbus, Ohio 43215

Re: 2010 OTFSP LOI

Dear Sir or Madam:

Please accept this letter confirming Endotronix, Inc.'s intention to submit a proposal for the 2010 Ohio Third Frontier Sensors Program. The requested company information is listed below.

Lead Applicant's name: **Endotronix, Inc.**

Address: **420 N. Main St., East Peoria, IL 61611**

Phone: **Toll free (877) 363-6879**
Direct (309) 282-3758

Contact person: **Harry D. Rowland**

Email address: **harry.rowland@endotronix.com**

Proposed Project title: Wireless Blood Pressure Monitoring

Estimated Grant Funds to be requested: One Million Dollars (\$1,000,000)

Known collaborators: Endotronix is currently involved in discussions with several potential collaborators.

The required one-page summary of the proposed Project is enclosed.

On behalf of Endotronix, I thank you for the opportunity to apply for this OTF grant. If you require additional information, please do not hesitate to contact me.

Sincerely,

/s/ Harry D. Rowland

Chief Technology Officer

Enclosure

Summary of Proposed Project

Lead Applicant: Endotronix, Inc.

Project Title: Wireless Blood Pressure Monitoring

2010 OTFSP

Endotronix, Inc. (“Endotronix”) is an early stage medical device company dedicated to the development and commercialization of minimally invasive wireless health monitoring products and data services for monitoring patient health. Wireless patient health monitoring has the potential to improve healthcare, both by enhancing treatment paradigms and by reducing the overall cost of hospital care. The company’s products capitalize on three mature technologies: radiofrequency identification (RFID), microelectromechanical systems (MEMS), and information technology (IT).

Endotronix’s products include miniature implantable wireless pressure sensors, a portable external measurement unit (the “reader”), and data management services. The sensors, which are designed small enough to be implanted via minimally invasive endovascular techniques, will provide continuous accurate measurements in both inpatient and outpatient settings. The portable reader unit will wirelessly power the sensors, allowing real-time transmission of the internal measurements to the portable unit. The data will be uploaded to a web-based data management system for analysis and monitoring, including both immediate diagnostic information and long-term statistical clinical analysis. The information will be monitored by healthcare professionals and individual patients to track patient health over time, thereby improving disease management and enabling early diagnosis of medical complications.

Endotronix’s main focus for the development of its technology is to monitor blood pressure. The company intends to expand the use of sensors in the biomedical field, and to improve the performance of those sensors. Endotronix aims to overcome technical barriers by developing sensors that are smaller and more accurate than those currently available in the medical field. Small sensor size and development of the wireless reader will not only improve current technology, but will also improve current medical practices by making continuous ambulatory blood pressure monitoring feasible.

The objectives of the proposed Project will be to develop the company’s prototypes into full product in preparation for market entry. The company has previously developed prototype-stage products and has successfully tested the prototypes *in vivo* at the Cleveland Clinic. During the project period, Endotronix will continue research and development activities to further develop, optimize, and test its technology. Prototypes and products will be used in pre-clinical animal trials to demonstrate that the product is ready for human trials. The company will then move forward with the clinical human trials and regulatory approval processes required to enter the market.

Endotronix recognizes the strength and expertise of Ohio’s medical community, and has therefore chosen Ohio as the location to commercialize its technology and conduct its clinical trials. Endotronix aims to collaborate with various individuals and organizations in Ohio during the project period. Potential Ohio collaborators include medical device consultants, electronics design and manufacturing firms, universities, business incubators, and major medical and clinical research facilities.

Hansen, Andrew

From: Kammy Willis [Kammy.Willis@sdmyers.com]
Sent: Wednesday, November 04, 2009 1:40 PM
To: OTFSP2010
Subject: 2010 OTFSP LOI

November 4, 2009

Lead Applicant's Name:

Myers Motors, LLC
180 South Avenue
Tallmadge, OH 44278

Contact Person:

Dana Myers
President and Managing Partner
Tel. 330-630-3768, ext. 3200
Dana.myers@myersmotors.com

Project Title:

Optimizing Electric Vehicle Lithium Battery Management

Estimated Grant Amount:

\$1,000,000

Summary of Project:

Myers Motors and the University of Akron are developing a battery management system using advanced sensor technology to monitor and control the functions of lithium ion batteries in conjunction with other electric vehicle components. This battery management system will also optimize the efficiency of battery charge/discharge cycles and limit the amount of degradation caused by each cycle, which is especially important when using batteries for transportation systems. This project will finalize the development and testing of this battery management system to achieve the desirable cost and performance standards. The project will also demonstrate a commercial prototype and begin commercialization of the system to support mass production of an affordable electric vehicle.

Best wishes,

Kammy Willis for Dana Myers

Myers Motors - Globally Cool Transportation

180 South Avenue
Tallmadge, OH 44278
330-630-3768
www.MyersMotors.com

11/12/2009



Date: **LLC** November 4, 2009

To: Ohio Department of Development
Technology and Innovation Division
77 South High Street, 25th Floor
Columbus, Ohio 43215
OTFSP2010@development.ohio.gov

From: Recharge Power LLC
7520 Main Street
Gates Mills, Ohio 44040

Subject: 2010 Third Frontier Sensor Program Letter of Intent

Lead Applicant: Recharge Power LLC

Contact Person: Nathaniel T. Smith
(440) 567-3080
ntsmith@recharge-power.com

Project Title: Sensors for charging stations, security, and parking applications

Grant Funds to be Requested: \$1,000,000

Collaborators:

Youngstown State University
Center for Transportation & Materials
Engineering
1 University Plaza,
Youngstown, OH 44555
Contact: Cynthia Hirtzel

Honeywell
Microelectronics & Precision Sensors
12001 Highway 55
Plymouth, MN 55441
Contact: Ron Fang

Case Western Reserve University
10900 Euclid Avenue
Cleveland, OH 44106-7223
Contact: Gary Wnek

I2C Technologies
1549 Boettler Road, Suite D
Uniontown, OH 44685
Contact: Jeff Doak

Project Summary: See Attachment

Respectfully Submitted,

A handwritten signature in black ink that reads "Nathaniel T. Smith".

Nathaniel T. Smith,
President,
Recharge Power LLC

Project Summary

Between 2010 and 2012, over a dozen major automobile manufacturers will be introducing electric vehicles (EV's) and extended range plug-in hybrid electric vehicles (PHEV's) which will require electrical charging infrastructure in commercial parking garages and at municipal curbside parking locations, hospitals, universities, shopping malls and other public parking environments. The ability to reliably locate and determine whether the charging stations are actually available will be critical for drivers of electric vehicles who need to recharge their batteries and for the overall success of migrating our vehicle fleet to alternative fuels – improving air quality, particle pollution and reducing greenhouse gases.

Working in collaboration with Case School of Engineering, Youngstown State University Center for Transportation & Materials Engineering, Honeywell Microelectronics & Precision Sensors, and i2C Technologies, Recharge Power is developing proprietary sensor technology that will inform drivers about which locations have charging stations and whether they are available or can be reserved. The technology employs patent pending magnetic field sensors and sonar for reliable real-time vehicle detection. RFID, low power communications, inventory management, GPS location/mapping and online portal technologies are integrated into the application.

The same sensor technology will also be employed in general parking applications including commercial garages, surface lots, and municipal curbside parking enabling real-time vehicle detection, better inventory control and enforcement. Another feature envisioned is to integrate i2C's Internet Protocol based video camera, license plate recognition and area surveillance technology into the charging stations enabling new security applications within parking environments - again leveraging the sensor technology to detect real-time presence of vehicles.

The scope of the work will be to integrate raw sensor elements, other system components and control system software and do testing, integration, calibration, and production of a complete sensor system for the recharge power stations and other intelligent parking products here in Ohio using local resources including the CWRU and YSU connections. Upon successful system integration we will install and test first-production demonstration units in commercial environments and to launch commercially nationwide.

Trial installations of the charging stations are expected to begin in the second quarter, 2010 with eight alpha site customers including City of Akron, University Hospitals, Case Western Reserve University, University Circle Inc., and Youngstown State University. The full commercial launch of the sensor enabled products is scheduled for mid year 2011 and is anticipated to require eighteen months and \$1,000,000 in Third Frontier funding to complete.

There are 105 million commercial parking spaces in the U.S. including approximately five million metered curbside parking spaces. At a 5% penetration, the market potential for charging stations is \$5.2 billion.

Funding for this project will enable a new novel use of state of art sensor technology and launch a new industry in Ohio servicing the electrification of the automotive industry, provide broad intelligent surveillance capabilities with vehicle detection, utilize the state's outstanding industrial manufacturing base, and create significant new employment opportunities within two years.

Hansen, Andrew

From: Denwood Ross III [dross@pressco.com]
Sent: Wednesday, November 04, 2009 1:44 PM
To: OTFSP2010
Cc: Don Cochran; William C. Holmes; Ed Morgan
Subject: 2010 OTFSP LOI

Ohio Department of Development
Technology and Innovation Division
Third Frontier Sensors Program
77 South High Street, 25th Floor
Columbus, OH 43215

November 4, 2009

Pressco Technology is pleased to submit the Letter of Intent (LOI) in response to the Ohio Third Frontier Sensors Program FY 2010 Request for Proposal. We intend to submit a proposal for the following project:

Title: High Performance Spectroscopy Sensor Applications in High Speed Product Testing

Lead Applicant: Pressco Technology, Inc.
29200 Aurora Road
Solon, OH 44139

Point of Contact: Denwood F. Ross, III
Director, New Product Research
dross@pressco.com

Collaborators: The Microscopy and Microspectroscopy Laboratory (MML)
Miami University of Ohio

Estimated Funds Requested: \$400,000

Project Summary

The current state of the art in high speed product testing, specifically food packaging, is susceptible to interference from competing sources. If the method of testing is infrared, then the response could be from unwanted thermal signals, spurious atmospheric contaminants, and momentary process-related but unwanted restrictions. If the technique is standard machine vision, even when enhanced multi-spectrally, the problems usually manifest as loss of contrast or spurious images. We have recently found that certain spectroscopic techniques can be applied to several current metrology issues of keen interest to the general packaging market. Initial internal experimentation demonstrated potential applications to issues as diverse as packaging thickness, thickness profiles, local thickness variations, material type, material crystallinity, and even contents analysis. All of this information can be readily separated from competing signals, making the result highly specific.

It is the object of this project to develop sensors based on innovative applications of this particular technique specifically for thickness, material type, material phase, and package contents. Such instrumentation does not currently exist. Each will involve different excitation and detection methods, and considerable effort will be expended to optimize the choice of excitation and detection spectra, as that will drive sensitivity and detectivity.

11/12/2009

Following that effort, work will focus on reducing the technique to a size and cost where industry will see the advantage to the new instrumentation and will upgrade their production facilities accordingly.

The benefit Pressco provides to industry is in our capacity to inspect 100% of the product. In other words, our speed and accuracy allow our equipment to keep up with the state of the art in high speed packaging lines, and increasingly in high speed filling applications. Being able to apply that expertise to 100% inspection of other quality related items, such as content purity, will be of benefit to the consumer as well as to the manufacturer.

Thank you for your consideration,

Denwood F. Ross, III
Director, New Product Research
Pressco Technology, Inc.
29200 Aurora Road
Solon, OH 44139
(440) 715-2547
dross@pressco.com
www.pressco.com

Lead Applicant Name: Super Systems Inc.
Address: 7205 Edington Drive
Cincinnati, OH 45249
Phone Number: 513 772 0060
Contact Person: Jim Oakes
Email Address: joakes@supersystems.com
Project Title: Commercialization of Combustion Exhaust Monitoring & Control System
Estimated Grant Funds: \$260,000.00

This project will expand the use of sensor technology to provide a real-time view and closed loop control of indirect fired radiant tube burner applications. The project will consist of commercializing a cost effective solution for high temperature furnace applications that yields higher efficiencies and lower emissions. With the potential for new regulations for green house gas emissions (GHG) and higher fuel costs, companies continue to look for ways to be prepared for monitoring emissions and become more efficient. This leads to a reduced carbon footprint and the efficiencies to be more competitive.

Based on the principals of combustion, where a hydrocarbon and air are mixed with an ignition source to produce heat, this system would monitor the composition of the exhaust to ensure the best mixture. Products of combustion represent green house gases and based on the correct mixture, these can be minimized and monitored. To do this, exhaust gas can be used as the source to determine if a burner is operating efficient. Combustion is the exothermic chemical reaction of hydrogen and carbon atoms contained in fuels with oxygen. In this reaction, the carbon is oxidized to form carbon dioxide (CO_2) or, if insufficient oxygen is available, carbon monoxide (CO). If there is an excess of oxygen present, non-reacted O_2 will be in the products of combustion. Excess O_2 makes heating inefficient, thus requiring more gas for the same results. In addition, excess air also allows for the formation of pollutants such as Nitrous Oxide (NO) and Nitrogen Dioxide (NO_2). Together, NO and NO_2 make up what is referred to as NO_x .

According to the Department of Energy, most high temperature direct-fired furnaces, radiant tubes operate with about 10 to 20% excess combustion air at high fire to prevent the formation of dangerous CO and "soot" deposits. It is estimated that precise control of air to fuel ratio will yield 5 to 25% or more savings in heat generation. Our studies have shown that with the right air/fuel mixture, burners will provide significantly more load capacity and lower emissions.

Currently this monitoring is a discontinuous process which requires manual interaction with non-scientific adjustments. The proposed solution will remove the guess work which currently exists to provide the most efficient mixture of gas to air.

Super Systems of Cincinnati, Ohio specializes in control and sensor technology that is used in the thermal processing industry focusing on process control. With years of service in the industry and a proven record in manufacturing, delivery and support, we have the right people and distribution network to make this product successful. Super Systems has presented a technical paper on this technology at the American Society of Metals in October of 2009. With the right investment in engineering and manufacturing, Super Systems will be able provide a solution to the market which can be retrofitted into the hundreds of thousands of existing burners being used today. On top of that, demand for this technology on new furnace has driven significant interest.

The applications for burner efficiency extend into many industries. High temperature furnaces for thermal processing such as aerospace, automotive, heavy manufacturing and medical equipment all benefit from the application. With a significant amount of concern related to energy consumption and environmental impact related to emissions, having a system in place at the right price to lower emissions (carbon footprint) and increase efficiencies has tremendous market potential.

OTFSP 10-769

Lead Applicant:

James B. Power
Science Applications International Corporation
250 Veronia Drive
Springfield, Ohio 45505
powerj@saic.com
937-525-7502 (w)
937-525-7501 (f)
937-304-4226 (c)

Project Title:

Cooperative Sensor Collection System

Known Collaborators:

Radiance Technologies Inc
3100 Presidential Dr
Fairborn, OH 45324-7145

The Design Knowledge Company
3100 Presidential Drive
Suite 103
Fairborn, Ohio 45324

Central State University
Director, National Environmental Technology (NET) Incubator
1400 Brush Row Road
Wilberforce, OH 45384

Avetec
4170 Allium Ct.
Springfield, OH 45505

Select Tech Services Corporation
1251 W Blee Rd
Springfield, OH 45502-8896

Estimated Grant Funds:

\$4.5 M

The proposed project will perform research and development in two main areas: multiplatform Unmanned Aerial System (UAS) mission planning and control capability and a mobile mission ground station that would support multiple simultaneous sensor feeds. The ability to cooperatively control multiple UAS platforms with different sensor packages may provide a mission capability that could not be supported by a single. As part of the ground station capability the team will integrate a multi-sensor multi-platform vehicle tracker fusion capability to provide tracking when a single sensor loses coverage, an alerting service that would notify users when activity occurs in a specific area, as well as other sensor processing tools to support specific missions. This capability is envisioned to support a number of commercial applications such as protection for major events, monitoring of power distribution lines or gas lines, emergency response to natural or man made disasters as well as land use applications such as flood mapping and crop health.

The multi-platform / multi-sensor control capability will provide a framework to integrate multiple UAS systems into a single control system that would support mission and sensor planning and generate flight plans and controls for the UAS platforms. Additionally the package will provide the control of the sensor packages based on the flight path. It is anticipated that various sensors to include video, spectral, and Electro-optical, and infrared sensors will be supported.

The ground station would support the processing of the multiple simultaneous sensors as well as other relevant information. The system would georegister the sensor data on a common geospatial map to support fusion of the data by other integrated capabilities. The ground station will provide a visualization environment to view the different data feeds. The system will feed the individual sensors to support processing by a tracking framework that would generate tracks of vehicles. This information could support facility protection, border monitoring, and event planning to include crowd control. The ground system framework would allow integration of other processing tools to be integrated from other vendors that would support the sensor systems. This would include target detection, video event detection, hyperspectral processing etc. The ground station will be portable to support multiple analysts use in numerous mission applications. It will provide standard interfaces to support integration with existing systems such as emergency management response vehicles that do not have real time sensor feeds.

Hansen, Andrew

From: leekareem@biotronicsinc.com
Sent: Wednesday, November 04, 2009 1:58 PM
To: OTFSP2010
Subject: 2010 OTFSP LOI

November 4, 2009
The Ohio Department of Development
Technology and Innovation Division
77 South High Street, 25th Floor
Columbus, OH 43215

Dear Sir/Madam:

Letter of Intent
2010 OTFSP LOI

The above named firm hereby submits this letter of Intent as an expression of interest in submitting a Proposal in response to Ohio Third Frontier Sensors Program 2010 OTFSP .

Sincerely,

Lee O. Kareem
President
Biotronics, Inc.
24831 Lorain Road
Suite 203
N Olmsted, OH 44070
Tel: (440) 801-9046
leekareem@biotronicsinc.com
Tel: (440) 801-9046
leekareem@biotronicsinc.com



3915 Germany Lane Suite 102
Beavercreek, OH 45431-1608
937-431-1644
937-427-4526 (fax)

Lisa Patt-McDaniel
Interim Director
The Ohio Department of Development
Technology and Innovation Division
77 South High Street, 25th Floor
Columbus, OH 43215

SUBJECT: Ohio Third Frontier Sensors Program Letter of Intent

ATTACHMENT: Summary of Commercialization of UV Raman Spectrometer Using Gated ICCD

Ms. Patt-McDaniel:

It is our pleasure to submit this Letter of Intent (LOI) for the 2010 Ohio Third Frontier Sensors program. The following is the key information regarding our future proposal submission:

Lead Applicant's Name: Defense Research Associates, Incorporated
Address: 3915 Germany Lane, Suite 102, Beavercreek, OH 45431
Phone: 937-431-1644
FAX: 937-427-4526
Contact Person: Ronald Clericus
Email Address: rclericus@dramail.com
Project Title: Commercialization of UV Raman Spectrometer Using Gated ICCD

Estimated Grant Funds
Requested: \$1,500,000 (\$1M from OTFC and \$0.5M from WCF)
Collaborator: EYZTek Incorporated
Address: 3915 Germany Lane, Suite C, Beavercreek, OH 45431
Phone: 937-427-2892

We look forward to submitting a quality proposal for your evaluation.

Sincerely,

A handwritten signature in black ink, appearing to read "LeRoy Anderson", is written over a faint, larger version of the same signature.

LeRoy Anderson
President
Defense Research Associates, Inc.

Commercialization of UV Raman Spectrometer Using Gated ICCD

Lead Applicant: Defense Research Associates, Inc. Collaborator: EYZtek, Inc.

Summary

US government has spent billions of dollars to support explosive detection research, but until today there is no device that has been used in the battlefield, airport or government check point because all laser-based prototypes are not eye safe and they detect a fixed point for indoor demonstration only. To let a system have practical applications, following 7 problems must be overcome: (1) standoff, (2) trace level, (3) high detection probability and low false alarm, (4) outdoor under the sun, (5) wide area search, (6) on the move, (7) eye safe. Last year, EYZtek received a \$450K pre-phase-II contract from the Army to develop a multi-channel fusion spectrometer for short distance explosive detection. A prototype has been developed and a demonstration has been successfully given at the Army's explosive lab in APG base on 6/10/08. Twenty two explosives have been positively detected and identified with 100% accuracy. This year, EYZtek also received a \$500K procurement contract from the Navy to develop a UV Raman spectrometer to overcome above 7 problems. A prototype has been developed using eye safe UV laser and gated intensified CCD (ICCD) for trace explosive detection in 30 meters, but the volume and cost are still concerns. At the same time, DoD agencies also want EYZtek to produce a portable or handheld explosive detector for fast airport screening and government check point. However, all existing handheld explosive detector (such as "first defender") using backed thin CCD can only reach a few millimeters so they are not practical. In order to reach a few meters for a portable/handheld unit we must use gated ICCD. This is the reason why EYZtek will team up with DRA to submit a proposal for the Ohio Third Frontier Sensor Program. DRA is a leading defense research firm in Dayton area and has developed many cutting edge technologies for military and law enforcement. Their electro-optic team is outstanding, their software team is excellent, and their manufacture/sales team is strong. DRA has more than \$10M annual income from research and products sales. They can work with EYZtek to use tapered fiber bundle to make the ICCD smaller and use folded optics to make the monochromator lighter/shorter. Their software also can more precisely synchronize the ICCD with the UV laser pulse to largely reduce the noise caused by fluorescent and environmental lights thus enhance the Raman signal to noise ratio several orders. Therefore, by using the compact and relatively inexpensive gated ICCD with folded optics for Raman spectrometer the team not only can produce an affordable standoff explosive detector to supply our troops in Iraq and Afghanistan to detect road side IED, car bomber and suicide bomber and EYZtek's sponsors Army and Navy will be the definite buyers, but also we can produce the portable/handheld Raman for airport screening, government check point, chemical analysis, drug detection, crop health monitoring, poisonous food analysis, and early cancer detection because the Raman detects the molecular vibration/rotation mode difference thus gives a unique fingerprint for the material even for the cancer cell. The commercial applications will be bigger than the military applications. Both RDA and EYZtek have rich experiences for manufacturing and sales, they are in the same building with over 50,000 square feet space for research and manufacture, more than \$10M annual sales have been achieved. After improving the current tested prototype the team can put the UV Raman spectrometer in production within one year. \$7M sales can be expected in 3 years and \$15M sales will be reached in 5 years. More than 30 high-pay jobs will be created in 5 years. This is a good project and it is ready to go commercialization.

OTFSP 10-772

LOCKHEED MARTIN



Date: October 4, 2009

To: Ohio Department of Development Technology and Innovation Division
OTFPVP2010@development.ohio.gov

From: Lockheed Martin MS2 Integrated Defense Technologies
1210 Massillon Road
Akron, OH 44315-0001

Subject: 2010 Ohio Third Frontier Sensors Program Letter of Intent

Lead Applicant: Lockheed Martin MS2 Integrated Defense Technologies

Contact Person: Daniel H Jones or Michael Cryder
daniel.h.jones@lmco.com; mike.cryder@lmco.com

Project Title: Lockheed Martin IDT Sensor Project

Grant Funds to be Requested: \$1,000,000

Potential Collaborators:
The Ohio State University
UDRI w/AFRL

Respectfully Submitted,
Daniel H Jones

Dr Daniel H Jones
Sr Materials & Process Engineer

Lockheed Martin IDT Sensor Project Summary

Background

History of Sensors @ LM: radar, electro-optical/infrared, laser

Need – anti-terrorism

Current activities

- ISIS (radar through laminate)

- Container inspection

- IED identification and neutralization

Issues

- Materials – sensors interactions

- Power supply

- Bandwidth and Overlap

Solutions/expertise

- “Legislate” materials

Facilities

- Other LM facilities (Syracuse, Palmdale)

- Akron

 - Integration of products

 - Testing of materials

- UDRI

- OSU - research

OTFSP 10-773



November 4, 2009

The Ohio Department of Development
Technology and Innovation Division
77 South High Street, 25th Floor
Columbus, OH 43215

Attn: 2010 OTFSP LOI

Dear Development Ohio:

This Letter of Intent (LOI) submits the following information in response to the solicitation for the Ohio Third Frontier Sensors Program.

The lead applicant will be:

*Advantage Development, Inc.
925 Bassett Road, Suite A
Westlake, OH 44145.*

The Office Phone Number is:

440-808-1250

The Office Fax is:

440-835-3415.

The principal point of contact is:

Michael R. Collins, President and Owner of Advantage Development, Inc.

Michael's email address is:

mcollins@advan-devel.com.

The Proposed Project Title is:

*Streaming Video Enhancement and Enhanced Video Compression in an
Integrated Mobile Wireless Sensor Suite with Advance Video Analytics*

Estimated Funds Request is:

\$750,000

Potential Known and Proposed Collaborators are:

Lorain County Community College

Wright State University

Autonomy, Inc. (Advanced Video Analytics and Surveillance)

XVD Corporation (Advanced Video Compression)

P. O. Box 45154, 925 Bassett Road, Suite A, Westlake, OH 44145

Phone: 440-808-1250 -- Fax: 440-835-3415 -- Cellular: 216-570-8775 -- email: mcollins@advan-devel.com

November 4, 2009

Page 2

Ipera Technologies, Inc. (Streaming Video Enhancement)

Propose Project Summary:

The emerging sensor environment, whether for surveillance, incident management, or remote monitoring, today relies upon existing wired infrastructure as well as present video imaging. Significant new demands are being made to provide video in more and more remote and 'ad hoc' locations. In a recent presentation in Washington, DC, the current CIO of the US Navy, Robert Carey said, "Two years ago video was not even considered but today it is a requirement."

The emerging environment for video is simultaneous with new technologies in image processing, compression, wireless transmission and routing, and video analytics. This project proposes to bring each of these technologies, already mature in their respective domains, and integrate these to provide a mobile capability that relies upon wireless bandwidth and network centric routing. Each of the identified emerging technologies is in early adopter and early majority market status with an already proven set of commercial products. In each case, the technologies have not even begun to develop their full early majority market growth and in each case the technologies lend themselves to further integration. The promise of an integrated suite is substantial across all markets from government to industry and commercial. In this regard, the demand for mobile video surveillance, monitoring and alarming is one of the single most exciting emerging markets.

Each technology is briefly summarized in the following bullets:

- *Streaming enhancement: Video images are degraded by the optics, electronics, digitization process, etc. The technology identified herein provides streaming processing and enhancement of color, light, contrast, noise, jitter, and twenty specific elements of the video image. It is presently operating in both the standard and high definition markets.*
- *Enhanced Compression: The state of technology in video compression is presently defined by the H.264 standard. Advanced compression, beyond H.264, has been launched as the result of multiple years of research. This compression has already been demonstrated over cellular links and has been reviewed by the Department of Defense's Multimedia Forensics personnel.*
- *Mobile Wireless Routing: Cisco Systems has developed a small form factor mobile access router that can be integrated with video enhancement and enhanced compression to enable the delivery of new sensor systems that provide critical voice, data, and video to be routed anywhere in the world over an Internet Protocol centric network. This capability provides the ability to route voice, data and video anywhere in the world.*
- *Video Analytics: Video, along with audio, text, data, and other forms of information, may now be computed to provide intelligent, decision quality information. This ability enables advanced monitoring, surveillance, warning and decision authority in a wide range of applications. The advanced video analytics provided by the selected partner is already being demonstrated in the United Kingdom over 4 million cameras, 200 thousand in the city of London alone. This analytic capability can now be provided using mobile video sensors in which the imagery is now routed over a wireless network. The video analytics can be provided at the local camera to enable linking and at a remote location to provide fused information and asset tracking.*

This project proposes to develop an integrated package that may be deployed anywhere in the world, subject to International Tariffs and Arms Regulations (ITAR) restrictions. Significant efforts will be placed on the integration of this into a cost effective, environmentally robust and performance focused solution. This effort will also seek to provide a robust laboratory environment for the development of metrics, concept differentiators, and application development. The technology will succeed through its integrations but its market growth will be dependent upon the quality of its solution and the personnel trained and ready to apply it and deploy it into its numerous potential applications.

November 4, 2009

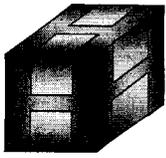
Page 3

The above is respectfully prepared and submitted.

Sincerely,

Michael R. Collins /MRC

Michael R. Collins
President



Lead Applicant

H-Cubed, Inc.
26988 Valeside Ln.
Olmsted Falls, OH 44138
440-241-1413

Collaborators

Cleveland Clinic, Cleveland, OH
SimuTech Group, Hudson, OH
Valtronic, Inc., Solon, OH

Contact Person

Ken Goldman
kgoldman@h-cubed.com

Title: Wireless Implantable Biomedical Sensor
Anticipated Grant Funding Request: \$850,000

Project Summary

Each year, there are over 10,000 newborns diagnosed with hydrocephalus in the U.S. Hydrocephalus, an excessive accumulation of cerebrospinal fluid (CSF) within the head, is a lifelong disease with no known cure. Fortunately, hydrocephalus can be managed with CSF shunts. Shunts redirect excessive CSF to another part of the body for absorption into the circulatory system. Unfortunately, 30-40% of shunts fail in the first year. Therefore, to reduce the risk of sustaining permanent brain injury, rapid diagnosis of shunt failure is critically important. Shunt malfunctions, commonly blockages, are diagnosed with brain imaging scans and percutaneous needle tapping. In addition to the high cost of brain scans, these diagnostic procedures are time consuming and invasive, thereby putting the patient at increased risk.

We have bench-top demonstrated a micro-miniature pressure sensor that can measure pressure wirelessly without the use of an onboard battery. We have also shown the sensor to be extremely stable over many months (low drift) and made with materials that are biocompatible. Our ultimate goal is to use our sensor technology to wirelessly monitor intracranial pressures *in vivo* for monitoring of intracranial pressure and thus shunt functionality. Rapid intracranial pressure monitoring could eliminate the need for brain scans and needle tapping, thereby reducing patient risks, saving valuable time, and controlling healthcare costs.

The purpose of the proposed OTFSP project is to transition our sensor technology into a commercially viable product such that at project completion we are in position to attract additional funding for human demonstration, clinical trials, and manufacturing facilitation. To accomplish this, the objectives of the proposed OTFSP are to: (1) Optimize the wireless pressure sensor, including packaging, and readout electronics for *in vivo* ambulatory use; (2) Establish a manufacturing framework for the product; (3) Achieve regulatory clearance for initial, general indications as well as reimbursement status.

OTFSP 10-775

October 26, 2009

Ohio Department of Development
Technology and Innovation Division, Attention: OTFSP
77 South High Street, 25th Floor
Columbus, OH 43215

To Whom It May Concern:

Please consider this a Letter of Intent to propose a project for the Ohio Third Frontier Sensors Program for FY 2010. Global Tracking Services, Inc will be pleased to propose the project 'Next Generation Monitoring System with Commercialized Position Sensor,' for monitoring of offenders for court districts in Ohio. Our initial estimate for cost of the project will be about \$600,000 for the Demonstration of the product and about \$300,000 of Capital for testing equipment that will reside at a University, we are considering Wright State. Please find a summary of the program attached.

Sincerely,

James Whiteman

Director of Engineering
JD@globalww.com

Global Tracking Services, Inc
1414 S. Green Rd. #106
Cleveland, OH 44121
216-297-9401

The number of people on probation or parole has skyrocketed to more than 5 million, up from 1.6 million just 25 years ago. This means that 1 in 45 adults in the United States are now under criminal justice supervision in the community. The Global Tracking Services, Inc (GTSI) started in Cleveland with the mission of promoting public safety using state-of-the-art positioning technology. GTSI provides an all-inclusive GPS tracking of criminals for all legal jurisdictions such as courts, sheriff's departments and federal agencies. GTSI's 'full service' reputation includes 24/7/365 monitoring, notice to parole office upon valid violation, notice to victim immediately if offender violates exclusion space, connection and deactivation of system on offender. With this service GTSI established itself as a leading supplier in the offender monitoring industry. GTSI initially leased the best equipment available to service the needs of the courts. However; the current equipment in the industry is not taking advantage of the latest technology. GTSI has spent over \$100,000, with plans to spend another \$1,000,000, to develop state-of-the-art devices and software thru internal development and strategic licensing. GTSI recognized an opportunity in the limited capabilities of competitors, specifically, the inability to monitor offenders in buildings. GTSI has acquired exclusive rights to some recently patented technology that provides the capability to extend monitoring of an offender inside buildings. GTSI proposes to finish the Demonstration phase of our development using the Third Frontier funding of \$600,000 of product development funds and \$300,000 of Wright Capital funds and \$1,000,000 of project match from GTSI. GTSI will use internal funds to start our Market Entry phase.

The goal of this project is to commercialize this exclusive technology in support of offender monitoring for Ohio Court jurisdictions that will:

- Build capabilities that contribute to accelerating the growth of the State's Instruments, Controls and Electronics cluster.
- Create opportunities for Ohio supply chain
- Develop an electronic offender monitoring service capability in Ohio.
- Create a significant technology base for economic development in Ohio.

The project responds to the industry demand for a new, higher performing, less expensive and reliable system to keep a watchful eye on criminals not being incarcerated. Currently, providers of this technology are unable to monitor offenders in buildings or in dense urban areas. The commercialization of GTSI technology will solve this problem and decrease the cost of providing the monitoring service. This capability will allow the expansion of offender monitoring to geographic areas that have a dense urban setting, e.g. New York City or Los Angeles. This technology is transferrable to all developed countries.

GTSI will initially transfer all offenders on their system when the system becomes operational. With reduced cost to operate and better performance, GTSI will be in a superior position to take more market share in Ohio. GTSI has been approached by agencies outside the state, specifically Texas, a sizable user of GPS systems. GTSI expect to secure significant market share with the value proposition: reduced costs of equipment and service, increased performance (in buildings and dense urban areas) and the continued 'full service,' capability. When successful, this project will have economic impact for Ohio with at least 20 new hires by the end of CY2010, another 25 new hires by the end of CY2011 and 75 more hires by the end of the 5 year reporting period. The capital portion of the project will provide a University with state-of-the-art equipment for testing RF/GPS/Cellular products to help in the education of students. Finally, the project will develop Ohio's electronics and plastics supply chain and strengthen Ohio's Instrument, Control and Electronic cluster.

Ohio Third Frontier Sensors Program

Letter of Intent

Lead Applicant	<u>Qbase, Inc.</u>
Address	<u>3610 Pentagon Blvd.</u>
Phone	<u>(937) 458-0345</u>
Contact Name	<u>Kyle Cantrell, Corporate Development</u>
Email	<u>kcantrell@qbase.us</u>
Proposed Project Title	<u>Qbase Persistent Surveillance Database for Situational Awareness and Security</u>
Estimated Grant Funds Requested	<u>\$950,000</u>
Collaborators	<u>University of Dayton and Persistent Surveillance Systems</u>



Ohio Third Frontier Sensors Program

OVERVIEW

The sensor technology available today offers tremendous capabilities for persistent sensing and monitoring. High resolution sensor systems can offer wide-area persistent surveillance options not previously available. However, these sensors generate massive amounts of data and create a unique set of data processing, storage and management challenges.

Qbase has existing capabilities in the areas of high-speed sensor data processing, massively scalable storage and temporally synchronized geospatial databases that offers new ways to integrate and fuse information from many different sensor platforms into a single sensor database. This integration allows for synchronized DVR playback of all data sources. In addition, live sensor feeds can be integrated with other data sets, including:

- GIS imagery and vector layers;
- building designs and floor plans;
- traffic, crime or other event data; and
- access controls and environmental controls.

The proposed project will create a commercial situational awareness application by integrating existing Qbase sensor data management technologies with the latest wide-area sensor technologies from Persistent Surveillance Systems (PSS). In addition, new visualization and end-user application features will be developed to provide an unprecedented situational awareness and forensic playback solution for a variety of security needs.

The resulting commercial product will provide:

- live ingestion and visualization of ground-based and airborne wide-area sensors offered by PSS;
- integration with indoor and outdoor surveillance cameras and traffic video cameras;
- support for many GIS layers: base maps, roads, buildings and other GIS layers;
- support for geo-registered video;
- advanced spatial and temporal search and retrieval features;
- geospatial visualization of sensor data with time controls for synchronized DVR playback;
- massive scalability to support many simultaneous sensors and a deep archive (up to 12 petabytes); and
- a robust commercial product with redundant components to provide high-availability for 24x7x365 operation.

Ohio Third Frontier Advanced Materials Program

Lead Applicant Contact Information

Authorizing Agent	Name	Paul L. Edmiston		
	Title	Chief Science Officer		
	Organization	Absorbent Materials Company		
	Address	770 Spruce Street		
	City, State, Zip	Wooster, Ohio 44691		
	Telephone	330-234-7999	Fax	330-263-2386
	E-Mail	p.edmiston@absmaterials.com		

Project Director	Name	Paul L. Edmiston		
	Title	Chief Science Officer		
	Organization	Absorbent Materials Company		
	Address	770 Spruce Street		
	City, State, Zip	Wooster, Ohio 44691		
	Telephone	330-234-7999	Fax	330-263-2386
	E-Mail	p.edmiston@absmaterials.com		

Fiscal Agent	Name	Stephen Spoonamore		
	Title	Chief Executive Officer		
	Organization	Absorbent Materials Company		
	Address	770 Spruce Street		
	City, State, Zip	Wooster, Ohio 44691		
	Telephone	330234-7999	Fax	
	E-Mail	s.spoonamore@absmaterials.com		

Grant Administrator	Name	Laura Underwood		
	Title	Project Manager		
	Organization	Absorbent Materials Company		
	Address	770 Spruce Street		
	City, State, Zip	Wooster, Ohio 44691		
	Telephone	330234-7999	Fax	
	E-Mail	l.underwood@absmaterials.com		

Authorizing Agent – the individual authorized by the Lead Applicant to accept the terms and conditions of an award of Grant Funds.

Project Director – the individual authorized by the Lead Applicant to direct the Project for which the Grant Funds have been awarded.

Fiscal Agent – the individual authorized by the Lead Applicant to sign Grant-related financial documents, *e.g.*, Requests for Payment, Grant financial reports, *etc.*

Grant Administrator – the individual authorized by the Lead Applicant to oversee the day-to-day administration of the Grant Funds, including preparing progress reports, monitoring project progress, *etc.*

Note: The same individual may hold more than one of these positions.

Ohio Third Frontier Advanced Materials Program Collaborator Information

Attach additional forms as needed.

Name _____
Title _____
Organization College of Wooster
Address 1189 Beall Ave

City, State, Zip Wooster, Ohio
Telephone _____ Fax _____
E-Mail _____

Name _____
Title _____
Organization _____
Address _____

City, State, Zip _____
Telephone _____ Fax _____
E-Mail _____

Name _____
Title _____
Organization _____
Address _____

City, State, Zip _____
Telephone _____ Fax _____
E-Mail _____

Name _____
Title _____
Organization _____
Address _____

City, State, Zip _____
Telephone _____ Fax _____
E-Mail _____



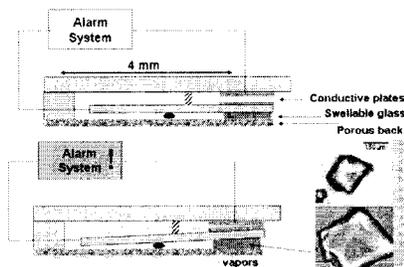
Low-Cost, Power Free Sensors for Environmental Monitoring And Industrial Safety Based on Animated Glass

Sensors to detect the presence of solvents and hazardous vapors are of critical need to chemical processing, mining, and environmental monitoring industries. A variety of chemical sensing technologies have continued to be developed and brought to market with only a small number being successfully implemented. Many sensors are impractical since they incorporate fragile design elements, require extensive calibration, and/or are based on expensive spectroscopic technology. The market continues to demand robust, reliable, and low-cost sensor systems.

Absorbent Materials Company (ABS Materials) produces a unique swellable glass material that is being developed primarily for use in chemical separation and water cleaning. However, the mechanical swelling of the glass can be a key functioning component of simple, but highly effective actuator-based sensors. Osorb glass expands up to 8 times its volume when in contact with solvent vapors or liquids. Osorb swelling is rapid and reversible generating enough force for the material to lift 20,000-times its own weight in the process of expanding. We envision using Osorb to create a suite of low-cost (<\$5/each) sensors that can be applied to the following situations:

1. Pipeline or process leak detection.
2. Underground tank leak detection.
3. Mining gas safety detection.
4. International/domestic cargo container safety/counter-terrorism monitoring
5. River/lake/municipal water quality management and environmental enforcement

Osorb-based sensors would not require power, not even batteries. If power was disrupted in a mine or industrial plant setting, an array of Osorb-triggered sensors could act as sentries to activate shut valves or create visual warning cues. For instance, ABS Materials has a patented process whereby the color of the transparent Osorb glass changes color if a specific liquid or gaseous chemical induces swelling. These sensors would be extremely attractive due to the low-cost, install and forget capabilities, and ability to operate under harsh conditions without power.



Two metal plates are spaced apart. When exposed to organic vapors, the swellable glass expands allowing the two plates to contact completing a circuit and indicating the presence of vapor. The glass shrinks when the absorbate evaporates. This design could be easily installed into the walls of various containers.

Photo: Micrograph of a glass particle dry (*top*) and exposed to acetonitrile vapor (*bottom*.)

ABS Materials is working on advanced composite materials to incorporate into variety of easily to produce sensor packages that can often be implemented into existing fire alarm/monitoring systems. Materials that change optical properties (color), conductivity, or mechanically actuate levers are currently completed bench-scale testing. These system incorporate advanced chemistry within the pores of Osorb. Next steps are to engineer and market the sensors. A challenge will be to initially introduce such systems to market since sensors with such novel and relevant characteristics have not be seen. An example is a sensor system that could be installed on an underground tank that would cost less than 1% of installation, but allow the owner to detect a leak immediately instead of dealing with a multi-million dollar clean-up operation if a leak persisted over time. This will enhance our economy and protect the environment.

Hansen, Andrew

From: Wendy Lawson Scott [scott@orbitalresearch.com]
Sent: Wednesday, November 04, 2009 12:30 PM
To: OTFAMP2010
Subject: 2010 OTFAMP LOI
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To Whom it May Concern:

Orbital Research is pleased to submit this second letter of intent to state Orbital's intent to produce and file a full proposal entitled, "Commercialization of a Harsh Environment Smart Sensor Interface" in response to the Ohio Third Frontier Sensors Program released on October 7, 2009.

1. Lead Applicant:
Orbital Research Inc.
4415 Euclid Avenue, Suite 500
Cleveland, Ohio 44103
216-649-0399 phone
216-649-0347 fax
2. Contact Person:
Joseph T. Snyder, Ph.D.
snyder@orbitalresearch.com
3. Project Title:
Commercialization of a Harsh Environment Smart Sensor Interface
4. Estimated Grant Funds:
\$420,000
5. Known Collaborators:
Linear Dimension Semiconductor, LLC

Cleveland State University
6. Proposed Project Summary:

Orbital Research proposes the commercialization of technology currently being developed under the Federal SBIR program and sponsored by the Navy, Air Force and NASA under several awards. The base technology has developed alpha and beta prototype Application Specific Integrated Circuits (ASICs) used in sensor intelligence and communion modules that offer commercial sensors the "smarts" that are sought for future sensor systems based on digital communications. These ASICs and modules are designed to function over broad environmental conditions and are especially designed to operate under severe thermal and vibration conditions. Military applications for these devices include turbine engine sensing

and health management, distributed engine control, and aerospace test and evaluation. Commercial applications include commercial aircraft, automotive, ground-based power generation, oil industry, and harsh industrial processing applications.

Based on the R&D completed to date, Orbital proposes to establish a commercial enterprise to manufacture and distribute ASICs and modules to OEMs of sensors and actuators for both military and civilian commercial markets. These commercialization activities are beyond the funding allowed by the SBIR program, but premature for other investment capital sources.

Thank you.

Wendy Lawson Scott
Orbital Research Inc.
4415 Euclid Avenue, Suite 500
Cleveland, Ohio 44103
216-649-0399