Department of Defense

Annual Report
on
Cooperative Agreements
and
Other Transactions
Entered into During FY2003
Under 10 USC 2371

INTRODUCTION

This report is provided in accordance with 10 U.S.C. 2371(h) which requires the Secretary of Defense to submit a report annually to the Senate Committee on Armed Services and the House of Representatives Committee on Armed Services on all those transactions entered into under 10 U.S.C. 2371(a) which are not categorized as contracts, cooperative agreements or grants (hereafter referred to as "other transactions") and all cooperative agreements entered into under 10 U.S.C. 2358 which include a section 2371 authorized clause requiring "Recovery of Funds".

The Secretary of Defense and the Secretary of each military department are authorized by section 2371 to enter into other transactions to carry out basic, applied, and advanced research projects. That same authority also permits certain transactions to include a clause requiring a person or other entity to make repayments of funds to the Department of Defense or any other department or agency of the Federal Government as a condition for receiving support under the agreement or other transaction. The authority of 10 U.S.C. 2371 was extended by Section 845 of Public Law 103-160, as amended, to permit the Director, Defense Advanced Research Projects Agency (DARPA), the Secretary of a military department, and any other official designated by the Secretary of Defense, to enter into other transactions to carry out prototype projects that are directly relevant to weapons or weapon systems proposed to be acquired or developed by the Department of Defense.

The amounts reported for non-government dollars for research and prototype projects include research and development investments made by for-profit firms. It is standard business practice for all for-profit firms to recover research and development investments through prices charged to their commercial and Government customers. Thus, firms that do business with the Federal Government may recover a portion of their investments through commercial prices of items sold to the Government or through allocations of Independent Research and Development costs to cost-type Government contracts.

This report addresses cooperative agreements that included a "recoupment clause" and two types of other transactions: other transactions for research and other transactions for prototypes. The total amount of funds recovered in FY 2003 due to the use of recoupment clauses was $12,988. Collectively, Army, Navy, Air Force, DARPA, the National Security Agency, the Missile Defense Agency and the National Imagery and Mapping Agency (NIMA) submitted 11 reportable research actions and 51 reportable other transactions for prototypes in FY 2003.

This report provides the specific information required by subsection 2371(h) (2):

(A) The Technology Areas in which research projects were conducted under such agreements or other transactions.

(B) The extent of the cost sharing among Federal and non-Federal sources.

(C) The extent to which the use of the cooperative agreements or other transactions-

(i) has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs; and

(ii) has fostered within the technology and industrial base new relationships and practices that support the national security of the United States.

The final page of the report provides a summary table for new prototype "other transaction" agreements. This table identifies: the number of new agreements, the breakdown among the three reasons authorized by statute for the use of prototype OT authority and information regarding the extent of participation of non-traditional contractors."

Agreement Number: F33615-03-3-2308

Type of Agreement: Other Transaction for Research

Title: Low-Cost High Performance Electric Brake System for Unmanned Aerial Vehicles

Awarding Office: Air Force Research Laboratory, Propulsion Directorate

Awardee: Electricore, Inc. Consortium

Effective Date: 22 Aug 2003

Estimated Completion or Expiration Date: 22 Oct 2005

U. S. Government Dollars: $ 1,538,272.00

Non-Government Dollars: $ 1,538,272.00

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objectives of this effort are to design, build, and dynamometer test, a reduced cost and high performance electro-mechanical braking system. This braking system will be designed and optimized for the demands of medium weight unmanned aerial vehicles (UAV's), with nominal weight classes of 20,000 pounds. The focus of this program will be on demonstrating lower system cost and advanced development of electric actuation, drive and power electronics, and brake control including anti-skid braking capabilities.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction agreement in the development of the low-cost high performance electric brake system is directly applicable to the needs of unmanned air vehicles providing an affordable electric brake system with advanced anti-skid brake control. This system is particularly well suited to USAF UCAV, which must remain fully operational after extended storage for periods of years. Existing hydraulic brake technology cannot meet this demand, while the typical aerospace design for electric braking and control is cost prohibitive compared to the analogous hydraulic brake system. This approach is to upgrade automotive-based actuation and control components and integrate them into and aerospace ready system to meet both the operational and cost-of-ownership goals for UAV's.

The fundamental system design applies equally well to manned aircraft and for the first time will provide a truly cost effective electric brake solution that can extend the benefits of higher reliability, lower maintenance, and enhanced safety to commercial and military aircraft. In particular, contemporary fighter aircraft such as the JSF and the F-22 would seem to be the most likely candidates. This development effort parallels electric brake development for military and commercial ground vehicles with similar benefits.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The use of an other transaction agreement has brought support to the Consortium's modular design philosophy allowing the actuation and control components to be cost–effectively extended to a broad range of unmanned air vehicles. In addition to the Consortium members, which consist of Electricore, Delphi and ABSC, The Boeing Company and General Atomics, have committed to being members of the airframer advisory team. They will guide the system configuration and requirements in a fashion to enable converting components for application to other UAV's.

Other benefits to the DOD through use of this agreement:
The use of an other transaction has resulted in additional benefits, not addressed above…
In the recent war on terror, the loss of a number of UAV's in sorties flown in Afghanistan has been attributed to lack of control during landings. The proposed system combines electric actuation and advanced anti-skid braking control for the military's unmanned air vehicles. The benefits of anti-skid braking include greatly enhanced vehicle stability and control at high ground speeds and/or under marginal runaway conditions, enhancing the safety of operation for not only the vehicle itself but for adjacent ground personnel and operating equipment. It additionally enables higher vehicle deceleration to shorten the ground-roll by 30% to 40% on dry hard surfaces, and up to 60% on wet or icy surfaces allowing operations from shorter fields. These benefits seem particularly significant for unmanned vehicles where control would be largely pre-programmed, and must be capable of rapidly adjusting to variable and sometimes unexpected take-off and landing conditions. Besides improved stopping performance and control benefits, anti-skid braking provides for substantially improved tire life and reduced costs.

Agreement Number: F29601-03-3-0052

Type of Agreement: Other Transaction for Research

Title: Development of High Power Fiber Laser Pumps

Awarding Office: Air Force Research Laboratory, Directed Energy Directorate

Awardee: Nuvonyx, Inc.

Effective Date: 30 Oct 2002

Estimated Completion or Expiration Date: 30 Nov 2005

U. S. Government Dollars: $ 2,444,010

Non-Government Dollars: $ 2,444,010

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objectives of this effort include:

a. Production-qualified, long life, high performance single mode emitter laser diode bars.
b. Mass-producible micro-channel cooler packaging
c. Reliable laser diode stacks
d. Low-cost, high brightness, high power fiber coupling packages.
e. Complete commercially viable systems

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The development of High Power Pumps for Fiber Lasers Dual Use Science and Technology (DUS&T) Program will create a commercially viable KW-class, Fiber-coupled diode laser pump source that, when sold commercially, will bring the cost per unit down below $100 per Watt. At this cost, these products will dominate the commercial markets, and at the same time, become available to the military as off the shelf products.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The US Military will benefit through direct cost savings, and availability of advanced pump sources in building its Directed Energy Weapon Systems. At present, no such technology exists at any cost. Consequently this DUS&T Program fulfills a direct critical need to the US Military Directed Energy Programs, as being conducted by the USAF through the Laser Integrated Technology (LITE) Program. The LITE Program is directly sponsored through the OSD Joint Technology Office programs for the development of Directed Energy Weapons Systems.

Other benefits to the DOD through use of this agreement:
Applicable laser integration technologies include, but are not limited to, high brightness and high efficiency diode laser sources, both coherent and incoherent beam combining techniques for power scaling architectures. Potential applications include high speed read/write sources, graphic printing sources, ultra-high data rate communications, in-situ and remote sensing, materials processing such as industrial cutting and welding, and military directed energy applications.

Agreement Number: F29601-03-3-0059

Type of Agreement: Other Transaction for Research

Title: Military/Civilian Mixed-Mode Global Positioning System (GPS) Receiver (MMGR)

Awarding Office: Air Force Research Laboratory, Space Vehicles Directorate

Awardee: Honeywell International, Inc.

Effective Date: 28 Mar 2003

Estimated Completion or Expiration Date: 29 Mar 2006

U. S. Government Dollars: $1,968,134.00

Non-Government Dollars: $ 1,968,134.00

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:

a. Demonstrate feasibility of applying Silicon-on-Insulator CMOS technology beyond existing commercial RF products, to create a working radio frequency analog RF front end for miniature GPS receivers. This will show a path to a single chip GPS receiver via combined RF analog, and ultra large scale integrated digital circuits.

b. Demonstrate feasibility of using a reconfigurable digital device to create a working GPS receiver. This will show a path to an adaptable MMGR that enables flexibility, and can be easily upgraded for both military and commercial GPS receivers and adheres to GPS Modernization/GPS III receiver specifications.

Extent to which the other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The development of Military/Civilian Mixed-Mode Global Positioning System (GPS) Receiver (MMGR) for the Dual Use Science and Technology (DUS&T) Program, will create a commercially reconfigurable circuitry with reduced cost and improved speed-power-weight capabilities. This is enabled through adaptation of commercial and radiation tolerant design and manufacturing abilities, that leverage synergies across proven legacy GPS receiver architectures.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The US Military will benefit through direct cost savings and availability of Military/Civilian Mixed-Mode Global Positioning System (GPS) Receiver (MMGR) technology to the warfighter. The technology will also provide the warfighter a more versatile design, which is lighter, lower power, and more affordable. At present, no such technology exists. Consequently this DUS&T Program fulfills a direct critical need to the US Military, as being conducted by the USAF through the Air Force Research Laboratory Space Vehicle Program.

Other benefits to the DOD through use of this agreement:
The research proposed will investigate and develop highly integrated and affordable Digital Beam Forming GPS technology with Anti-Jam and multipath-mitigation, and will provide for substantial Government involvement, more than the usual participation contemplated by a contract or grant.

Agreement Number: MDA972-03-3-0001

Type of Agreement: Other Transaction for Research

Title: Virtual Electromagnetic Testrange (VET) Capability Evaluation and Recommendation Phase

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Raytheon Company

Effective Date: 4 Nov 2002

Estimated Completion or Expiration Date: 3 Nov 2004

U. S. Government Dollars: $ 1,600,000

Non-Government Dollars: $ 1,198,823

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted:
This effort undertakes comparative evaluation of several computational electromagnetics algorithms, implemented as computer software codes, for the purpose of predicting the electromagnetic scattering characteristics of objects of interest in DoD applications. The codes under evaluation come from several cooperating sources, including Government, academic institutions, and airframe companies. The technology area is radar cross section prediction.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
This effort is not expected to directly broaden the technology and industrial base available for meeting DoD needs. It is, however, expected to promote a substantial increase in the effectiveness with which the existing technology base in computational electromagnetics can be applied in the radar cross-section design of DoD air vehicles. It is also expected to provide a clear picture of where the gaps and weaknesses are in the current technology base in this area.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
Two of the four major companies producing air vehicles for the DoD, Raytheon and Northrop Grumman, are performing under this effort. The team, led by Raytheon and including HRL Laboratories, is working to evaluate software codes important to all four major DoD airframers with the goal of developing guidelines that define which codes and underlying algorithms work best for different classes of air vehicle design problems. The results will be shared with other airframe companies and DoD-relevant users to promote a major advance in the baseline of best design practice for radar cross section prediction and design for air vehicles. The cooperation and teamwork involved in this effort helps support the national security of the USA.

Agreement Number: MDA972-03-3-0005

Type of Agreement: Other Transaction for Research

Title: T-197 Antitoxin, Cell Library and Know-how Information Program

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Millennium Pharmaceuticals, Inc.

Effective Date: 5 Jun 2003

Estimated Completion or Expiration Date: 4 Jun 2004

U. S. Government Dollars: $ 0

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objective of this no cost effort is to determine if the T-197 antitoxin is useful in treating anthrax-related illnesses. The technology area is biological warfare defense.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The performing organization, Millennium Pharmaceuticals, is a nontraditional defense supplier. The use of an other transaction provided DoD with access to this commercial firm on a military prototype project, thereby broadening the technology and industrial base.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
An other transaction allows private industry to participate in a government program where intellectual property rights and the need for government purpose rights can be addressed in a constructive manner. The end result is the availability of a broad technology that exists in the industry from which the government was able to build on and further accelerate the development of the technologies that are needed by DoD. In addition, the use of an other transaction agreement has fostered cooperation among industrial contributors to work together with the government to support the national security of the U.S.

Agreement Number: MDA972-03-3-0003

Type of Agreement: Other Transaction--Other

Title: Friction Stir Processing Research and Development Studies

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Commonwealth of Australia Represented by the Defence Science & Technology Organisation

Effective Date: 24 Mar 2003

Estimated Completion or Expiration Date: 23 Jun 2004

U. S. Government Dollars: $ 148,850

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objective of this effort is to develop data on the influence of friction stir processing (FSP) on "Sonoston" material properties. Sonoston is an alloy with high damping capacity used especially for marine propellors. It will undertake studies into FSP's potential to "heal" near-surface porosity and refine microstructures such that corrosion resistance might be increased in as-cast Sonoston. In addition, these studies may lead to a better understanding of the FSP process and its effect on materials properties generally.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction enables DSTO to jointly participate with the U. S. Government in critical technology development for improvements in Sonoston material properties. As an Australian Government organization, DSTO would not comply with regulations imposed by the Federal Acquisition Regulation and would not accept a procurement contract. This joint effort was made possible through the use of an other transaction.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This program brings together two Governments to jointly improve Sonoston material properties. This program aims to leverage DSTO expertise in materials for marine environments and the dependence of their properties on microstructure and DARPA's interest in developing friction stir processing (FSP) as a method for local microstructure modification to provide improved properties for a variety of DoD applications, such as marine propellers. If it is demonstrated by the findings of the current effort that the FSP-modified Sonoston materials exhibit significant improvement in corrosion, stress corrosion, and pitting behavior, DARPA and DSTO will consider expansion of the program to include processing of larger articles (e.g., subscale or prototype propellers) and evaluation under operational environments to encompass cavitation effects.

Other benefits to the DoD through use of this agreement:
The use of an other transaction--other agreement under the authority of 10 U.S.C. § 2371 allows DSTO to use existing Australian accounting practices and avoids the cost of setting up U.S. Government accounting systems.

Agreement Number: MDA972-03-3-0004

Type of Agreement: Other Transaction for Research

Title: Development of Chip-to-Chip Optical Interconnects

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Terabus Consortium, c/o Agilent Technologies, Inc.

Effective Date: 30 Jul 2003

Estimated Completion or Expiration Date: 31 Dec 2004

U. S. Government Dollars: $ 7,249,884

Non-Government Dollars: $ 4,424,352

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objective of this effort is to develop and demonstrate optical interconnect technologies that overcome the current chip-to-chip electrical interconnect deficiencies experienced by the current state of practice. This project is intended to demonstrate that optical interconnects between multiple silicon chips will enable communications between chips that is as seamless as data communication within the chip itself. Optical interconnect technology is critical given that modern business and warfare technologies demand vast flows of data which will eventually outpace the physical ability of electrical circuits.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of an other transaction facilitates the Consortium Member's (Agilent and IBM) commercial business/research units participating in critical technology development for advances in Chip-to-Chip Optical Interconnects. Agilent, as a commercial company, utilizes internal accounting systems that are not compliant with regulations imposed by the Federal Acquisition Regulation. Therefore, a procurement contract was not feasible. The success of this optical interconnect research project is dependent on the knowledge and expertise contributed by Agilent in the area Verticle Cavity Surfacing Emitting Lasers (VCELS). If not for an other transaction, Agilent would not have been able to participate with IBM under this effort.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
This program brings together two members of industry that traditionally compete with each other to, instead, engage in innovative, but high-risk research and development with a common goal; that of developing a single optical interconnect technology that will drive commercial industry standards. The commercial applications to be developed will benefit the commercial endeavors of the Consortium Members, the electronics industry in general and, ultimately, the United States. If successfully developed in a way that can be manufactured in a cost-effective manner, the commercial market for Terabus developed chip-to-chip optical interconnect technology is considerable.

The overall impact of this advanced interconnect will allow computers with large numbers of tightly connected processors to expand in flexible interconnect configurations according to customer needs. Additionally, infusion of this technology into the commercial market will allow the United States Government to have ready access to teraflop(s) computers in a small, rugged form factor that can be inserted into a variety of military equipment/systems. Early user involvement in the program, Agilent's and IBM's ability to drive commercial industry standards, and the co-participation with other ongoing DARPA

programs, such as the High Productivity Computing Systems (HPCS), will insure that the technology will make an impact in military and commercial applications.

Certain rights pertaining to obligation and payment (accounting systems), disputes (alternate disputes resolution), foreign access to technology, and intellectual property rights (Bayh-Dole) were important to the Consortium Members. These required additional negotiation and flexibility in the provisions ultimately agreed upon between the parties. This flexibility and tailoring was possible only with the use of an other transaction.

Agreement Number: MDA972-03-3-0002

Type of Agreement: Other Transaction for Research

Title: Low Cost Method for the Extraction of Titanium

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Titanium Metals Corporation

Effective Date: 14 Mar 2003

Estimated Completion or Expiration Date: 13 Mar 2007

U. S. Government Dollars: $ 12,237,000

Non-Government Dollars: $ 708,000

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objective of this effort is to develop a low cost method for the extraction of titanium from a laboratory scale to an industrial-production scale. The technology area is advanced materials.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The performing organization, Titanium Metals Corporation, is a nontraditional defense supplier. The use of an other transaction provided DoD with access to this commercial firm, thereby broadening the technology and industrial base.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The use of an other transaction allowed this commercial firm to use its existing commercial accounting practices, alleviating the requirement and avoiding the cost of setting up a government-approved system. Further, the use of an other transaction provided freedom from the standard intellectual property regime, and mandatory flow-down clauses that are obstacles to commercial participation and practice.

Agreement Number: N00014-00-3-0020

Type of Agreement: Other Transaction for Research

Title: High Power Density Integrated Motor-Propulsors and Electric Machines

Awarding Office: Department of the Navy, Office of Naval Research

Awardee: Electric Boat Corporation

Effective Date: 06 November 2000

Estimated Completion Date: 05 November 2003

U. S. Government Dollars: $1,088,378.99

Non-Government Dollars: $1,839,799.00

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted:

The technical objective of this project is to develop integrated motor/propulsor and associated power conversion technology for use in a wide variety of military and commercial marine propulsion applications. Specifically, a Low Acoustic Signature Motor/Propulsor for Electrically (LAMPrEy) Powered undersea vehicles will be developed. The intent is to transition the integrated motor propulsor technology to commercial applications, including Small Waterplane Area Twin Hull ferries, and hybrid electric land vehicles, i.e. cars, trucks and buses.

On 24 April 2003, Other Transaction Agreement Number N00014-00-3-0020 was modified to add the following two additional tasks to the Statement of Work:

1) conduct circumferential vibration measurements on the propulsion motor and propulsor (~channels of
coherent accelerometer data), and
2) conduct Laser Doppler Velocimertry (LDV) survey upstream of the propulsor rotor.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:

The combat effectiveness of the Navy undersea vehicles and torpedoes relies on their ability to be unseen to active and passive sonar. This project will explore the integrated motor propulsor technology that offers the potential of reducing radiated noise and operating costs.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:

An other transaction agreement was used to provide more flexible patent rights in inventions than are normally required under the Bayh-Dole Act.

Agreement Number: N00421-03-3-0124

Type of Agreement: Other Transaction for Research

Title: Enhancement of Aerospace Systems for Availability and Upgradeability

Awarding Office: Department of the Navy, Naval Air Warfare Center Aircraft Division

Awardee: Texas Engineering Experiment Station, Texas A&M University System

Effective Date: 20 Jun 2003

Estimated Completion or Expiration Date: 30 Nov 2003

U. S. Government Dollars: $300,000

Non-Government Dollars: $436,600

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: The goal of this program is to dramatically reduce aerospace vehicle systems life-cycle costs by accelerating development of new systems with architectures, tools, and processes that allow easy technology upgrade and insertion. The program will also investigate aging aircraft system issues and abatements. This program will create a financial and technical "critical mass" with industry members by experts to foster creation and development of aging aircraft key issues, costs and abatement strategies; modular and open architectures and approaches; design and support tools and processes; recommended approaches and standards, and validation and verification tools and techniques.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The aerospace industry has been and continues to be faced with unprecedented technical challenges. The challenges include safety (advanced/more sophisticated design); operations/training; standardization (common/interoperable systems, flight decks, type ratings, etc.); efficiency for many older airlines; acquisition (development and manufacturing); maintenance issues (goal is maintenance-free); spares issues (reduced) obsolescence and contamination of electronic assemblies, and cost/competitiveness.

These challenges have forced all members of this industry from private sector to Government agencies to work together to develop and implement industry-wide solutions. Cost reduction in design, development, manufacturing and operations, rapid introduction to the market, increased safety and reliability of the end product all require industry-centric solutions. In addition, the influence that other high-tech industries, such as the Integrated Circuit (IC) and consumer electronics industries, have on the aerospace industry are so drastic that the traditional solutions and individual R&D programs are ineffective.

The Aerospace Vehicle Systems Institute (AVSI) is a cooperative venture of aerospace companies for the aerospace industry formed in 1998 and is a research center of the Texas Engineering Experiment Station (TEES). TEES is a component of Texas A&M University.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: TEES is an educational institution that has previously worked with DoD. However, use of an OT allows the Government to capitalize on commercial technology development having potential for military application. This is enhanced by the use of commercial-like agreements with more flexible terms than is possible with a FAR based contract. For example, this agreement contains alternate patent rights provisions and flexible termination provisions.

Agreement Number: N00421-03-3-0124 P00001

Type of Agreement: Other Transaction for Research

Title: Enhancement of Aerospace Systems for Availability and Upgradeability

Awarding Office: Department of the Navy, Naval Air Warfare Center Aircraft Division

Awardee: Texas Engineering Experiment Station, Texas A&M University System

Effective Date: 26 Sep 2003

Estimated Completion or Expiration Date: 30 Nov 2003

U. S. Government Dollars: $93,500

Non-Government Dollars: $162,554

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: This modification allowed additional efforts to be applied to this program to dramatically reduce aerospace vehicle systems life-cycle costs by accelerating development of new systems with architectures, tools, and processes that allow easy technology upgrade and insertion. The program will also investigate aging aircraft system issues and abatements. This program will create a financial and technical "critical mass" with industry members by experts to foster creation and development of: aging aircraft key issues, costs and abatement strategies; modular and open architectures and approaches; design and support tools, and processes; recommended approaches and standards, and validation and verification tools and techniques.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The aerospace industry has been and continues to be faced with unprecedented technical challenges. The challenges include safety (advanced/more sophisticated design); operations/training; standardization (common/interoperable systems, flight decks, type ratings, etc.); efficiency for many older airlines; acquisition (development and manufacturing); maintenance issues (goal is maintenance-free); spares issues (reduced) obsolescence and contamination of electronic assemblies, and cost/competitiveness.

These challenges have forced all members of this industry from private sector to Government agencies to work together to develop and implement industry-wide solutions. Cost reduction in design, development, manufacturing and operations, rapid introduction to the market, increased safety and reliability of the end product all require industry-centric solutions. In addition, the influence that other high-tech industries, such as the Integrated Circuit (IC) and consumer electronics industries, have on the aerospace industry are so drastic that the traditional solutions and individual R&D programs are ineffective.

The Aerospace Vehicle Systems Institute (AVSI) is a cooperative venture of aerospace companies for the aerospace industry formed in 1998 and is a research center of the Texas Engineering Experiment Station (TEES). TEES is a component of Texas A&M University.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: TEES is an educational institution that has previously worked with DoD. However, use of an OT allows the Government to capitalize on commercial technology development having potential for military application. This is enhanced by the use of commercial-like agreements with more flexible terms than is possible with a FAR based contract. For example, this agreement contains alternate patent rights provisions and flexible termination provisions.

Agreement Number: DABK39-03-H-0001

Type of Agreement: Cooperative Agreement

Title: Microelectronics Testing and Technology Obsolescence Program

Awarding Office: Army Contracting Agency (ACA), Directorate of Contracting, SFCA-SR-WS BLDG 143, WHITE SANDS MISSILIE RANGE NM 88002-5201

Awardee: Western New Mexico State University

Effective Date: 01 Aug 2003

Estimated Completion or Expiration Date: 31 Jul 2006

U. S. Government Dollars: $5,400,000.00

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted:
The technical objectives of this effort are 1) test, procure, and store radiation tolerant and non-radiation tolerant electronics and 2) develop engineering solutions for microelectronics components that are no longer developed.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs:
The use of this cooperative agreement will provide sourcing and testing for microcircuits and electronics devices that are not readily available in the industrial sector to meet the specialized requirements of the DoD. It also provides for the contributing solutions to support challenges that have no other viable solution.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA:
The use of this cooperative agreement provides a bridge between the radiation hardened community and the novel support solutions developed by the Defense Logistics Agency for non-radiation hardened microcircuits.

Agreement Number: NMA401-02-9-2001/0014

Type of Agreement: Other Transaction for Prototype
Title: Precision Geopositioning From Airborne Tactical Imagery

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 17 October 2002

Estimated Completion or Expiration Date: 16 October 2003

U. S. Government Dollars: $200,206

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: As the DoD and Intelligence Community (IC) increasingly rely on the use of Unmanned Aerial Vehicles (UAV) for tactical intelligence and targeting, there is a need to improve the geopositional accuracy of targets acquired from sensors on these vehicles. Currently, the geopositional accuracy of targets acquired from electro-optical (EO) sensors is better than targets acquired from synthetic aperture radar (SAR) sensors, but both need improvement. Research suggests that significant improvement of target geopositional accuracy results when targeting is performed using a tightly integrated EO image-based target locator and an inertial navigation system (INS)/ Global Positioning System (GPS) navigator. The objectives of this effort are: (1) to create, through simulation, just such a device and determine the significance it has in improving geolocation; (2) to develop an error model for the target location determination problem from tactical SAR imagery; and (3) to perform prototype feasibility analyses to support current and future DoD/IC requirements. This project is in the Geospatial Intelligence technology area.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. In addition to providing program management for this effort Rosettex, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. The use of an OTA will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative processing capability.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would under a customary Government contract. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Other benefits to the DoD through use of this agreement: This OTA will foster research and development practices that are more like those in commercial organizations resulting in the more rapid development of a new technology for use by DoD and the intelligence community.

Agreement Number: NMA401-02-9-2001/0013

Type of Agreement: Other Transaction for Prototype

Title: Computer Aided Diagnostic (CAD) Tools for Early Detection and Management of Eye Diseases

Awarding Office: National Imagery and Mapping Agency, ATTN, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 17 OCT 02

Estimated Completion or Expiration Date: 17 JUL 03

U.S. Government Dollars: $437,499.00

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objective of this effort including the technology area in which the project was conducted: Accurate, fast, automated processing of retinal images for enhanced visualization, detection, and treatment of eye diseases are fundamental capabilities which are needed in the area of ophthalmology. Millions of US citizens with eye disease (e.g. 14M diabetics, 4M AMD, etc.) are not receiving quality eye-care. Amongst the factors for this inadequacy of care are the inability of bringing the service to the point of need and the tools that are at the disposal of physicians. This project broadens the technological bases, developed under previous NTA projects, to explore and develop new functional tools for early detection and management of eye diseases. The technology areas are Imagery, GIS and Cartography (IGC) and Digital Processing, Analysis and Management (PAM).

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has broadened the technology base in the following four ways: (1) Development of a software tool for cross-modalities registration of 2D retinal imagery and the exploration of the integration of Optical Coherence Tomography (OCT) toward the recovery 3D retinal maps; (2) Conduct of a pilot study to (a) study the current application of pattern recognition capability in detection and classification and (b) investigate the ability to detect lesions by applying Hierarchical Pyramid Neural Networks (HPNN); (3) Enhancement of Slitlamp mosaicing capabilities to acquire very high-resolution digital video and integrating the information extending super resolution and super fusion; and, (4) Development of a prototype tool to generate hi-resolution images from a set of low-resolution images. The tool will ingest a set (sequence) of images and provide both the options to apply super-resolution or super-fusion to generate of the result. The goal of this project is to transfer core elements of the technology developed for medical application directly to a tool that could be applicable to the DOD and intelligence community.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OTA places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than they would otherwise. The use of an OTA has resulted in new relationships between Rosettex and other non-traditional defense contractors such as Wills Eye Research Institute (*WERI*), University of Texas Medical Branch (*UTMB*), and Lambertville Associates (*LA*). WERI, UTMB, and LA are leading institutions involved in clinical eye disease research and support the effort in several important ways including (a) supporting the refinement of protocols for digital data acquisition and presentation; (b) providing data sets from archival data containing fundus images, angiographic sequences, and optical coherence tomography (OCT) data and support fundus image(s) indicating the locus of OCT slices; (c) providing guidance and feedback on the functionality, look and feel of tools in order to make them useful for visualization and evaluation of ophthalmic pathologies and applications; and (d) evaluating and reviewing the incremental functionality and final results. Through briefings, technical meetings, and demonstrations, the NTA and the Medical Community will gain valuable insight into the advantages of using automated processing of retinal images for enhanced visualization, detection, and treatment of eye diseases. The Intelligence Community will gain valuable insight into the performance and use of a new tool to generate hi-resolution images from a set of low-resolution images. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Other benefits to the DoD through use of this agreement: The OT Instrument has allowed the Government to procure these products/services in a much more timely manner than traditional DoD procurement methods would allow.

Agreement Number: NMA401-02-9-2001/0015

Type of Agreement: Other Transaction for Prototype

Title: Hyperspectral/Panchromatic Data Fusion for Improved Imagery Exploitation

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 31 October 2002

Estimated Completion or Expiration Date: 30 April 2004

U. S. Government Dollars: $1,659,786.00

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: The technical objective is to reduce data acquisition costs while improving geospatial database content and completeness by integrating current automated and semi-automated cartographic feature extraction systems with multi-/hyperspectral imagery and elevation data to improve the overall performance of the feature extraction systems while adding important surface material attribution to the extracted features. This capability will be incorporated into a commercial software platform for testing and evaluation by NIMA. This project supports the Geospatial Intelligence Technology area.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction has resulted in the participation of Rosettex Technology and Ventures Group with other non-traditional contractors such as ERDAS Defense Programs and Carnegie Mellon University. Rosettex provides innovative solutions to government intelligence communities and research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. The use of an OT for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative processing capability.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OT fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OT places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Agreement Number: NMA401-02-9-2001/0016

Type of Agreement: Other Transaction for Prototype

Title: Enhanced Biometrics for Differential Advantage: Phase II

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 26 February 2003

Estimated Completion or Expiration Date: 25 February 2004

U. S. Government Dollars: $249,997.00

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: The goal of the enhanced biometrics program is to determine what types of improvements in COTS biometrics appear feasible from an analytic viewpoint and to conduct a prototype demonstration system that assesses the feasibility of the most promising technologies in this regard. This phase of the program expands upon a previous project that was conducted to develop means for assessing fitness for duty in the context of a biometric identification system Specifically, the project will assess the physical measurement capabilities of the Phase I demonstration system; assess the limitation of the physical measurement capabilities of a hypothetical "best possible" system; and assess the ability to determine subject fitness for duty from the physical measurements of the demonstration system.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) for this project will help develop commercial technology to the point where it can be readily adapted for incorporation into DoD systems. The opportunity is to make improvements in COTS biometrics that will provide a differential advantage to Government agencies charged with protecting sensitive government assets. Under this prototype project, differential advantages that complement previous iris recognition work will be applied to protecting assets displayed on workstations. Furthermore, it is expected that the methods developed in this project will have application to other biometric modalities and could be useful in a "stand alone" mode of operation.

In addition, the use of an OTA resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group and COTS technology from a nontraditional defense contractor, Iridian Corp, adapted to this application by Sarnoff Corporation. In addition to providing program management for this effort, Rosettex with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transaction of technology into the commercial market place.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. In the context of this particular effort, cooperative development of commercial technology for adaptation to DoD needs helps establish a powerful set of practices and specific relationships that further national security.

Agreement Number: NMA401-02-9-2001/Task Order No. 0020

Type of Agreement: Other Transaction for Prototype

Title: Conflation for Feature Level Data Base (FLDB) Project

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 29 Apr 2003

Estimated Completion or Expiration Date: 18 Jul 2004

U. S. Government Dollars: $2,095,659.00

Non-Government Dollars: $0
Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: NIMA's near-term Geospatial Intelligence (GI) conflation needs include the immediate operational requirement for conflation of vector data to produce integrated databases and datasets that are then used in analysis and production of geospatial intelligence. Software tools can be developed and deployed to help automate the conflation process, and thereby increase efficiency and improve productivity. Under this conflation project, these tools will be enhanced, extended, and matured to help automate the conflation process in support of NIMA's near-term needs.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. The use of an OTA for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative processing capability.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OTA places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Agreement Number: NMA401-02-9-2002/0004

Type of Agreement: Other Transaction for Prototype
Title: Development of a Prototype Physical Geolocation System

Awarding Office: National Imagery and Mapping Agency, National Technology Alliance (NTA)

Awardee: 3M on behalf of the Chemical, Bio and Rad Tech Alliance

Effective Date: 06 May 2003

Estimated Completion or Expiration Date: 21 September 2003

U.S. Government Dollars: $249,751.00

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objective of this effort including the technology area in which the project was conducted: The objective of the Physical Geolocation System (PGS) prototype is to develop a system that will allow the US Government to determine the recent travel history of objects to verify the information contained in their associated travel documents. This initial phase of the project will be to evaluate the data in the databases that provide the identity and geographic distribution of the pollens, spores, and soil minerals that will be used by the PGS, determine the geographic resolution capabilities of the combined datasets, and identify, analyze, and document any gaps that are present in the database information.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an other transaction agreement will bring together the capabilities of companies that would not normally collaborate. Cargill, Inc. is the non-traditional defense contractor participating on the initial phase. Later phases of this work are expected to include Cargill, Inc. and other non-traditional defense contractors such as Honeywell and 3M.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The use of an other transaction agreement has placed trusted and knowledgeable individuals from divergent as well as competing companies into an environment designed for collaboration and cooperation. Access to the technologies and knowledge base present in the corporate laboratories and offices can only be accomplished through the OTA. The technologies hidden in the laboratories of companies that normally do not do business with the government are extensive and directly applicable to defense against weapons of mass destruction including the development of the PGS. As these technologies are shared for their mutual freedom and individual business growth, the companies benefit by expanding the industrial base of new products available for purchase.

Agreement Number: NMA401-02-9-2002/0006

Type of Agreement: Other Transaction for Prototype

Title: Element Detection Sensor Assessment Prototype

Awarding Office: National Imagery and Mapping Agency, National Technology Alliance (NTA)

Awardee: 3M on behalf of the Chemical, Bio and Rad Tech Alliance

Effective Date: 21 May 2003

Estimated Completion or Expiration Date: 06 September 2003

U.S. Government Dollars: $35,449.00

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objective of this effort including the technology area in which the project was conducted: This prototype project will evaluate an element detection sensor device with the potential to uniquely detect a variety of elements at useful standoff ranges. The detection of weapons materials, including mines, unexploded ordnance, weapons caches and materials used in weapons of mass destruction are critical elements of modern military operations. The technology under consideration in this project has the potential to provide a highly effective, man-mobile detection and localization capability for military field use. If initial results are correct and the device can be used tactically, it may have significant value in a variety of areas including detection of weapons and explosives, arms control monitoring and illegal drug interdiction. This first phase of the project will determine the validity of the preliminary results determine the underlying physical principles of the detections in order to optimize the performance of devices built to exploit the detections, and produce fieldable prototype units that can be used in operational situations.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an other transaction has resulted in the participation of a nontraditional defense contractor, 3M. Depending on the outcome of the first phase, additional non-traditional partners are expected to participate. The use of an other transaction agreement will bring together capabilities of companies that would not otherwise collaborate.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The use of an other transaction agreement has placed trusted and knowledgeable individuals from divergent as well as competing companies into an environment designed for collaboration and cooperation. Access to the technologies and knowledge base present in these corporate laboratories can only be accomplished through the OTA. The technologies hidden in the laboratories of companies that normally do not do business with the government are extensive and directly applicable to defense against weapons of mass destruction including the development of sensors used for element detection.

Agreement Number: NMA401-02-9-2002/0007

Type of Agreement: Other Transaction for Prototype

Title: Development of a Prototype for the Reverse Engineering of Urban Underground Facilities

Awarding Office: National Imagery and Mapping Agency, National Technology Alliance (NTA)

Awardee: 3M on behalf of the Chemical, Bio and Rad Tech Alliance

Effective Date: 28 May 2003

Estimated Completion or Expiration Date: 06 November 2003

U.S. Government Dollars: $459,123.00

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objective of this effort including the technology area in which the project was conducted: The technical objectives of this effort are to evaluate the ability to apply engineering and construction related design principles to the detection of underground facilities in urban settings. This requires a careful examination of real-world data that can be determined for areas of interest and engineering and planning logic to be applied to interpret these data. This prototype project falls under the technology area of Chemical, Biological and Radiological Technology Defense.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: Skills necessary to accomplish this effort are not typically part of the DoD intelligence community labor pool and have not been collectively mined with a focus on urban underground facilities. The use of an other transaction agreement will bring together disparate engineering, planning, and construction skill sets with the intelligence community to tackle the enduring hard challenge of urban underground facilities.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The use of an other transaction agreement has placed trusted and knowledgeable individuals from divergent as well as competing companies into an environment designed for collaboration and cooperation. Access to the technologies and knowledge base present in the international engineering and construction industry can only be accomplished through the OTA. The expertise, data, and insights hidden in the work history and relationships of companies that normally do not do business with the government are extensive and directly applicable to defense against weapons of mass destruction and the underground facilities that are built to house them.

Other benefits to the DoD through Use of this agreement: The OT Instrument has allowed the Government to procure these products/services in a much more timely manner than traditional DoD procurement methods would allow.

Agreement Number: NMA401-02-9-2001/0019

Type of Agreement: Other Transaction for Prototype
Title: Deployable Joint Command and Control (DJC2) Prototype Project

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 08 April 2003

Estimated Completion or Expiration Date: 07 April 2004

U. S. Government Dollars: $2,401,039

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: Deployable Joint Command and Control (DJC2) is an enabling capability, in support of the planned US military role presented within the template of Joint Vision 2020, and is in direct support of the Joint Command and Control requirements described in the Transformation Study Report presented to the Secretary of Defense. The DJC2 program is an acquisition program to field modular, expandable, deployable Joint C2 Headquarters for use by geographic CINCs/Combatant Commanders and Joint Task Force (JTF) Commanders. This effort will support the acquisition effort and will focus primarily on the information technology aspects of the DJC2 program, including the baseline technologies and structure; independent assessment of technologies, technology development programs, and similar efforts; evaluations of the applicability of commercial technology; and prototypes of recommended configurations.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. In addition to Rosettex, there are six (6) other non-traditional defense contractors supplying technical expertise and system engineering, and integration support for the effort: (1) ATINAV; Somerset, NJ, (2) ISPA; Arlington, VA, (3) Kentia Management Group, Inc.; Round Hill, VA, (4) LinkTank, LLC; Lawrenceville, NJ, (5) Open Source Software Institute, Oxnard, MS, and (6) Semandex Corporation; Princeton, NJ. The use of an OTA for this project will broaden the DoD technology and industrial base by encouraging the development of unique and innovative processing and command and control capabilities.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OTA places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Agreement Number: NMA401-02-9-2001/0021

Type of Agreement: Other Transaction for Prototype
Title: Synthetic Aperture Data Extraction Technology Technical Assessment

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 10 June 2003

Estimated Completion or Expiration Date: 09 December 2003

U. S. Government Dollars: $61,405.00

Non-Government Dollars: $0
Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: Synthetic Aperture Radar (SAR) is becoming an increasingly useful source for geospatial intelligence. Military airborne SAR capabilities and commercial SAR sources, such as RADARSAT, have been demonstrated to provide a day-night, all-weather alternative for collection of geospatial information. Planned higher resolution commercial SAR capabilities will increase SAR utility. The objective of this effort is to provide a technical assessment of the state-of-the-art in Automated Data Extraction (ADE) technology as it pertains to SAR and to identify fruitful approaches for potential R&D in this subject area. This project is in the Geospatial Intelligence technology area.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was recently formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. The use of an OTA for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative processing capability.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OTA places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Agreement Number: NMA401-02-9-2001/0025

Type of Agreement: Other Transaction for Prototype
Title: Software Defined Radio (SDR) Joint Tactical Radio System (JTRS) Cluster 3 & 4 Core Project

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 21 May 2003

Estimated Completion or Expiration Date: 20 November 2003

U. S. Government Dollars: $399,412

Non-Government Dollars: $0
Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: A number of opportunities were previously identified for development of a common core within Joint Tactical Radio System (JTRS) Clusters 3 and 4. Several of these opportunities require initial evaluation steps to consider technical feasibility and benefit. This project is focused on evaluating feasibility and benefit in core development areas that are expected to have significant payoff. For the National Technology Alliance (NTA), this effort provides direct insight and interaction with the primary evolving tactical radio program for DoD, invaluable in support of other NTA programs involving information dissemination to tactical users. NTA will have direct discussions with NIMA internal organizations such as the NIMA Support Team and NIMA Counter-Terrorism Team, providing updates to those organizations concerning the development status, value and capabilities of JTRS in meeting their mission needs.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. In addition to Rosettex participation, by specifically identifying opportunities for commercial technology within the JTRS core, and incorporating those into the cluster 3 &4 baseline, the use of the cooperative agreement will allow new commercial technology providers to supply components for the JTRS system.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OTA places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Agreement Number: NMA401-02-9-2001/0005

Type of Agreement: Other Transaction for Prototype
Title: Information Services on a Semantic Network Prototype

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 02 June 20

Estimated Completion or Expiration Date: 03 September 19

U. S. Government Dollars: $1,206,811

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: The objective the effort is to demonstrate how XML-based content routing systems enhance Command and Control by delivering better information (timelier, accurate, and complete) across echelons. Data will be taken from authoritative Service or Defense Agencies and fused with "in-theater" sources to translate those data or asset visibility into actionable information. The information will be utilized in collaborative planning, course of action analysis and development, and the preparation of logistics estimates and deployment data.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: A nontraditional defense contractor, Semandex Networks, will conduct the technical efforts under this prototype project. Founded in 2000, Semandex is a software infrastructure company building the next generation of content routers for business networks. The Semandex platform products handle human-to-human or machine-to-machine interaction, dynamically matching originator with end-user without the need for elaborate, costly, and static distribution architectures. Semandex boasts an experienced technical staff and a highly qualified management team to position its solutions for marketplace success. The prototype project will result in improved technology available to DoD for translating and delivering intelligence data across echelons that support national security.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The cooperative nature of the Other Transaction as compared to a customary FAR contract will contribute to achieving commercialization of this technology, which will in turn provide for more economical support of the Government's increasing needs for imagery information within the DoD and intelligence community.

Agreement Number: NMA401-02-9-2001/0023

Type of Agreement: Other Transaction for Prototype
Title: Sentient Environments: Immersive Monitoring, Continuous Activity Tracking, Event Recognition, and Alert Signaling

Awarding Office: National Imagery and Mapping Agency, IB, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 21 May 2003

Estimated Completion or Expiration Date: 20 May 2004

U. S. Government Dollars: $1,777,277.00

Non-Government Dollars: $0
Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: The objective of this project is to develop and deploy a sentient environment to provide total situational awareness of and monitoring of a site using a blanket of stereo and monocular video cameras and other sensors. The system will be a high-visibility demonstration system that can visually monitor people and their activities for extended periods of time by "handing off" tracked objects from one sensor node to another and recognizing key events, such as a person entering a restricted area. The system will also serve as a long-term development environment for exploring the benefits of other biometric sensors, such as iris scanners, face recognition and fingerprint readers, integrated into a system that is designed to maintain identities over an extended period of time. The technology area is Information Processing and Management.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. The use of an OTA for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative processing capability.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OTA places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Agreement Number: NMA401-02-9-2002/Task Order No. 0008

Type of Agreement: Other Transaction for Prototype
Title: Global Infectious Disease Surveillance System (GIDSS)

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Awardee: 3M on behalf of the Chemical, Bio and Rad Tech Alliance

Effective Date: 30 Jul 2003

Estimated Completion or Expiration Date: 30 Jul 2004

U. S. Government Dollars: $599,981.00

Non-Government Dollars: $0
Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: The overall program objective is to develop a continuously updating Global Infectious Disease Surveillance Systems (GIDSS) to monitor, track, and map global disease. The key elements of this program are to 1) develop and validate new disease surveillance tools, 2) enhance existing disease surveillance tools, and 3) develop methods to incorporate non-traditional data into the GIDSS to more efficiently assess disease threats around the world. This includes identifying outbreaks as well as establishing baseline levels of endemic infection. At this stage it is important to be able to rapidly detect a disease outbreak and assess disease distribution in the absence of other country-specific public health data. This project will work to develop a breath analysis tool as a means to collect non-traditional data.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: In meeting with the technical personnel within the Armed Forces Medical Intelligence Center (AFMIC), disease surveillance data was identified as a critical need. The Chemical, Biological and Radiological Technology Alliance (CBRTA) has the necessary skill sets and infrastructure required to perform activities such as those identified in the Statement of Work. The use of an "other transaction" agreement will bring together the planning, experimental design, fabrication, and test execution skill sets with from within the CBRTA to tackle the hard challenge of generating a Global Infectious Disease Surveillance System.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The use of an Other Transaction (OT) agreement has placed trusted and knowledgeable individuals from divergent as well as competing companies into an environment designed for collaboration and cooperation. Access to the technologies, knowledge base, and unique infrastructure required for this program could best be accomplished through the OT. The expertise, data, and insights hidden in the work history and relationships of companies that normally do not do business with the government are extensive and directly applicable to defense against weapons of mass destruction, in this case, specifically Biological Warfare agents and other human pathogens.

Agreement Number: NMA401-02-9-2001/0024

Type of Agreement: Other Transaction for Prototype
Title: Information Relevance Prototype

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 02 July 2003

Estimated Completion or Expiration Date: 02 July 2004

U. S. Government Dollars: $1,095,533

Non-Government Dollars: $0
Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: The objective of this project is to establish an Information Relevance Prototype to serve as a framework for community evaluation of commercial information relevance approaches, methods, and technologies. Information relevance is central to decision making superiority as it enables the delivery of the most pertinent information wherever it is needed.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. In addition to Rosettex, Saffron Technology, also a nontraditional defense contractor will supply associative data mining software resources and technical expertise in support of the effort. Saffron Technology delivers powerful commercial capabilities enabling organizations to analyze information to discover knowledge and search for additional, relevant knowledge from external sources. The use of an OTA for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative processing capability.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OTA places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Agreement Number: NMA401-02-9-2001/0022

Type of Agreement: Other Transaction for Prototype

Title: Smart Dissemination Networks Infrastructure

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 09 June 2003

Estimated Completion or Expiration Date: 09 June 2004

U. S. Government Dollars: $1,103,886.00

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: The objectives of this effort are to prototype an end-to-end real-time dissemination system for use in urban environments. Results of the prototype are intended to provide an example of a nationally relevant dissemination architecture for urban environments, test operational interconnectivity and related policy issues, and validate various technical approaches for distributed networks of sensors, metropolitan-area information dissemination, and mobile end user receipt and use of timely information. Intended users are first responders and Homeland Security/Homeland Defense responders; military users will likely be interested in portions of the dual use technology and architecture.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. In addition to Rosettex, there are two (2) other non-traditional defense contractors supplying technical expertise and system engineering, and integration support for the overall Smart Dissemination Networks effort: (1) Kentia Management Group, Inc.; Round Hill, VA, (2) Thirteen/WNET (PBS affiliate television broadcaster). Additional non-traditional defense contractors are anticipated as new technologies are identified for incorporation into the program test bed environment. The use of an OTA for this project will broaden the DoD technology and industrial base by encouraging the development of unique and innovative dissemination and command and control capabilities.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OTA places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Agreement Number: NMA401-02-9-2001/0030

Type of Agreement: Other Transaction for Prototype

Title: Iris on the Move: Phase I

Awarding Office: National Imagery and Mapping Agency, IB, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 01 August 2003

Estimated Completion or Expiration Date: 15 November 2004

U. S. Government Dollars: $599,315.00

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: Iris recognition is known as one of the most reliable means to identify an individual based on biometric information. However, existing iris recognition systems require that the subject remain stationary. In addition, most systems require that the subject self-positions in front of the iris recognition device. This prototype system will be a high-visibility demonstration system to perform iris recognition while a subject is walking towards a portal such as a doorway or an airport metal detector. The technology area is Digital Technology Infrastructure.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has resulted in the participation of two nontraditional defense contractors, Rosettex Technology and Ventures Group and Iridian Technologies. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. Iridian Technologies will supply unique software resources and expertise in support of the effort. The use of an OTA for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative processing capability.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OTA places industry team members and the

Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Agreement Number: NMA401-02-9-2001/0026

Type of Agreement: Other Transaction for Prototype

Title: Integration of Geo-spatial Analysis and Visualization Tools with WISDOM Prototype Project

Awarding Office: National Imagery and Mapping Agency, IA, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 11 July 2003

Estimated Completion or Expiration Date: 10 November 2003

U. S. Government Dollars: $99,529.00

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: The objective of this prototype project is to enhance DoD's capability to perform data mining and intelligence analysis with WISDOM software by incorporating geospatial analysis tools and visualization aids. WISDOM software provides valuable data mining, link and pattern analysis tools for counter-terrorism applications; however, WISDOM currently does not incorporate geo-spatial information in its analysis suite. This project will develop and integrate geo-spatial analysis tools and visualization aids, based on WISDOM OpenMap™ toolkit which will link time-location history, geo-political entities, geographic features, attributes and imagery, with WISDOM's data products. This will allow users to discriminate and recognize temporal geo-spatial patterns, link biometric data and activity patterns with geographic information, and support tertiary intelligence analysis. The resulting capability will significantly enhance the user's ability to identify potential terrorist threats and support counter-terrorist planning and operations. The technology area is Information Processing and Management.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. The use of an OTA for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative processing capability.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OTA places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Agreement Number: NMA401-02-9-2001/Task Order 0031

Type of Agreement: Other Transaction for Prototype

Title: Fangorn

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 28 August 2003

Estimated Completion or Expiration Date: 27 November 2004

U. S. Government Dollars: $300,000.00

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: The technology area is Digital Technology Infrastructure; however, the specific technical objectives of this effort are classified.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative capability in the biometrics field.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of a new technology for use by DoD and the intelligence community.

*****Limited information is provided due to the classified nature of this project.

Agreement Number: NMA401-02-9-2002/0009

Type of Agreement: Other Transaction for Prototype

Title: Development of a Prototype for the Environmental and Industrial Chemical Hazard Analysis System

Awarding Office: National Imagery and Mapping Agency, National Technology Alliance (NTA)

Awardee: 3M on behalf of the Chemical, Bio and Rad Tech Alliance

Effective Date: 29 July 2003

Estimated Completion or Expiration Date: 28 July 2004

U.S. Government Dollars: $499,091.00

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objective of this effort including the technology area in which the project was conducted: The two technical objectives of this effort are 1) to develop a new methodology for assessing risk to deployed military personnel from chemical exposures that accounts for both the exposure time and the environmental behavior of the chemicals and 2) to develop a database that contains the information needed to implement the methodology for selected chemicals that will demonstrate the effectiveness of this approach.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has resulted in the participation of a nontraditional defense contractor, 3M. The use of an OTA will broaden the DoD technology and industrial base by encouraging the development of a unique and new methodology for medical risk assessment.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The use of an OTA placed trusted and knowledgeable individuals from divergent companies into an environment designed for collaboration and cooperation so that the access to the technologies and the knowledge base present in these divergent corporations could only be accomplished through the OTA. The project will lead to a better understanding of toxicological responses to chemical exposures and assessment of risk to deployed US troops. That understanding can also be incorporated into detection equipment designed to alert users to ambient concentrations of toxic chemicals.

Other benefits to the DoD through use of this agreement: The OT Instrument has allowed the Government to procure these products/services in a much more timely manner than traditional DoD procurement methods would allow.

Agreement Number: NMA401-02-9-2001/0013

Type of Agreement: Other Transaction for Prototype

Title: Computer Aided Diagnostic (CAD) Tools for Early Detection and Management of Eye Diseases

Awarding Office: National Imagery and Mapping Agency, ATTN, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 17 OCT 02

Estimated Completion or Expiration Date: 17 JUL 03

U.S. Government Dollars: $437,499.00

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objective of this effort including the technology area in which the project was conducted: Accurate, fast, automated processing of retinal images for enhanced visualization, detection, and treatment of eye diseases are fundamental capabilities which are needed in the area of ophthalmology. Millions of US citizens with eye disease (e.g. 14M diabetics, 4M AMD, etc.) are not receiving quality eye-care. Amongst the factors for this inadequacy of care are the inability of bringing the service to the point of need and the tools that are at the disposal of physicians. This project broadens the technological bases, developed under previous NTA projects, to explore and develop new functional tools for early detection and management of eye diseases. The technology areas are Imagery, GIS and Cartography (IGC) and Digital Processing, Analysis and Management (PAM).

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has broadened the technology base in the following four ways: (1) Development of a software tool for cross-modalities registration of 2D retinal imagery and the exploration of the integration of Optical Coherence Tomography (OCT) toward the recovery 3D retinal maps; (2) Conduct of a pilot study to (a) study the current application of pattern recognition capability in detection and classification and (b) investigate the ability to detect lesions by applying Hierarchical Pyramid Neural Networks (HPNN); (3) Enhancement of Slitlamp mosaicing capabilities to acquire very high-resolution digital video and integrating the information extending super resolution and super fusion; and, (4) Development of a prototype tool to generate hi-resolution images from a set of low-resolution images. The tool will ingest a set (sequence) of images and provide both the options to apply super-resolution or super-fusion to generate of the result. The goal of this project is to transfer core elements of the technology developed for medical application directly to a tool that could be applicable to the DOD and intelligence community.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OTA places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than they would otherwise. The use of an OTA has resulted in new relationships between Rosettex and other non-traditional defense contractors such as Wills Eye Research Institute (*WERI*), University of Texas Medical Branch (*UTMB*), and Lambertville Associates (*LA*). WERI, UTMB, and LA are leading institutions involved in clinical eye disease research and support the effort in several important ways including (a) supporting the refinement of protocols for digital data acquisition and presentation; (b) providing data sets from archival data containing fundus images, angiographic sequences, and optical coherence tomography (OCT) data and support fundus image(s) indicating the locus of OCT slices; (c) providing guidance and feedback on the functionality, look and feel of tools in order to make them useful for visualization and evaluation of ophthalmic pathologies and applications; and (d) evaluating and reviewing the incremental functionality and final results.

Through briefings, technical meetings, and demonstrations, the NTA and the Medical Community will gain valuable insight into the advantages of using automated processing of retinal images for enhanced visualization, detection, and treatment of eye diseases. The Intelligence Community will gain valuable insight into the performance and use of a new tool to generate hi-resolution images from a set of low-resolution images. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Other benefits to the DoD through use of this agreement: The OT Instrument has allowed the Government to procure these products/services in a much more timely manner than traditional DoD procurement methods would allow.

Agreement Number: NMA401-02-9-2001/Task Order 0028

Type of Agreement: Other Transaction for Prototype

Title: Innovative Framework For Understanding Integrated Intelligence

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 08 August 2003

Estimated Completion or Expiration Date: 08 February 2005

U. S. Government Dollars: $1,084,918.00

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: This effort will demonstrate a new human-centered approach to intelligence integration that uniquely leverages the analyst's fundamental ability to process both visual and language-based information. This approach will permit analysts to effectively combine their visual pattern recognition skills to analyze information, with their language skills to reason about evolving situations.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. The use of an OTA for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative processing capability.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OTA places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to

continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Agreement Number: NMA401-02-9-2001/0032

Type of Agreement: Other Transaction for Prototype

Title: Joint Integrative Analysis and Planning Center (JIAPC) Collaborative Environment Implementation Support

Awarding Office: National Imagery and Mapping Agency, IA, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 08 September 2003

Estimated Completion or Expiration Date: 22 October 2004

U. S. Government Dollars: $1,662,678.40

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: In light of the multi-layered, interconnected Joint Integrative Analysis and Planning Center (JIAPC) headquartered adaptive target environments envisioned in post-Cold War conflicts, there is a need for a collaborative environment to facilitate fully integrated nodal and network analysis for effects based operational support. The JIAPC initiative will implement a collaborative environment focused on support to Information Operations. The JIAPC will provide standardized processes, enhanced analysis and planning capabilities, seamless target characterization, and timely response to planning requirements.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. Additional non-traditional defense contractors are anticipated as new technologies are identified for incorporation into the program test bed environment. The use of an OTA for this project will broaden the DoD technology and industrial base by encouraging the development of unique and innovative dissemination and command and control capabilities.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations

resulting in the rapid development of new technologies. The OTA places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Agreement Number: NMA401-02-9-2001/Task Order 0027

Type of Agreement: Other Transaction for Prototype

Title: Innovative Fusion Capabilities

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 15 August 2003

Estimated Completion or Expiration Date: 14 February 2005

U. S. Government Dollars: $1,869,962.00

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: This effort will identify, implement and evaluate solutions for innovative fusion and presentation capabilities in a Geospatial Intelligence prototype environment. A prototype approach will serve to test Multi-Intelligence fusion tools and methods that may be commercialized by industry and socialize the capabilities among users within NIMA and with NIMA's mission partners in the Defense and Intelligence Community.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. The use of an OTA for this project will broaden the DoD technology and industrial base by encouraging the development of a unique and innovative processing capability.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OTA places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of

this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Other benefits to the DoD through use of this agreement: None.

Agreement Number: NMA401-02-9-2001/0018

Type of Agreement: Other Transaction for Prototype

Title: Civilian Synthetic Aperture Radar (SAR) for Geospatial Intelligence

Awarding Office: National Imagery and Mapping Agency, IA, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 15 September 2003

Estimated Completion or Expiration Date: 14 June 2004

U. S. Government Dollars: $828,623

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: Increasing requirements for certain MASINT intelligence products places an increasing demand on traditional data sources that supply this MASINT data. These demands often have conflicting acquisition requirements, as well as impacts on the collection of other intelligence products. The result is that the current MASINT capabilities are only brought to bear on known high-priority areas. This approach makes it impossible using traditional sources to conduct any sort of large-scale surveillance of areas for detection of activities of interest. This program will demonstrate the ability to use civilian SAR sources to perform large scale monitoring for detection of human activity (traffic, used air strips, excavations, new building). This data may be used to queue other national capabilities. The objective of this project will be to demonstrate and develop a program for routine, coherent monitoring of regions of interest. The technical goals and objectives of this program are: (1) Process archival data already available at NIMA for determination of Civilian SAR sensitivity; (2) Demonstrate applications of a civil SAR source to detect events of interest over long time periods; (3) Demonstrate the capability to separate CCD signals of anthropomorphic source from those of natural origin; (4) Provide licensed software inside DIAC for processing commercial SAR data; and (5) Assess transition potential technology studied and developed. This project is in the Geospatial Intelligence technology area.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has resulted in the participation of a nontraditional defense contractor, Rosettex Technology and Ventures Group. Rosettex was recently formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. The use of an OTA for this project will broaden the DoD

technology and industrial base by encouraging the development of a unique and innovative processing capability.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations resulting in the rapid development of new technologies. The OTA places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Agreement Number: NMA401-02-9-2001/0033

Type of Agreement: Other Transaction for Prototype

Title: Development of a Logical and Physical Interface Between InPhase's Holographic Storage System and a NIMA Host System Project

Awarding Office: National Imagery and Mapping Agency, IDN, National Technology Alliance (NTA)

Awardee: Sarnoff Corporation on behalf of Rosettex Technology & Ventures Group

Effective Date: 29 September 2003

Estimated Completion or Expiration Date: 29 September 2004

U. S. Government Dollars: $1,019,452.00

Non-Government Dollars: $0

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: The project to develop an interface between a previously developed holographic storage system prototype and a NIMA host system will optimize the storage system's performance for NIMA's data archival applications and minimize the effort required to integrate the drive into NIMA's storage architectures.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an Other Transaction Agreement (OTA) has resulted in the participation of a nontraditional defense contractor, InPhase Technologies. InPhase is recognized as the leader in holographic storage development. InPhase was spun out of an R&D effort at Bell Laboratories, Lucent Technologies, that was partially supported by the NTA. InPhase currently has a patent portfolio that contains more than eighty patents and patent applications related to the effort. In addition to InPhase, Rosettex Technology and Ventures Group another non-traditional defense contractor is supplying technical support for the effort. Rosettex was formed to provide innovative solutions to government intelligence community user needs. In addition to providing program management for this effort Rosettex, with its diverse team, is able to provide research and development services, prototype development and demonstration, seamless system integration, and transition of technology into the commercial market place. The use of an OTA for this project will broaden the DoD data storage technology and industrial base by encouraging the development of unique and innovative processing and command and control capabilities.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This OTA fosters research and development practices that are more like those in commercial organizations

resulting in the rapid development of new technologies. The OTA places industry team members and the Government in a more commercial-like relationship than would a customary Government contract. Industry team members are more willing to commit their personnel and resources to projects in support of this relationship than it would otherwise. Furthermore, these partnering relationships are anticipated to continue beyond the life of the agreement, thereby broadening the industrial technologies available to meet DoD needs.

Agreement Number: DAAE30-9-0800 – Task Order Sub-Agreement # 0019

Type of Agreement: Other Transaction for Prototype

Title: Synthesis of DADE

Awarding Office: US Army Tank-Automotive and Armaments Command – Armament Research, Development and Engineering Center (TACOM-ARDEC)

Awardee: GEO-CENTERS

Effective Date: 15 April 2003

Estimated Completion or Expiration Date: 15 April 2004

U. S. Government Dollars: $150,000.00

Non-Government Dollars: $0.00

Dollars Returned to Government Account: $0.00

Technical objectives of this effort including the technology areas in which the project was conducted: Under this effort, GEO-CENTERS, INC. will carry out a program aimed at developing an economical and environmentally friendly process for the preparation of DADE. GEO-CENTERS will investigate the applicability of alternate bases and utility of non-conventional energy sources in the DADE synthesis from diethyl oxalate and identify the best base for use in the synthetic process. From this investigation they will provide scale-up plans for DADE to the government.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: By developing novel energetic material that has increased energy, reduced sensitivity, environmental and easy to demilitarize, the warheads that the soldier will use will be smaller and lighter and thus support the rapid movement of troops while leaving less of a “footprint’ on the battlefield environment. GEO-CENTERS will investigate the applicability of alternate bases and utility of non-conventional energy sources in the DADE synthesis from diethyl oxalate and identify the best base for use in the synthetic process. These new processes and industrial base sources will broaden both the Technology and Industrial Base.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This is one of the first Army Projects awarded under the National Advanced Energetics Technology Program (NAETP). This initiative infuses resources and impetus into a declining industrial base. This NAETP sponsored project is a critical enabler for precision weapons that are required by all services. This project supports the NAETP Master Plan dated 9/22/03 and enhances the partnership between DoD, DOE, Industry and Academia. The new processes and industrial base sources developed on this project will also create new relationships within the Technology and Industrial Bases to provide the new materials.

Agreement Number: DAAE30-9-0800 – Task Order Sub-Agreement # 0020

Type of Agreement: Other Transaction for Prototype

Title: Novel Approaches for the Synthesis of DADE

Awarding Office: US Army Tank-Automotive and Armaments Command - Armament Research, Development and Engineering Center (TACOM-ARDEC)

Awardee: Eaton Associates

Effective Date: 1 Jun 2003

Estimated Completion or Expiration Date: 31 May 2006

U. S. Government Dollars: $90,000.00

Non-Government Dollars: $0.00

Dollars Returned to Government Account: $0.00

Technical objectives of this effort including the technology areas in which the project was conducted: Under this effort, Eaton Associates will carry out a program to design synthetic routes for Diamino Dinitro Ethylene (DADE) that are more economical and environmentally friendly than the current process. Eaton Associates will investigate the current synthesis methods to determine where efficiency of production can be found and where change to the synthesis process steps will result in benefit the environment. From this investigation they will provide new synthesis routes for DADE to the government.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: By developing novel energetic material that has increased energy, reduced sensitivity, environmental and easy to demilitarize, the warheads that the soldier will use will be smaller and lighter and thus support the rapid movement of troops while leaving less of a “footprint’ on the battlefield environment. Eaton Associates will investigate ways to synthesize DADE. Currently there is no onshore source for DADE. These new processes and industrial base sources will broaden both the Technology and Industrial Base and allow a domestic source for this increasingly important energetic material.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This TOSA is one of the Army’s Projects awarded under the National Advanced Energetics Technology Program (NAETP). This initiative infuses resources and impetus into a declining industrial base. This NAETP sponsored project is a critical enabler for precision weapons that are required by all services. This project supports the NAETP Master Plan dated 9/22/03 and enhances the partnership between DoD, DOE, Industry and Academia. The new processes and industrial base sources developed on this project will also create new relationships within the Technology and Industrial Bases to provide the new materials.

Agreement Number: DAAE30-9-0800 – Task Order Sub-Agreement # 0021

Type of Agreement: Other Transaction for Prototype

Title: Developmental Testing and Research Assistance of Explosives, Specifically – Robust, Insensitive Munitions (IM) Compliant

Awarding Office: US Army Tank-Automotive and Armaments Command - Armament Research, Development and Engineering Center (TACOM-ARDEC)

Awardee: General Dynamics, Ordnance and Tactical Services

Effective Date: 30 June 2003

Estimated Completion or Expiration Date: 30 June 2004

U. S. Government Dollars: $311,456.00

Non-Government Dollars: $0.00

Dollars Returned to Government Account: $0.00

Technical objectives of this effort including the technology areas in which the project was conducted: The objective of this proposal is to design (through computational analysis or otherwise), fabricate and test explosives, warheads, and other tests fixtures to accurately determine performance and sensitivity properties. The end result would be data that contributes to the qualification of new PAX explosives or other formulations. From the multitude of testing that will be conducted a prototype for testing new IM explosives will result.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: This prototype method will provide data to understand the many factors that contribute to the insensitivity of prototype explosives. This project is a key enabler to achieve the 2004-2008 Goals for Explosive Testing in the FY 03-04 Defense Technology Area Plan. This prototype method will provide early indications that new formulations will be insensitive and quickly determine if new sources of explosives will meet requirements

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This sub agreement will provide the prototype method to allow new sources of explosives to be quickly tested to determine the degree of sensitivity. . This new practice will foster new relationships within the technology and industrial base by providing a common baseline testing protocol to quickly assess the performance characteristics of foreign or commercially available explosives and broaden the options, relationships and sources of supply available to the Department of Defense.

Agreement Number: DAAE30-9-0800 – Task Order Sub-Agreement # 0022

Type of Agreement: Other Transaction for Prototype

Title: Development, Characterization and/or Qualification of Energetics/Reactives for Various Applications

Awarding Office: US Army Tank-Automotive and Armaments Command - Armament Research, Development and Engineering Center (TACOM-ARDEC)

Awardee: ATK Thiokol

Effective Date: 30 June 2003

Estimated Completion or Expiration Date: 30 Jun 2005

U. S. Government Dollars: $2,226,350.00

Non-Government Dollars: $0.00

Dollars Returned to Government Account: $0.00

Technical objectives of this effort including the technology areas in which the project was conducted: Acquire the necessary technical data that allows .50 caliber RMEB "SMK" ammunition to be safely and reliably deployed in a limited capacity per Government discretion. Enhancement to the RMEB baseline configuration is desired in order to enhance sensitivity and reactivity when impacting the targets of interest. Upon accomplishing these objectives, the contractor will deliver prototype rounds to the government.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: This sub agreement broadens the US Technology and Industrial base by developing a new prototype material that is available from domestic materials that does not rely on foreign technology. Although initially designated for Special Operating Forces in small quantities this prototype design is applicable to many Service Requirements.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This Joint Project is the first use of a Master Other Transaction Agreement for Special Operations weapons or materials. It is also the first use by Naval Surface Weapons Systems (DAHLGREN). . This project supports the NAETP Master Plan dated 9/22/03 and enhances the partnership between DoD, DOE, Industry and Academia. The new processes and industrial base sources developed on this project will also create new relationships within the Technology and Industrial Bases to provide the new materials. This Second Generation Reactive Material is the first that is capable of surviving gun launch and spin stabilization. When this technology is expanded to large caliber Artillery Rounds it will replace the Cold War Era High Explosive Production Ammo Plants with a much safer and cheaper production alternative that doesn't require special production plants. Many new relationships and practices will be formed between DoD and Industry.

Agreement Number: DAAE30-9-0800 – Task Order Sub-Agreement # 0023

Type of Agreement: Other Transaction for Prototype

Title: Development and Qualification of Theromobaric Explosive

Awarding Office: US Army Tank-Automotive and Armaments Command - Armament Research, Development and Engineering Center (TACOM-ARDEC)

Awardee: Ensign-Bickford Aerospace & Defense Company

Effective Date: 30 June 2003

Estimated Completion or Expiration Date: 30 Jun2 2004

U. S. Government Dollars: $192,539.00

Non-Government Dollars: $0.00

Dollars Returned to Government Account: $0.00

Technical objectives of this effort including the technology areas in which the project was conducted: Under this effort, the contractor will conduct theromobaric binder material and explosive studies, and from this studies will formulate an optimized enhanced blast explosive for testing.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: This sub agreement broadens the technology and industrial base by providing a new class of explosive that will be available from domestic sources. This new class of explosives will utilize a prototype process that will free up manufacturing capacity for standard explosives. These new Non-Ideal Explosives do not use conventional High Explosives that are produced in Cold War Era Explosive Production Ammunition Plants. The new ingredients are less hazardous than conventional High Explosives and can be produced by commercial plants in the US. This will broaden the technology and industrial base by providing more sources of supply.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: **This sub agreement establishes new relationships in the technology and industrial base by providing a new class of explosives that will be available from domestic sources using new methods of manufacture. The new sources of supply will allow for competition between domestic sources of supply and this new practice will drive down costs and allow for more relationships within the commercial market. Since the ingredients will be commercially available the DoD will not require Cold War Era Explosive Production Ammunition Plants for this new class of warheads.**

Agreement Number: DAAE30-9-0800 – Task Order Sub-Agreement # 0024

Type of Agreement: Other Transaction for Prototype

Title: The Development of a Slurry-Mix Explosive Analyzer

Awarding Office: US Army Tank-Automotive and Armaments Command - Armament Research, Development and Engineering Center (TACOM-ARDEC)

Awardee: University of Denver Research Institute

Effective Date: 30 June 2003

Estimated Completion or Expiration Date: 30 Jun 2004

U. S. Government Dollars: $212,943.00

Non-Government Dollars: $0.00

Dollars Returned to Government Account: $0.00

Technical objectives of this effort including the technology areas in which the project was conducted: Under this effort, the contractor will develop an in-process system to monitor explosive slurry mixtures within a production still. A pilot-scale system will be installed and tested for PAX-2A explosives at Picatinny Arsenal, NJ.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: This sub agreement established a new relationship within the weapons and energetics technology base by teaming with an educational institution. This in-process analyzer will take the "Black Magic" and guesswork out of Explosive Slurry Mixing. It will allow small businesses to enter the DoD explosives market by eliminating the waste associated the trial and error method of refining a production process. If needed in a National Emergency, this process can be quickly incorporated into the US Commercial Industrial Base for increased production capacity.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The pilot scale explosive slurry analyzer will be used to control the explosive making process thereby improving yield and helping to assure consistency. At the conclusion of this effort there will be a custom system for slurry process control which will improve the life-cycle of munitions. The success of this effort will establish a prototype explosive slurry analyzer that can be further refined to support other DoD explosive developing facilities and improve the explosive output. By developing a controlled and repeatable process, relationships can be developed with the US small business and commercial industrial base to provide slurry mixed explosives. This analyzer can control the process with ingredients of varying quality. This will allow the use of wider specifications and this new practice will expand the source of supply for domestic ingredients.

Agreement Number: DAAE30-9-0800 – Task Order Sub-Agreement # 0025

Type of Agreement: Other Transaction for Prototype

Title: Fuze Technology/Conventional Energetics and Micro Electrical Mechanical Systems (MEMS) Technologies

Awarding Office: US Army Tank-Automotive and Armaments Command - Armament Research, Development and Engineering Center (TACOM-ARDEC)

Awardee: L-3 Systems Company

Effective Date: 11 September 2003

Estimated Completion or Expiration Date: 11 September 2008

U. S. Government Dollars: $4,477,346.00

Non-Government Dollars: $0.00

Dollars Returned to Government Account: $0.00

Technical objectives of this effort including the technology areas in which the project was conducted: Under this effort, the contractor will conduct research and development efforts for Velocity Measurement Rocket Ignition, Responsive Accurate Mission Module Inductive Fuze Setter, Multi-point Initiation, 2nd Launch Environment, Power Sources and 2nd Battery.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: This sub agreement broadens the technology and industrial base by expanding the Technology Base to meet the Multi Service requirements in the Joint Miniature Fuze Technology Roadmap. The technology developed under this project will allow fuzes to use widely available Micro Electro Mechanical (MEMs) Devices instead of Cold War Era Mechanical Clock Work Timing and Safe and Arm Devices. The decline of the watch making industry in the US will no longer affect the production and design of modern fuzes. The Fuze Industrial Base will be broadened into the growing MEMs Commercial Industrial Base of Non Traditional Government Contractors.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: **This sub agreement establishes new relationships in the technology and industrial base by providing a Joint Procurement Vehicle in order to facilitate the Multi Service pursuit of Fuze Technology that is consistent with the Joint Miniature Fuze Technology Roadmap. By expanding into the growing MEMs Commercial Industrial Base new relationships will be established between DoD and the new producers. A new practice will be that competition can be restored to DoD procurements based on the large number of MEMs producers who are Non Traditional Government Contractors.**

Agreement Number: DAAH01-03-9-R003

Type of Agreement: Other Transaction for Prototype

Title: LED-based light engine for high-efficiency distributed lighting systems

Awarding Office: US Army Aviation and Missile Command (AMCOM), AMSAM-AC-OS-RAY

Awardee: Lumileds Lighting, U.S., LLC

Effective Date: 15 Aug 2003

Estimated Completion or Expiration Date: 15 Sep 2006

U. S. Government Dollars: $ 5,300,000

Non-Government Dollars: $ 2,904,045

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: The Defense Advanced Research Projects Agency (DARPA) is very interested in providing a new light engine paradigm for multiple military platforms. The objective of the High Efficiency Distributed Lighting (HEDLight) program is to enable significant reductions in platform vulnerability through the use of remote source lighting, particularly on Naval warships, with a secondary emphasis on enabling improved visual acuity of the warfighter. The Space and Naval Warfare Systems Center, (SPAWARSYSCEN) San Diego, received a proposal from Lumileds under Broad Agency Announcement, X66001-03-X-6001, entitled "BAA In Support of DARPA Microsystems Technology Office and DOD". This BAA was posted 7 Nov 02. It seeks proposals for research and development in the following areas: (1) microelectronics, (2) micro-electromechanical systems (MEMS), and/or (3) photonics technology. The Lumileds proposal, "Light Emitting Diode (LED)-based Light Engine for High-Efficiency Distributed Lighting Systems", was evaluated and selected under the photonics technology topic. The DARPA Advanced Technologies Office has chosen to fund this effort to develop an alternative light source under the HEDLight program. The use of multiple LED emitters to cover approximately 10nm wide bins, with phosphors to fill in "gaps" is a very novel approach. The proposed Lumileds light engine is desirable for low power lighting systems and for applications requiring high-shock resistance and long life. Also, the use of LEDs as the driving source for the light engine opens up the possibility of potential cost savings, and increased application flexibility owing to the small form factor and mitigated thermal waste. The Lumileds fiber light engine will provide all the benefits of solid-state technology, with instant turn-on, dynamic color control, white point maintenance over life, negligible radiated heat, high shock resistance, and operating life exceeding 10,000 hours. The goal is that match will be maintained to +/- 10% within 10 nm bins from 420 to 650 nm, with no "gaps" or "spikes" in the emission spectra.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: Lumileds has limited experience with FAR-based contracts. As a business decision, they have chosen to not accept any further FAR-based contracts due to the undue burden caused by FAR clauses. The use of an other transaction agreement has resulted in Lumileds participating to a significant extent in a Defense program, where they otherwise would not have participated. Lumileds participation is expected to supply new key technologies in LED technologies. The use of an other transaction agreement benefits the DoD by allowing Lumileds, one of the world's leading optoelectronics manufacturers, to build upon their existing design knowledge and state-of the-art experience for DoD applications. Lumileds, a joint venture company between Agilent Technologies (50%) and Philips Lighting (50%), is the offspring of HP Associates and Hewlett-Packard Optoelectronics Division, with more than thirty years experience in its core competencies

of III-V materials and device development for LEDs. In particular, Lumileds has perhaps the most experience of any manufacturer in understanding extraction efficiencies of LEDs and has demonstrated the world's most efficient visible-spectrum LED. Lumileds line of Luxeon LEDs is unequal in the marketplace. Lumileds has a fully established high-volume manufacturing facility in San Jose, CA, for epitaxial growth and wafer fabrication as well as a packaging operation headquartered in Penang, Malaysia, from which more than 3 billion LEDs were shipped in 2002. This other transaction with Lumileds provides the Department of Defense with a solid-state light source for the HEDLight program.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The use of an other transaction agreement has lead to the development of a new relationship between the Department of Defense and Lumileds which should support the national security of the USA by increasing platform survivability through use of remote source lighting, particularly on Naval warships. The DoD will obtain better technology in the future by working with Lumileds as they have a solid understanding of the LED technologies and extraction efficiencies needed for an LED-based high efficiency distributed lighting system.

A nontraditional Defense contractor is not participating to a significant extent in this prototype project and at least one-third of the total cost of the prototype project is to be paid out of funds provided by Lumileds.

The light engines developed through this program will have commercial applications. The technology developed to provide these LED-based light engines should provide a firm base for launching market investigations into such applications. The proposed integrated fiber illuminator will enhance Lumileds existing commercial portfolio, providing a path for the future sustainment of the successful technology in the commercial marketplace.

Agreement Number: DAAE07-03-9-F001

Type of Agreement: Other Transaction for Prototype

Title: Future Combat Systems

Awarding Office: US Army Tank-Automotive and Armaments Command (TACOM), AMSTA-AQ-ABF

Awardee: The Boeing Company

Effective Date: 30 May 2003

Estimated Completion or Expiration Date: 31 Dec 2011

U. S. Government Dollars: $130,000,000.00

Non-Government Dollars: $0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: The technical objectives of this effort are to acquire the Future Combat Systems (FCS) that meet the Key Performance Parameters (KPP) and other requirements of the FCS ORD. These technical objectives are described by the seven Objective Force capabilities: (1) responsive, (2) deployable, (3) agile, (4) versatile, (5) lethal, (6) survivable, and (7) sustainable. The Objective Force (OF) Future Combat Systems (FCS) equipped Unit of Action (UA) is the Army's land force capability for decisive tactical warfighting in the 21st century. Toward this end, the Future Combat Systems (FCS) are comprised of a family of advanced, networked air-and-ground-based maneuver, maneuver support, and sustainment systems that will include manned and unmanned platforms. Future combat systems are networked via a C4ISR architecture, including networked communications, network operations, sensors, battle command systems, training, and both manned and unmanned reconnaissance and surveillance capabilities that will enable situational understanding and operations at a level of synchronization heretofore unachievable. Future Combat systems will operate a system that will network existing systems, systems already under development, and new systems to be developed to meet the needs of the Unit of Action (UA). The network will enable improved ISR, battle command, real time sensor-shooter linkages, and increased synergy between echelons and within small units. It will also enable the UA to connect to Unit of Employment (UE) and Joint-Interagency-Multinational (JIM) capabilities available to the small units of the UA. The FCS will enable the networked UA to develop the situation in and out of contact, set conditions, maneuver to positions of advantage, and to close with and destroy the enemy through standoff attack and combat assault as articulated in the Objective Force Unit of Action O&O Plan. The FCS equipped UA will exhibit the "quality of firsts" – see first, understand first, act first, and finish decisively—in support of component, Joint and combined operations.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an other transaction agreement has allowed the continued participation of three non-traditional defense contractors, Strategic Perspectives, Inc., McClean, VA, 22101, Navigator Development, Enterprise, AL 36331, and Parametric Technology Corporation, Bellevue, WA 98004 that began in the CTD phase of the FCS program. Strategic Perspectives, Inc. will support the program by providing systems engineering and advanced simulation technology to guide the evolution of the System of Systems architecture and capability compliance over time. Parametric Technology Corporation will assist in the definition, analysis, design, development, implementation and support of the Advanced Collaborative Environment. Functional performance specifications will be used to acquire the hardware and software for FDS SDD from a series of competitive actions to increase participation by industry.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The use of an other transaction agreement for the FCS SDD phase has allowed the continued participation of two non-traditional defense contractors that began in the FCS CTD phase. Their participation is significant for FCS prototype work. Because of the flexibility afforded by an OT845 Agreement, the Army will be able to enter into innovative business arrangements or structures that would not be feasible or appropriate under a FAR-based procurement contract. FCS represents an unprecedented unified effort that requires a level of interaction, cooperation, and collaboration inconsistent with FAR-based procurement contracts to include interaction between the Government and all lower-tier sub-contractors where there is no privity of contract to sustain the relationship. This interaction will occur primarily through membership and participation in key IPTs. The innovative business relationship that seamlessly integrates Government and LSI expertise is possible by use of this other transaction where government personnel will work closely with the LSI based upon the needed skills and expertise.

Other benefits to the DOD through use of this agreement: The use of an other transaction has resulted in additional benefits, not addressed above, such as the unique partnering effort between the Government, the LSI (Lead System Integrator-Boeing/SAIC), and its subcontractors. This innovative business relationship will seamlessly integrate the Government, the LSI and its subcontractors to achieve a highly collaborative effort that would be highly inappropriate under a FAR-based procurement contract.

Agreement Number: DAAH01-03-9-R002

Type of Agreement: Other Transaction for Prototype

Title: Direct Current Metal Halide Source, Highest Efficiency Source for Distributed Lighting Systems

Awarding Office: US Army Aviation and Missile Command (AMCOM), AMSAM-AC-RD-AY

Awardee: APL Engineered Materials, Inc.

Effective Date: 05 Mar 2003

Estimated Completion or Expiration Date: 05 Mar 2006

U. S. Government Dollars: $ 2,718,449

Non-Government Dollars: $ 45,000

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: The technical objective of the Defense Advanced Research Projects Agency (DARPA) High Efficiency Distributed Lighting (HEDLight) Program is to develop innovative concepts relating to high efficiency distributed lighting, including high efficiency full spectrum light sources, coupling optics, optical-fiber-luminaires, and integrated fiber-illuminators, to enable significant advances in platform survivability through use of remote source lighting, particularly on Naval warships, with a secondary emphasis on enabling improved visual acuity of the warfighter. The technical objective of the program is the demonstration of high efficiency distributed lighting illuminators characterized by the Illuminator Properties and Objectives as stated in the Broad Agency Announcement (BAA) DAAH01-02-R-RB04 and the associated Proposers' Information Pamphlet (PIP). The APL Direct Current Metal Halide Source (DCMHS) was selected for award under the high efficiency, full spectrum light source topic.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an other transaction agreement has resulted in nontraditional defense contractors participating to a significant extent that would otherwise not participate if a procurement contract was used. APL does business through contracts for commercial items. The provisions of the OT enabled their participation by lifting the undue burden that would be caused by a procurement contract. In particular, the FAR clauses involving intellectual property would be unacceptable to commercial companies in the lighting industry. APL participation is expected to supply new key technologies in quartz metal halide (QMH) light sources. The use of an other transaction agreement benefits the DoD by allowing APL, the world's leading High Intensity Discharge lamp materials supplier, to build upon their existing design knowledge and state-of the-art experience for DoD applications. APL has extensive lamp materials fabrication and characterization facilities and has the ability to form adherent barrier coatings on quartz and to apply protective silica coatings on Mo sealing foils for oxidation protection. In addition, APL has solved several of the problems inherent in making a low-wattage light source simultaneously achieving 90 lumens per watt with a high Color Rendering Index spectral output. All of this capability is foundational to successfully meeting program goals. The technology developed under this effort will enhance and expand the use of QMH light sources for use in the proposed HEDLight applications and for use in energy-efficient applications in commercial lighting applications worldwide. APL's sister company, Venture Lighting International, Inc. is also a non-traditional defense contractor and will be performing some significant aspects of the work, particularly in the equipment design and fabrication and in collaborating on lamp design. In addition, APL

has teamed with Fiberstars, Inc., another non-traditional defense contractor. Fiberstars, the world's largest fiber optic lighting company, will serve as technical advisors and consultants to APL in this effort.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The use of an other transaction agreement has lead to the development of a new relationship between the Department of Defense and APL, which should support the national security of the USA by increasing platform survivability through use of remote source lighting, particularly on Naval warships. The DoD will obtain better technology in the future by working with this nontraditional contractor as they have a solid understanding of the technology and the tradeoffs between efficiency, output spectrum, effective size of the optical source, and lifetime.

Fiberstars has completed a joint development agreement with Advanced Lighting Technologies, Inc. (ADLT), the parent company of both APL and Venture Lighting, concerning inventions. Fiberstars receives the fiberoptic lighting rights and ADLT receives rights to other fields of use. This arrangement allows for the free flowing exchange and development of technology, and it encourages spillovers.

Agreement Number: DAAH10-03-9-0002

Type of Agreement: Other Transaction for Prototypes

Title: Hunter Sensor Suite Integration in support of the Hunter Stand-Off Killer Team (HSKT) Advanced Technology Demonstration (ACTD)

Awarding Office: Aviation Applied Technology Directorate (AATD), US AMCOM (AMSAM-RD-AA-C)

Awardee: Northrop Grumman Systems Corporation Electronic Systems, Defensive Systems Division

Effective Date: 01 NOV 2002

Estimated Completion or Expiration Date: 31 DEC 2003

U. S. Government Dollars: $ 1,360,000

Non-Government Dollars: $ 719,519 (includes contributions by Northrop Grumman.)

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: Via the contemplated Other Transaction agreement, the collaborative team will produce and demonstrate a prototype Hunter unmanned aerial vehicle (UAV) onto which is integrated a Multi-mission Optronic Stabilized Payload (MOSP), for the HSKT Advanced Concepts Technology Demonstration (ACTD). The HSKT ACTD is a systems of systems concept which will integrate advanced technologies and war fighting concepts of operations to give a Joint Task Force (JTF) Commander and his manned assets the necessary tools to wage a continuous / uninterrupted air, surface and ground campaign with accurate reconnaissance, surveillance and precision targeting capability, while continuously adapting to the rapidly changing battle environment. HSKT will accomplish this by integrating mature technologies, verifying subsystem interoperability, and demonstrating the combined advanced capability. In addition to the sensor package, HSKT will include modifications to an unmanned aerial vehicle for improved aircraft navigation, communications with either a ground control station (GCS) or other host aircraft (AH-64D Longbow or A2C2S BLACKHAWK) and on-board calculations for geo-location of targets. So equipped this prototype Hunter will be demonstrated under the HSKT ACTD. This project affords an outstanding opportunity to provide the Army a significant command and control advance and thereby significantly improve war-fighting capability that will provide the Army with a very capable force multiplier well into the 21st century. Additionally, it enhances aircrew situational awareness and decreases cockpit workload. A primary objective of the ongoing demonstration efforts is to prove that it is possible to control multiple UAVs from manned platforms from a significant standoff distance. The basic technology associated with the ACTD has application in numerous military, commercial, and civil arenas, including law enforcement operations that use multiple aircraft, aerial fire-fighting operations, search and rescue, nuclear power plant control and disaster response, and others. This highly collaborative effort will help assure US industry as a world leader in their military, commercial, and civil applications.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: Use of an 845 prototype agreement has contributed to a broadening of the technology and industrial base for meeting DoD needs. Northrop Grumman has made substantial private investment in the technology. Northrop Grumman has unique previous experience with the Navy in the Fire Scout program in controlling a UAV and its payload via TCDL and to reduce the Target Location Error (TLE) for laser designation. In that

program Northrop Grumman cooperated with Israel Aircraft Industries, Tamam Division in the development of an advanced Electro-optical camera/Forward Looking Infrared (FLIR) and Laser Rangefinder/Designator (LRF/D) with precision targeting capability. In order to achieve the TLE goal of 30 meters for this program, the sensor will need to be integrated with an inertial navigation system to determine the UAV location in spatial coordinates along with the payload azimuth, elevation, and range-to-target coordinates. Had the Other Transaction authority not been available, it is doubtful that the Government could have accessed this specific technology so affordably for DoD use. Use of an Other Transaction enabled the Army to access the technologies and negotiate minimum essential rights in data to bring the multi-discipline, interdependent HSKT collaboration to fruition. Use of this Other Transaction authority has afforded the opportunity for a highly collaborative effort which will improve the capabilities of both private sector and the Government. The success of the program will be supported through substantial Government involvement. The past investments of Northrop Grumman and the DoD will serve as leverage and enable introduction of the Hunter Sensor Suite into current Army assets. This effort meets the intent of Public Law 103-160 as amended in Section 804 of the DoD 1997 Authorization Act and provides an excellent opportunity for the Army to avail itself of commercial products and its associated processes. This is an example of the benefits of the more flexible business practices afforded by the Other Transaction authority.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The HSKT ACTD has afforded the opportunity for Northrop Grumman to establish business alliances and accrue mutual benefits through a uniquely structured collaboration atypical of that found under FAR based contracts. This Other Transaction affords a new vehicle for industry and military services to work together in achieving HSKT ACTD demonstration goals. Using Other Transaction authority for the Hunter Sensor Suite integration effort enables the Government to take advantage of rapidly changing technology that is inherent in the commercial components brought to the program by Northrop Grumman. The more flexible intellectual property terms and relief from the administrative burden typical of a conventional contract has enhanced the Government's ability to access the technology. In addition, the Government is effecting a highly collaborative HSKT team, each member bringing specialized capability and each member also having highly diverse, sometimes competing, business strategies. Through these arrangements, the HSKT will have the opportunity to explore, more affordably, the technology barriers associated with hardware and software integration. This is a significant undertaking, but it has great potential for future application. Although Northrop Grumman is a traditional defense contractor, there is adequate commercial interest to attract a significant percentage of cost contribution. The Government continues to assert that initiatives which serve to integrate the production bases will afford benefit in defense weapon systems. The instant acquisition seeks to demonstrate that potential benefit and establish affordable capabilities for Army implementation. It is clear that this integration effort is a challenge that necessitates highly interactive collaboration rarely practiced in a conventional contracting arrangement.

Other benefits to the DOD through use of this agreement: The use of an Other Transaction has resulted in additional benefits. The negotiation dynamic is different when negotiating a project of mutual benefit and a project for the direct benefit of the Government. Each party to the negotiation lacks the in-depth appreciation of the other party's complete business strategy. The private investment in developing a new product offering appears to vary widely among industry sectors. Insertion of commercial technology into a fielded military system, especially one with airworthiness/flight safety implications, requires disclosure of more information and delivery of more data (and providing Government rights to data) than some firms desire. It can be very difficult to achieve balance with regard to intellectual property and rights in data that recognize the interests of each of the parties. The investment in developing a new product offering and the strategic planning involved in market analysis and business alliances complicates the negotiation dynamic. Without these flexible instruments many technologies which benefit our fleet and developmental weapon systems will go untapped. In this instance, the cost share/investment of Northrop Grumman adds leverage and high probability of success. Without that leverage, the benefits of Level 4 UAV control, that of real-time reconnaissance, surveillance, target acquisition (RSTA) and battle damage assessment (BDA), allowing a campaign to be fought continuously on-the-move, with greater lethality, survivability, and responsiveness, while reducing cockpit workloads would be unaffordable. The timing of this project is

expected to enable commercial/developed technologies to be fully integrated on the platforms and in time for Army program decisions. If HSKT ACTD demonstration goals are met, this effort should enhance transition to production. It is for these reasons that an Other Transaction was originally contemplated to allow for insertion of Government adapted technology via a highly collaborative arrangement which would provide benefits for DoD and performance improvements for the warfighter. The primary purpose of the proposed agreement is to produce and demonstrate a prototype Hunter unmanned aerial vehicle (UAV) onto which is integrated a Multi-mission Optronic Stabilized Payload (MOSP), for the HSKT Advanced Concepts Technology Demonstration (ACTD) which includes integration and flight qualification with the AH-64D Apache and A2C2s Blackhawk helicopters to assess the benefits accruing from such a commercial technology insertion.

Agreement Number: DAAD19-03-9-0001

Type of Agreement: Other Transaction for Prototype

Title: Novel Methods for the Synthesis of Long DNA and it's Assembly into Gene and Genome Sequences

Awarding Office: Robert Morris Acquisition Center – Research Triangle Park Division (AMSRD-ACC-R) on behalf of the Office of Special Technology

Awardee: Gene and Genome Assembly using Microchemical Oligonucleotide Manufacture (GMOM) Consortium, with Agilent Technologies Inc. as lead member

Effective Date: 20 June 2003

Estimated Completion or Expiration Date: 20 April 2006

U.S. Government Dollars: $3,982,764.84

Non-Government Dollars: $2,533,600.00

Dollars Returned to Government Account: $0

Technical objectives of this effort including the technology areas in which the project was conducted: Current techniques have been successfully used in the construction of long DNA fragments but they are limited by high costs, mutational frequency, time requirements and low reliability. The overall goal of this prototype technology development program is to develop streamlined, high quality micro-chemical synthesis and fragment assembly methods that will provide the basis for automated gene and genome construction devises. The ability to produce long synthetic nucleic acids of high sequence integrity will have significant impacts in several molecular biology applications, including nucleic acid structural examination, site-directed mutagenesis, and linker synthesis strategies. A systematic evaluation of the applicability and mutational potential of chemical ligation strategies will provide a roadmap for appropriate application of the technology in the broader molecular biology landscape. The development of novel, straightforward, high efficiency chemical ligation strategies could provide a broadly applied platform for use in molecular biology.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an other transaction agreement will broaden the technology and industrial base available for meeting Department of Defense needs. The development of high quality DNA synthesis methods under this agreement will leverage a novel chemical synthesis approach for RNA that was initiated in the laboratory of Marvin H. Caruthers at the University of Colorado (one of the members of the consortium.) This chemistry has been developed and successfully commercialized by Dharmacon, Inc. (another member of the consortium) for the synthesis of RNA. The lead member of the consortium, Agilent Technologies, Inc. is a non-traditional defense contractor and also has been willing to contribute 39% in cost share to this effort. Agilent Technologies, Inc. is willing to participate in this program only if an other transaction is used. The successful development of an RNA synthesis method requires the development of complex but milder synthesis and deprotection conditions. The conditions used for the chemical synthesis of RNA molecules, thus may address many of the short falls of DNA synthesis in terms of sequence integrity and length limitations. Although the chemical procedures used for the synthesis of RNA are significantly more complex than the chemical procedures used for standard DNA synthesis, the chemical synthesis procedure is currently applied in a high throughput laboratory environment to produce thousands of synthetic RNA oligonucleotides per day.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This other transaction has fostered a new relationship with a consortium of unique membership

that would have not been formed and willing to participate in this program without working under an other transaction. To evaluate the effectiveness of these novel prototype design tools, chemistries and ligation approaches for high throughput gene assembly, the University of Coloralo, Dharmacon and Agilent (members of the consortium) will each leverage their respective proprietary technologies for use in the proposed prototype technology development plan. These technologies will include, but not be limited to, proprietary chemical technologies, proprietary prototype instrumentation, proprietary design schemes and algorithms and proprietary software. These may include inkjet DNA synthesis, inkjet deposition, substrate preparation, optical imaging, data analysis, assay design algorithmics, and applications. The ability to quickly convert any long contiguous stretch of DNA sequence information into an actual isolated molecular entity will have a profound impact on not only long-term biomedical research studies but also the ability to rapidly generate antidotes against an infectious or deadly agent that either emerges naturally from our environment or is deliberately engineered for use as weapons for war or terrorist attack (thus supporting the naitional security of the USA.)

Other benefits to the DOD through use of this agreement: None.

Agreement Number: DAAB07-03-9-K201

Type of Agreement: Other Transaction for Prototype

Title: Design & Build Prototype Power Amplifier Modules for TPQ-47 Radars

Awarding Office: US Army CECOM Acquisition Center, Fort Monmouth, NJ 07703-5008

Awardee: Raytheon Company

Effective Date: 1/ 28/03

Estimated Completion or Expiration Date: 07/31/04

U. S. Government Dollars: $3,154,578

Non-Government Dollars: $ 2,969,055

Dollars returned to Government Account: $ 0

Technical Objectives of this effort including the technology areas in which the project was conducted: The technical objective of this effort is to engineer, build and verify installed operation of prototype Power Amplifier Modules (PAMs) that can be implemented in the AN/TPQ-47 radar, SDD Program.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base for meeting Department of Defense needs: This effort will enable the Government to utilize state of the art resonant inverter technology to provide high voltage bias for a Gridded Traveling Wave Tube (GTWT) as an integrated system suitable for pulsed RF high power amplification in a radar. The PAMs will ultimately be utilized in the TPQ-47 SDD radar.

Extent to which the cooperative agreement or other transaction has fostered within the technology and Industrial base new relationship and practices that support the national security of the USA: This effort will enable the Government to utilize enhanced transmitter technology in sensors that can provide information valuable to military operations, reconnaissance and other information gathering efforts in support of the security of the USA.

Other benefits to the DOD through use of the agreement: The principal purpose of this agreement is for the Government to support and stimulate Raytheon Company to provide its best effort in the development and prototyping of power amplifier modules for the AN/TPQ-47 radar.

Agreement Number: DAAB07-03-9-K601

Type of Agreement: Other Transaction for Prototype

Title: Soldier-Level Integrated Communications Environment (SLICE)

Awarding Office: US Army Communications-Electronics Command

Awardee: ITT Industries, Inc.

Effective Date: 13 November 2002

Estimated Completion or Expiration Date: 30 June 2005

U. S. Government Dollars: $29,802,111.00

Non-Government Dollars: $14,676,047.00

Dollars Returned to Government Account: $0.00

Technical Objectives of this effort including the technology areas in which the project was conducted: The objective of this effort is to capitalize on the design and development investment for the SUO-SAS technology made on the DARPA OTA, and to continue the Maturation work of this technology to provide prototype systems for integration and demonstration efforts to support the Object Forces. This action consists of engineering and maturation work of the SUO-SAS technology and procurement of prototype SUO-SAS systems for integration and demonstration efforts.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The US Army is transforming its current tactical communications infrastructure to a highly mobile, networked, adaptive and scaleable communications architecture to meet the immediate needs of the Warfighters. The SUO-SAS technology can be fully exploited using the SUO waveform as a common denominator to support multiple systems requirements (eg, dismounted soldier communications, sensors, robots relays, networked fires, and smart munitions). Interoperability with Future Combat System (FCS) can be quickly achieved with this common solution and provide a system of system approach to support the network-centric Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) architecture.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: Through the support that this Other Transaction Agreement (OTA) provides the military, the national security of the USA is supported as well. Under this effort, technology is developed for systems integration for Object Forces. This will support the U. S. Army's ultimate goal of transforming its tactical communications infrastructure to meet the Warfighters' immediate needs. Multiple systems requirements will be supported and interoperability with Future Combat Systems will be achieved. By technologically improving the Army's warfighting equipment under this effort, the national security of the USA is strengthened.

Secondly, the use of an OTA has allowed the Government more flexibility (e.g. appropriate terms and conditions were negotiated without regulatory restrictions). This flexibility allows the Government and industry to gain access to this area of technology, and will enable the Government to access research results and obtain certain rights in data and patents. It is evident that the use of an OTA has fostered new business relationships that support the national security of the United States.

Agreement Number: DAAB07-03-9-P011

Type of Agreement: Other Transaction for Prototype

Title: Dual Band Focal Plane Array Manufacturing (DBFM) Program

Awarding Office: U.S. Army Communications-Electronics Command, Acquisition Center

Awardee: Rockwell Scientific Company LLC

Effective Date: 03 Mar 2003

Estimated Completion or Expiration Date: 11 Sept 2006

U.S. Government Dollars: $15,506,611 (excludes optional tasks $2,621,372)

Non-Government Dollars: $2,448,000

Dollars Returned to Government Account: $0

Technical Objectives of this effort including the technology areas in which the project was conducted: This agreement pertains to the Dual Band Focal Plane Array (DBFM) Program, designed to develop improved manufacturing processes for dual band cooled staring focal plane arrays (FPAs), as described below. These FPAs, specifically 1280x720 pixels each responding simultaneously in the MWIR and LWIR spectral bands, meet the needs of a wide range of potential critical military applications. Critical applications of this FPA technology include long-range target identification and the advanced image processing algorithms used for rapid wide area search in Future Combat Systems for the Full Spectrum Army. Current technology is producing small quantities of single-color 640x480 FPAs (in either MWIR OR LWIR) and 2-color smaller-format FPAs (e.g., 256x256), but at relatively high costs. Because the primary roles of this highest-performance technology are military, i.e., no near-term commercial high-volume market will drive this product's development; the government's support is necessary to establish the manufacturing capability. Benefits of the DBFM Program include increased yields, lowered acquisition/logistics costs, and improved performance. The detailed goals of the Program are set forth in Section C.1. below. In summary, the two-color IRFPA manufacturing technology developed on the DBFM Program will prepare the Army and industry to transition FCS programs into Full-Scale Development and Low-Rate Initial Production phases.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: Rockwell Scientific Company is utilizing two subcontractors on this program – Nikko and Jazz Semiconductor, both of which are considered to be nontraditional defense contractors. Both of these entities are making significant contributions to the program by providing new, essential, and unique enabling technology for 3rd generation FPAs. In both cases, these suppliers provide capabilities that cannot be found anywhere else. These technical contributions increase the performance of the end product by enabling low-power, high-density circuitry and large area small-pixel detector arrays. They also significantly reduce the material costs, which is an essential element to reducing overall FPA costs by a factor of ten.

The objective of Subject program is to reduce the cost of 3rd Gen Focal Plane Arrays (FPAs), while achieving the performance criteria required by future combat systems. There are essentially three major components critical for the fabrication of FPAs: the substrates upon which the detector arrays are made, the detector arrays themselves, and the electrical circuits communicating with the outside systems or users. Each of these components is integral and inseparable to the fabrication of 3rd generation FPAs. Rockwell Scientific Company essentially is the device integrator and relies heavily on the technical contributions from Nikko for substrates and Jazz for the readout integrated circuits. Jazz is a commercial silicon foundry, and as is typical of other electronic component markets, the DOD makes up a very small part of

their business. Jazz will receive approximately $2.8M of the total $15.5M government funding on this contract. Jazz will be supplying key new enabling technology in that their ROIC fabrication process is technically and financially significant to the program. The manufacturing process improvements (non-stitch initiatives) enabled by Jazz will provide a significant material cost reduction for 3rd Gen FPAs, while enabling an increase in performance. The significant and unique technical contribution by Jazz is the use of very small design capability and circuit stitching methods using 0.25 micron design rules and 0.18 micron equipment. Jazz is the only US supplier of these capabilities.

Nikko will provide the CdZnTe substrates, which represent the technical foundation for producing these very large focal plane arrays. Nikko's substrate business segment represents an extremely small percentage of Nikko's business, and only a very small percentage of that market is defense related. Nikko, a Japanese company, is the world's only supplier of large area substrates. It will receive approximately $1.4M of the total Government funding of $15.5M. These substrates will supply new key technology relative to large area (>50 cm2) substrates, which are not available anywhere else in the world. The large area substrates are technically and financially significant to the program as they enable fabrication of large area detectors as well as increasing the throughput of arrays per wafer. Nikko's unique manufacturing process improvements (surface finish initiatives) will provide a significant performance improvement and increase in yield while the large area (increased die per wafer) provides material cost reduction for 3rd Gen FPAs.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: Using an other transaction for this program affords the government the flexibility to operate more like a commercial entity and negotiate the terms and conditions appropriate. Specifically, with regard to its in-kind contribution, the Government accepted Rockwell's proposal to evoke the guidelines of Section C.1.5 of the Other Transactions (OT) Guide for Prototype Projects, dated January 21, 2001, which relieves Rockwell of the requirement to contribute a one-third share based on the fact that two of its subcontractors Jazz and Nikko represent nontraditional defense contractors at the subcontractor and lower-tier vendor level respectively and who are providing a significant contribution to the project. As stated above, Jazz is a commercial silicon foundry that will receive approximately $2.8M of the total $15.5M government funding on this contract. Jazz will be supplying key new enabling technology in their fabrication process. Its very small design capability and circuit stitching methods using 0.25 micron design rules and 0.18 micron equipment are unique.

Nikko (formerly Nimtec) will provide the CdZnTe substrates, which represent the technical foundation for producing very large focal plane arrays. Nikko, a Japanese company, is the world's only qualified supplier of large-area CdZnTe substrates for Molecular Beam Epitaxial (MBE) growth of HgCdTe. It will receive approximately $1.1M of the total Government funding of $15.5M. The large area (>36 cm^2) substrates provided by Nikko offer a key technological advantage because they enable fabrication of large-area detectors and increase the throughput of arrays per wafer, thereby reducing the cost per unit array.

Both of these subcontractors are providing new, essential, and unique enabling technology for 3^{rd} generation FPAs. In both cases, these suppliers provide capabilities that cannot be found anywhere else. These technical contributions increase the performance of the end product by enabling low-power, high-density circuitry and large area small-pixel detector arrays. They also significantly reduce the material costs, which is an essential element to reducing overall FPA costs by a factor of ten.

It is evident that the use of another transaction agreement has fostered new business relationships that support the national security of the United States.

Agreement Number: DAAH01-03-9-R001

Type of Agreement: Other Transaction for Prototype

Title: High Energy Distributed Lighting (HEDLight) Fiber Luminaire, Efficient Fiber Optic Coupling, and Lighting System

Awarding Office: US Army Aviation and Missile Command (AMCOM), AMSAM-AC-RD-AY

Awardee: Fiberstars, Inc.

Effective Date: 19 Feb 2003

Estimated Completion or Expiration Date: 19 Feb 2006

U. S. Government Dollars: $ 6,818,352

Non-Government Dollars: $ 1,553,431

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: The technical objective of the Defense Advanced Research Projects Agency (DARPA) High Efficiency Distributed Lighting (HEDLight) Program is to develop innovative concepts relating to high efficiency distributed lighting, including high efficiency full spectrum light sources, coupling optics, optical-fiber-luminaires, and integrated fiber-illuminators, to enable significant advances in platform survivability through use of remote source lighting, particularly on Naval warships, with a secondary emphasis on enabling improved visual acuity of the warfighter. The technical objective of the program is the demonstration of high efficiency distributed lighting illuminators characterized by the Illuminator Properties and Objectives as stated in the Broad Agency Announcement (BAA) DAAH01-02-R-RB04 and the associated Proposers' Information Pamphlet (PIP). Fiberstars efforts were selected for award under coupling optics, optical-fiber-luminaires, and integrated fiber-illuminators topics.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an other transaction agreement has resulted in nontraditional defense contractors participating to a significant extent that would otherwise not participate if a procurement contract was used. Fiberstars does business through contracts for commercial items. The provisions of the OT enabled their participation by lifting the undue burden that would be caused by a procurement contract. In particular, the FAR clauses involving intellectual property would be unacceptable to commercial companies in the lighting industry. Fiberstars participation is expected to supply new key technologies in high efficiency distributed lighting. The use of an other transaction agreement benefits the DoD by allowing Fiberstars, the largest distributed lighting company and the world-leading supplier of efficient fiber optic lighting systems, to build upon their existing design knowledge and state-of the-art experience for DoD applications. Fiberstars already has in place significant illuminator fabrication and design capability, including the manufacture of fiber-illuminaires and high performance plastic optical fiber cables. Being the leading supplier of Efficient Fiber Optic lighting is a Fiberstars core business strategy. The proposed integrated fiber illuminator would enhance their existing commercial portfolio, providing a path for the future sustainment of the successful technology in the commercial marketplace.

Fiberstars and Optical Research Associates (ORA), the leading provider of illumination design software tools, have formed a team committed to developing the new HEDLight Integrated Fiber-Illuminator. Fiberstars and ORA plan to meet or exceed program objectives by considering subsystem design, system integration issues, and the development of a new software optimization tools.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The use of an other transaction agreement has lead to the development of a new relationship between the Department of Defense, Fiberstars, and ORA which should support the national security of the USA by increasing platform survivability through use of remote source lighting, particularly on Naval warships. The DoD will obtain better technology in the future by working with Fiberstars as they have a solid understanding of the tradeoffs in the integration of subsystems and of the total system factors affecting the performance, usefulness, and maintainability of a high efficiency distributed lighting system.

Agreement Number: DAAH10-03-9-0001

Type of Agreement: Other Transaction for Prototypes

Title: COSSI Savings Initiative for Magnetoelastic Torque Measurement System for the Chinook Helicopter (CH-47) Model T55 Turboshaft Engine

Awarding Office: Aviation Applied Technology Directorate (AATD), US AMCOM (AMSAM-RD-AA-C)

Awardee: Honeywell International Inc.

Effective Date: 11 Feb 2003

Estimated Completion or Expiration Date: 14 Feb 2005

U. S. Government Dollars: $ 2,100,000

Non-Government Dollars: $ 1,034,329

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: This other transaction for prototypes results from the Commercial Operations and Support (O&S) Savings Initiative (COSSI), an undertaking of the Dual Use Applications (DUAP) Program Office, a joint program of the Department of Defense. Under this Agreement, which constitutes Stage I of the COSSI, Honeywell International Inc. (hereafter referred to as Honeywell) and the U.S. Army will jointly demonstrate a form, fit and function (F^3) replacement torque measurement system for the T55 engine. The system is based on the use of a simpler, more robust magnetoelastic sensor and Commercial off-the-Shelf (COTS) integrated electronics. The COSSI magnetoelastic torque measurement system offers a means to greatly reduce Operating and Support (O&S) costs by increasing the reliability of the T55-GA-714A engine torque system. This will be accomplished by incorporating commercial off-the-shelf technology and processes without the cost of a development program. The intent is to develop and test methods for the purpose of lowering the military system's operation and support (O&S) costs by acquiring a prototype that offers increased military capabilitites of the T55 engine equally applicable to the commercial as well as the military sector. Stage I of this COSSI project is the non-recurring engineering effort to adapt the commercial design, develop and qualify the magnetoelastic torque measurement system for the T55 engine. The magnetoelastic torque measurement system will be integrated and installed on an Army CH-47 helicopter, and flight qualified/endurance tested to demonstrate the functionality of the COSSI magnetoelastic torque measurement system when integrated into the CH-47. This project for the magnetoelastic torque measurement system offers a means to greatly reduce Operating and Support (O&S) costs by increasing the reliability of the T55-GA-714A engine torque system. This will be accomplished by incorporating commercial off-the-shelf technology and processes without the cost of a development program. The capability afforded by the magnetoelastic torque measurement system will eliminate periodic maintenance, increase mean time between failure (MTBF), decrease mean time to repair (MTTR), simplify torque calibrations, eliminate support equipment and reduce demand for spares. The COSSI Agreement affords a new vehicle for industry and military services to work together in achieving the project objective.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: Use of an 845 prototype agreement has contributed to a broadening of the technology and industrial base for meeting needs. This Stage I COSSI is a highly competitive product offering. The COSSI solicitation anticipated use of the Section 845 other transaction authority specifically to experiment with more flexible ways for

conducting business with an objective of reducing cost and accessing commercial available technology which might otherwise not be exploited for use. Had the Other Transaction authority not been available, it is doubtful that the Government could have accessed this specific technology so affordably for use. Under an other transaction for prototypes, the Government can be more flexible regarding the minimum patent rights which must be obtained pursuant to Bayh-Dole. During negotiations, Honeywell requested modification to the AATD-proposed Patent article inasmuch as the purpose of the project is to adapt the existing commercial product. The negotiated article is consistent with the authority and mutual interests of the parties. Use of an other transaction enabled the Army to access the technologies, negotiate minimum essential rights in data and contract on terms that enabled Honeywell to protect its intellectual property. Use of this other transaction authority has afforded the opportunity for a highly collaborative effort which will improve the capabilities of both private sector and the Government. The success of the program is ensured through very substantial Government involvement. The past investments of Honeywell will serve as leverage and enable introduction of the magnetoelastic torque measurement system into the Chinook fleet, and facilitate a transition to COSSI Stage II, production.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The COSSI has afforded the opportunity for Honeywell to pursue a technology important to its interests and engage in an insertion effort of high impact on the Chinook. The business arrangement invoked in support of this agreement creates a very interdependent and collaborative work environment between Honeywell and the Government. This technology is of high importance for several reasons. This project for the magnetoelastic torque measurement system represents an outstanding opportunity to provide the Army with an anticipated O&S cost savings of $21.7 million through the year 2019 while significantly improving the operatinal readiness of the Chinook. The current torque measurement system is the top maintenance problem facing the T55 engine. The problems associated with the current system results from obsolete electricial components, errors due to temperature changes, low mean time between failure (MTBF), and frequent time-consuming calibrations with unique test equipment. In addition to solving the problems associated with the current system, the magnetoelastic torque measurement system will be more accurate, draw less electrical power, have fewer components, weigh less, and be more robust. These improvements are important on the future battlefield, and rapidly emerging technologies are critically needed to offset parts obsolescence, and an aging fleet that must be affordably modernized if the U.S. is to maintain its superiority. Using other transaction authority for COSSI enables the Government to take advantage of rapidly changing technology that is inherent in the commercial components brought to COSSI by Honeywell. The more flexible intellectual property terms and relief from the administrative burden typical of a conventional contract has facilitated those relationships. Additionally, for COSSI to produce the projected cost savings, there must be a very significant collaboration within the Government and with Honeywell, which this COSSI Stage I initiative will afford. The Government will be substantially involved in the IPT process and will be providing program oversight. It is clear that reengineering the process is a challenge which necessitates highly interactive collaboration rarely practiced in a conventional contracting arrangement.

Other benefits to the DoD through use of this agreement: The use of an other transaction has resulted in additional benefits. The negotiation dynamic is different when negotiating a project of mutual benefit and a project for the direct benefit of the Government. Each party to the negotiation lacks the in-depth appreciation of the other party's complete business strategy. The private investment in developing a new product offering appears to vary widely among industry sectors. It appears that the industries which have primarily civil market share may expect to spend more in developing new product offerings. The development investment is offset by a significantly more rigid intellectual property negotiation position. Insertion of this commercial subsystem into a fielded military system, having airworthiness/flight safety implications, requires disclosure of more information and delivery of more data (and providing Government rights to data) than some firms desire. It can be very difficult to achieve balance with regard to intellectual property and rights in data that recognize the interests of each of the parties. The investment in developing a new product offering and the strategic planning involved in market analysis and business alliances complicates the negotiation dynamic. Without these flexible instruments many technologies which afford incremental benefit to our fleet and developmental weapon systems will go untapped. In this

instance, Honeywell's cost share will add leverage and high probability of success. Without that leverage, the benefits of COSSI, that of lower operating costs and performance improvements, would be unaffordable for the PM Cargo Helicopter. The timing of this project is expected to enable commercial/developed technologies to be fully integrated on a Chinook to capture as early as possible O&S savings. It is for these reasons that an other transaction was originally contemplated to allow for insertion of Government adapted technology via a highly collaborative arrangement which would provide cost benefits and performance improvements for the CH-47 Chinook helicopter.

Agreement Number: MDA972-03-9-0001

Type of Agreement: Other Transaction for Prototype

Title: Closed-Loop, End-to-End Prototype System for Early Warning and Decision Making

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Hicks & Associates, Inc.

Effective Date: 13 Dec 2002

Estimated Completion or Expiration Date: 31 Dec 2003

U. S. Government Dollars: $ 19,300,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: The technical objective is to develop a terrorism information awareness (TIA) prototype system for the purpose of countering asymmetric threats, specifically to provide early warning of terrorist activity including the development of operational concepts, experimentation of technology, and development of system architecture.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The performing organization, Hicks & Associates, Inc., is a traditional defense contractor; however, two subcontractors, Acxion Corporation and Groove Corporation are nontraditional defense contractors. The use of an other transaction provided access to these commercial firms by allowing relief from the normal intellectual property regime, accounting requirements and flow-down requirements of standard government contracts. Access to these firms broadened the technology base.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The use of an other transaction has allowed Hicks to tap into the technical resources of many different companies referred to as Tailgaters in a timely and efficient manner. Rather than being required to follow the stringent subcontractor approval requirements under the FAR, an other transaction permits Hicks the flexibility to pursue additional Tailgaters that will provide significant benefits to the program without having to delay the program for time consuming approvals. The extreme complexity and time pressure of this program make the flexibility and streamlining available under an other transaction essential to technical success.

Agreement Number: MDA972-03-9-0002

Type of Agreement: Other Transaction for Prototype

Title: Aluminum-Free Active (ALFA) Super High Efficiency Diodes (SHEDS)

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Alfalight Inc.

Effective Date: 23 Sep 2003

Estimated Completion or Expiration Date: 22 May 2005

U. S. Government Dollars: $ 3,903,955

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: The technical objective of this effort is to develop several revolutionary as well as evolutionary methods for increasing the power conversion efficiency (PCE) of aluminum-free (Al-free) laser diode bars from a current 50% to a goal of 80% at 880nm and 980nm wavelength in order to pump Nd:YAG and Yb:YAG, respectively. The technology area is super high efficiency diodes (SHEDS).

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The recipient of this award is a nontraditional performer. As a small business and a purely commercial company, unable to meet the requirements of a federal procurement contract, Alfalight stated that it would not agree to the terms of the Federal Acquisition Regulation. Also, the principal purpose of this non-procurement instrument is the acquisition of a prototype for the direct benefit of the Federal Government.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: This program brings a non-traditional, commercial company into the effort to foster innovative research in the area of super high efficiency diodes. The outcome of this program will help the military to build compact, low cost high energy laser systems based on direct-diode and diode-pumped solid state materials such as slab, disk and fiber lasers that could be used for numerous defensive, tactical and surveillance applications. Some key innovations proposed are: use of a single layer of quantum dots with high bandgap Al-free material in the surrounding barrier as the gain medium for high gain and ultra-low threshold laser. Certain rights pertaining to obligation and payment and intellectual property rights were important to Alfalight. These issues required additional negotiation and flexibility in the provisions ultimately agreed upon between the parties. This flexibility and tailoring were possible only with the use of an other transaction.

Other benefits to the DoD through use of this agreement: The use of an other transaction allows Alfalight to use existing commercial accounting practices, which is necessary for this purely commercial company to conduct business with the Government.

Agreement Number: MDA972-03-9-0003

Type of Agreement: Other Transaction for Prototype

Title: DP-5X Vertical Take Off and Landing (VTOL) Unmanned Air Vehicle (UAV)

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Dragonfly Pictures, Inc.

Effective Date: 21 Aug 2003

Estimated Completion or Expiration Date: 20 Aug 2004

U. S. Government Dollars: $ 996,692

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: Dragonfly Pictures, Inc., will leverage its previously developed infrastructure and VTOL technology (independently developed by the contractor) to substantially reduce the development risk of the Future Combat Systems (FCS) program by providing a flight-ready, tactically transportable , VTOL UAV to integrate with a gimbaled payload for technology demonstration of a new sensor package called JIGSAW. The technology area is VTOL unmanned vehicles.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: Dragonfly is a small commercial contractor, primarily focused on research, development, test, and evaluation of rotorcraft technology. As a nontraditional defense supplier, Dragonfly is not disposed to accept the regulations and restrictions that accompany FAR-based procurement contracts. An Other Transaction is far more attractive to Dragonfly, because it can quickly respond to DoD needs, without being burdened with layers of acquisition rules or changes to its accounting systems. As a result, the use of an Other Transaction has broadened the technology base by providing access to a nontraditional defense supplier.

Extent to which the cooperative agreement or other transaction has fostered with the technology and industrial base new relationships and practices that support the national security of the United States: The use of an Other Transaction allowed this commercial firm to use its existing commercial accounting practices, alleviating the requirement of setting up a government-approved system. On this effort the government is making fixed payments based upon the accomplishment of milestones. Milestones may be adjusted as technical needs dictate. Further, the Other Transaction provided freedom from the standard intellectual property regime that is sometimes an obstacle to commercial participation. On this program, Dragonfly is using intellectual property it developed prior to award, thus benefitting DoD.

Agreement Number: MDA972-03-9-0004

Type of Agreement: Other Transaction for Prototype

Title: A-160 Phase I Program

Awarding Office: Defense Advanced Research Projects Agency (DARPA)

Awardee: Frontier Systems, Inc.

Effective Date: 11 Sep 2003

Estimated Completion or Expiration Date: 10 Sep 2007

U. S. Government Dollars: $ 75,000,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: The technical objective of this effort is to design, fabricate and flight test the A-160 Vertical Takeoff and Landing (VTOL) Unmanned Aerial Vehicle (UAV), utilizing a special design, which will demonstrate high vehicle reliability, operability in various environments, and operation of selected payloads. The technology area is unmanned air vehicles (UAVs).

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an other transaction agreement has enabled the DoD to work with Frontier Systems, a commercial company that has been unwilling to work with DoD under a FAR-based procurement contract. The contribution made to the broadening of the technology and industrial base is best noted by the pioneering research and development that will be accomplished in reducing the high attrition rates historically experienced in UAVs along with reducing the endurance, range and altitude gap between fixed wing aircraft and helicopters. Utilizing Frontier's streamlined research approach is estimated to cost less than it would historically cost under a procurement contract.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The success of this program will result in increased range and endurance of light rotorcraft providing the U.S. military with enhanced defense capabilities along with providing an inexpensive UAV to other departments of the Federal Government, state and local governments, and commercial enterprises.

Agreement Number: N00421-03-9-0001

Type of Agreement: Other Transaction for Prototype

Title: United States Special Operations Command (USSOCOM) X-2 A160 Hummingbird (Un-Manned Aerial Vehicle (UAV))

Awarding Office: Department of the Navy, Naval Air Warfare Center Aircraft Division

Awardee: Frontier Systems, Inc.

Effective Date: 19 Aug 2003

Estimated Completion or Expiration Date: 30 Nov 2004

U. S. Government Dollars: $18,100,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: This Other Transaction (OT) for Prototype is a follow-on to a Defense Advanced Research Projects Agency (DARPA) OT demonstrating a unique rotor and flight control design that will significantly increase endurance, range and altitude. Frontier Systems, Inc. developed and patented the Hummingbird 160 Helicopter Optimum Speed Rotor (OSR) technology that provides the basis for these capability increases.

The technical objective of this USSOCOM/NAVAIR effort is to build on the DARPA effort, demonstrating increased range and maneuverability including deep penetration, terrain following missions with accelerated take-offs and landings into small landing zones. In addition, the USSOCOM/NAVAIR effort will demonstrate the military utility of the overall system (including payloads) and identify optimal payloads and payload parameters for Special Operations Missions.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an OT has provided access to OSR technology via a non-traditional defense contractor. Frontier Systems is a small non-traditional Department of Defense contractor as defined in the Other Transaction Guide for Prototype Projects dated January 2001. Frontier will not accept a standard procurement contract. Frontier's patented OSR technology will benefit DoD wherever UAVs or helicopters have applications. If successful on UAVs, the OSR technology can be transferred to helicopters; thereby, revolutionizing helicopter design and capabilities.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: Frontier will be working with a variety of industry partners and institutions of higher learning in differing types of agreements to develop and evaluate unique payloads for the capability to support Special Operational Forces (SOF) missions. The OT will facilitate this by providing goals and general direction, rather than the hard deliverables standard in procurement contracts. An OT also allows flexibility to adjust to lessons learned during evaluations and experiments, and to adjust the development goals accordingly.

Other benefits to the DOD through use of this agreement: The continued development of this technology will also benefit and be applicable to the U. S. Army Future Combat System.

Agreement Number: N00421-03-9-0002

Type of Agreement: Other Transaction for Prototype

Title: Mid-Pacific Photonics Prototyping Facility (M3PF)

Awarding Office: Department of the Navy, Naval Air Warfare Center Aircraft Division

Awardee: APIC Corporation

Effective Date: 17 Jul 2003

Estimated Completion or Expiration Date: 17 Jul 2004

U. S. Government Dollars: $ 5,623,160

Non-Government Dollars: $ 250,000

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: The technical objective of this effort is to acquire commercial prototyping process technology needed to develop and fabricate prototype Photonic Integrated Circuit (PIC) chips for use on Navy and other defense networking and communication systems. This will be accomplished by developing and fabricating a world-class photonics prototyping facility that can be used to fabricate the next generation of integrated photonics chips needed to reduce the size, weight, cost and installation penalties associated with applying photonics to naval aircraft and other defense systems.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an other transaction (OT) has allowed the government to do business with a non-traditional Department of Defense (DoD) contractor and its collaborative team of business and engineering professionals. APIC, as a newly formed small business entity, lacks the infrastructure necessary to conduct business in accordance with traditional FAR requirements such as Cost Accounting Standards (CAS).

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The use of an OT has allowed the government to clearly define the significant contributions of all of the team participants and spell out the intellectual property rights of each party. Use of an OT for Prototype has also afforded the government more insight into the participation and performance of all team members than would be possible under the prime-subcontractor arrangement of a traditional FAR contract.

Agreement Number: N00014-03-9-0002

Type of Agreement: Other Transaction for Prototype Projects

Title: The Design, Construction and Demonstration of Sea Coaster Advanced Hull Form Technology

Awarding Office: Department of the Navy, Office of Naval Research

Awardee: American Marine Holdings, Inc.

Effective Date: 19 Jun 2003

Estimated Completion or Expiration Date: 18 Aug 2004

U. S. Government Dollars: $ 3,741,000

Non-Government Dollars: $ 732,883

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: The technical objective of this effort is to demonstrate the effectiveness of a proprietary surface effect craft hull form. The demonstration will be accomplished through the detailed design and construction of an approximately 100-foot test craft (Prototype) which will be made available to the Navy for testing and evaluation. The potential applications of this technology include high performance special operations craft, high-speed littoral warfare vessels, fast intra-theater transports and rapid deployment logistics ships.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: This other transaction will broaden the Navy's options in advanced hull forms. The recipient (American Marine Holdings) and one of the subrecipients (Air Ride Craft) have entered into a patent and technology agreement which effectively assigns certain exclusive rights and certain non -exclusive licenses in the Air Ride SEACOASTER SECAT (Surface Effect CATamaran) Advanced Marine Vehicle invention to American Marine Holdings. An other transaction agreement allows greater flexibility in negotiating patent and intellectual property rights. The unique SeaCoaster hull configuration, which combines the features of a catamaran hull form with those of a surface effect ship, has already been employed in commercial applications (65-foot hull, which was subsequently converted to a passenger ferry). The lessons learned from the 65- foot hull will be incorporated into the 100-foot test craft prototype design (scale-up) model, since the objective of the project is to demonstrate the degree to which the SeaCoaster hull form can be expanded to larger, higher speed seagoing boats and ships.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The recipient and subrecipients have never entered into or performed on any procurement contract subject to full coverage under the cost accounting standards prescribed in the Federal Acquisition Regulation, or any other procurement contract in excess of $500,000 to carry out prototype projects or to perform basic, applied, or advanced research for a federal agency. The recipient and subrecipients are providing access to technology and committing private funds to foster a relationship with the Government. An other transaction made access to the technology possible by allowing for a special licensing agreement (Patent and Technology Agreement) between the recipient and the subrecipient. Successful results could provide a vessel design applicable for both military and commercial markets.

Agreement Number: F33615-03-9-2422

Type of Agreement: Other Transaction for Prototype

Title: Endothermically Fueled Scramjet Engine Flight Demonstration

Awarding Office: US Air Force Research Laboratory (AFRL) Propulsion Directorate, Advanced Propulsion & Turbine Contracting Branch (Det 1 AFRL/PRKB)

Awardee: Scramjet Engine Demonstrator-Wave Rider Consortium (comprised of Pratt & Whitney and Boeing, Advanced Space and Launch Systems)

Effective Date: 09 Sep 2003

Estimated Completion or Expiration Date: 30 Sep 2007

U. S. Government Dollars: $ 200,000

Non-Government Dollars: $ 0

Dollars Returned to Government Account: $ 0

Technical objectives of this effort including the technology areas in which the project was conducted: The technical objective of this effort is to flight test the United States Air Force (USAF) Hypersonic Technology (HyTech) scramjet engine, using endothermic hydrocarbon fuel, by accelerating a vehicle from boost (approximately Mach 4.5) to Mach 6 to 7+. The goals of the program are (1) to acquire ground and in-flight test data of an operating, actively cooled, self-controlled prototype scramjet engine, (2) demonstrate the viability of the HyTech endothermically fueled engine in flight, and (3) prove the practicality of a free-flying scramjet powered vehicle.

Extent to which the cooperative agreement or other transaction has contributed to a broadening of the technology and industrial base available for meeting Department of Defense needs: The use of an other transaction agreement has resulted in the participation of non-traditional defense contractors which are as follows: (1) Ormond LLC, 1505 Central Ave South, Kent, WA (providing intricate water-jet milling of heat exchanger patterns), (2) Dynamic Gunver Technologies LLC, 255-T Sheldon Road, Manchester, CT (providing laser welding of engine panels without impinging on heat exchanger patterns) (3) Jansen's Aircraft Systems Controls, 2245 West University, Suite 21, Tempe, AZ (providing integration of valve sealing technologies with electronic controls at elevated temperatures and pressures), (4) Pioneer Aerospace, 45 South Satellite Road, South Windsor, CT (providing the recovery system), (5) Starfire Systems, 10 Hermes Road, Malta, NY (providing the carbon/SiC nose and tail assembly), (6) Veridian Engineering, 4455 Genesee Street, Buffalo, NY (providing wind tunnel testing), (7) Howmet Castings, 201 Cercon Drive, Hillsboro, TX (providing vehicle body structural casting). Use of an OTA facilitates the use of subcontractors for fabrication of prototype hardware and/or services whose accounting and quality systems need not be subject to standard Government FAR/DFAR contract requirements.

Extent to which the cooperative agreement or other transaction has fostered within the technology and industrial base new relationships and practices that support the national security of the USA: The use of an other transaction agreement has allowed two traditional defense contractors to form a consortium rather than having a prime/subcontractor relationship under the traditional FAR based contract. By forming the consortium, the Government will obtain significant additional prototype development effort by converting the customary indirect costs associated with a prime/subcontractor relationship into additional government funded direct costs. This also fosters an agile business partnering relationship

between the consortium and the Government, who will utilize a team approach to enable the Government and consortium to be flexible in their program management decision making process.

The following charts provide a summary of DoD's use of the three statutory reasons an agency can use to award new Prototype OTs and the level of participation on non-traditional contractors in new OTs.

Prototype OT Award Reason Code	Number of Awards	% of Total Awards	# Distinct Non-Traditional Firms Participating
"A" = Non-traditional significant participation	43	84%	38
"B" = Cost Sharing	7	14%	0
"C" = SPE Determination of Exceptional Circumstances	1	2%	3

# Non-traditional companies participating	41
# Non-traditional Companies as Prime Contractors	8

Fifty-one of the sixty-one prototype summaries contained in this Report to Congress are categorized as "New Agreements"*.

* New agreements consist of only those agreements coded as "Initial Award" in the "Type of Action" reporting block of the DD Form 2759, REPORT OF OTHER TRANSACTIONS FOR PROTOTYPE PROJECTS. Major modifications (increased scope of work) and master agreements are not considered to be new agreements.