

## Appendix C - Success Stories

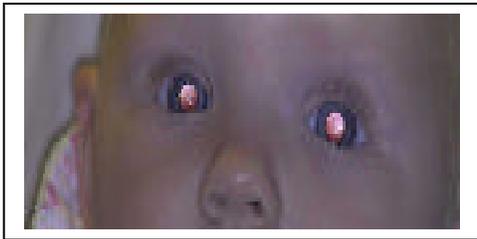
### Army – Aviation and Missile Command Research, Development, and Engineering Center

#### *iScreen*



Using a CRADA, a digital ocular scanner that produces diagnostic quality images of the eye was developed. Advanced digital imaging techniques were integrated into a photo-screening system, which is capable of screening pre-verbal, verbal, and non-verbal children and adults for: amblyopia (lazy eye), strabismus (misaligned eyes), cataracts, as well as refractive errors such as myopia (near-sightedness), hyperopia (far-sightedness), and astigmatism (elliptical

optical power). The screening requires no patient/screener interaction; the procedure is non-invasive, and requires only a few seconds for the entire process.



Called “iScreen,” it is a simple, fast, and accurate screening technology to detect ocular abnormalities in patients as young as 3 months of age. It is the fastest and most advanced system available, and results are over 90% accurate. In one year, over 500,000 eye-screening examinations have taken place across the country.

### Army – U.S. Army Soldier Systems Command, Natick RD&E Center, Sustainability Directorate, Ration Systems Division, Ration Development Branch

#### *Adaptation of Intermediate Moisture Food Technology Produces Quality Rations*



A technical breakthrough in developing military rations that look freshly prepared yet can be kept at room temperature for up to three years has been achieved. Besides meeting Army mobilization requirements, the technology reflects innovations in intermediate moisture food (IMF) technology, which carefully balances moisture, pH, and water binding to give foods soft, moist qualities without promoting microbiological growth. The team's work led to the

development of several types of pocket sandwiches.

The team's transfer of IMF technology to industry resulted in the commercialization of the rations with Sara Lee Bakery. Working under two CRADAs, Sara Lee Bakery and SSCOM (NRDEC) are actively producing extended shelf-life bakery items that do not

require refrigeration. A second CRADA with GoodMark Foods, Inc. focuses on developing and commercializing the meat-filled sandwich components. The team's success has also resulted in inquiries from other major industrial food organizations.

The technology simplifies shipping, distribution, and handling and increases soldier acceptance, mobility, and consumption. The team's work also demonstrates how federal lab technology can strengthen the U.S. industrial base—providing synergistic benefits to all partners.

### **Navy - Naval Air Warfare Center Weapons Division (China Lake)**

#### *Maximally Security Computer Network for Processing Highly Sensitive Data*



A breakthrough computer network security system called the SecureSwitch™ Information Security System (SSISS) by Market Central, Inc., and the Readykey® Information Security System for Computers™ (RISSC) by Radionics, Inc., has been developed for local area computer network security that is superior to existing techniques. The SSISS/RISSC security systems provide a maximally security computer network for processing highly sensitive data. Unlike standard data encryption and other software based computer security techniques, the new technology can work on any platform, any operating system, and any

application software. The RISSC system combines a Radionics, Inc. Readykey Access Control System with patented security network switches developed by the Naval Air Warfare Center Weapons Division (NAWCWD) and Market Central, Inc., to provide a network security system with unparalleled password protection, authentication, discretionary access control, audit trail and network configuration management. The SSISS system follows a similar approach. By focusing on a computer system's need for power and network connections, the SSISS/RISSC systems are not affected by compatibility issues with upgrades to network computer software or hardware. Up to 18,000 users per site can be put on the new SSISS/RISSC computer security system without requiring specialized computer security software resident on the network computers that often conflicts with other software and slows the performance of the computers connected to local area networks. The SSISS/RISSC security system is much more security than a firewall. Using a SSISS/RISSC system, the basic computer security features no longer reside on each individual network computer platform. So as the network data processing computers evolve to new editions of software applications, upgrades to operating systems, and upgrades of computer hardware, the SSISIS/RISSC computer security system is unaffected by these changes. This approach keeps the life cycle cost of the SSISS/RISSC computer security system low. Several technology transfer processes including a CRADA, three patents, four remaining patent applications, and one exclusive patent license agreement covering the seven patents and patent applications were used to accomplish this transfer of technology.

**Navy – Naval Surface Warfare Center Dahlgren Division, Coastal Systems Station**  
*Omni-Directional Vehicle (ODV) Drive System*



Conventional wheels on vehicles limit their directional mobility. In general, they are incapable of moving laterally, diagonally, or rotating within their own footprint. The turning radius of conventional wheeled vehicles is also quite limited. With an omni-directional vehicle (ODV), movement is capable in any direction.

When compared to standard or All Wheel Steer (AWS) vehicles, the ODV is mechanically simple with fewer components and easier to design, fabricate, and maintain than standard or AWS vehicles as the ODV eliminates complicated steering and drive mechanisms. The ODV employs a simple fail-safe control system, whether implemented in a manual, teleoperated, or automated vehicle. A three-axis joystick controls the velocity, direction, and rotation of the vehicle motion. Only a few minutes of training is required to learn to operate the vehicle safely. For robotic and automated unmanned vehicle applications the ODV drive system can easily accommodate a high-level control system. Unconstrained omni-directional movement, coupled with ease of implementing high level control systems, will enable the coordinated movement (slaving) of ODVs to transport oversize or heavy loads as well as the coordinated movement of two or more vehicles to perform a single task. Potential military applications for the ODV include ordnance handling, aircraft weapons loading, materials handling, jet aircraft engine handling/installation, and firefighting.

In January 1996, the Navy Coastal Systems Station, Naval Sea Systems Command, entered into a two year CRADA with Air Tracks, Inc., of Vineland, NJ, to transfer omni-directional vehicle technology. This company was incorporated to commercialize innovative technology to produce omni-directional vehicles. The company, now doing business under the name AIRTRAX Corporation, markets and sells two forklifts, the ATX-E3000 and the ATX-3000, and a helicopter ground handling machine based on ODV technology.

**Air Force – Air Force Research Laboratory, Information Directorate**  
*Know-It™*



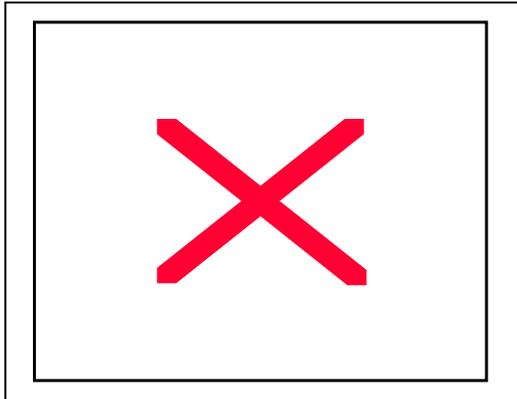
In FY2000, The Information Directorate completed its CRADA with TextWise, LLC, to determine the utilization potential of a chronological information extraction system developed by TextWise under a SBIR contract. This system, called KNOW-IT™, is a method of recognizing information-rich linguistic constructions that

contain proper names or related phrases, then producing representations of the relations between concept pairs contained in those phrases. Knowledge produced

under this CRADA will help the Information Directorate satisfy its intelligence community technology requirements.

### **Air Force – Air Force Research Laboratory, Space Vehicles Directorate**

#### *Satellite Door*



A patent was awarded to a joint team of laboratory and high school students resulting from work done under the Directorate's S.P.A.C.E. education outreach program. This joint team designed a protective satellite door that opens and closes with the aid of magnets. The student-designed door uses magnets to levitate the moving part of the door. Friction and wear can lead to door failure once a satellite is launched. By levitating the door in a magnetic field, the students were able to essentially eliminate the friction associated with a

mechanical door. On August 29, 2000, patent number 6,109,564 was awarded for an electromagnetic, sliding space environment protection satellite door. The effort received national TV coverage highlighting the event, including a CNN Christmas special for children.

S.P.A.C.E. stands for Students Planning and Conducting Engineering. Through the S.P.A.C.E. program, the AFRL provides mentors and materials so that high school students can have a real-world research experience. Under the AFRL technology transfer for education systems engineering methodology, a teacher works with the Air Force mentors providing guidance as the students conduct a year-long research project. Final results are presented to scientists and dignitaries at the Kirtland AFB S.P.A.C.E. Symposium each spring.

### **Air Force – Air Force Research Laboratory, Materials and Manufacturing Directorate**

#### *All-Composite Lighter, Quieter Forearm Crutches*



This new crutch design was born about three years ago as a CRADA effort among the Materials and Manufacturing Directorate; Ergonomics, Inc., a Dayton firm specializing in superior ambulatory aids, crutches, canes, and walkers; and the Wright Technology Network which promotes government-business partnerships and opportunities across Ohio. These forearm crutches are made from the same graphite-epoxy composite material used in the B-2 Stealth bomber and high-tech golf clubs. They are 60 percent lighter, 90 percent quieter, 20 percent stronger, more attractive, and far more durable than conventional aluminum crutches.

## **Ballistics Missile Defense Organization (BMDO)**

### *Performance Measures*

BMDO does not have laboratories per se, but funds small and large businesses, universities, and other Federal agency laboratories for advanced technology. In general, BMDO attempts to track the commercialization success of these companies, universities, and Federal laboratories in relation to their BMDO-funded research and development. Of the 485 research projects documented and approved through November 15, 2000, the BMDO Technology Applications program has tracked:

- ❖ **65 Spinoff Companies:** any time a new company is formed to help commercialize a technology developed with BMDO funding.
- ❖ **402 products on the market:** products now marketed that are based on or use technology developed with BMDO funding.
- ❖ **325 patents pending:** the number of patent applications filed by companies seeking to commercialize technology developed with BMDO funding.
- ❖ **690 patents granted:** the number of such patents that have been granted to date.
- ❖ **556 ventures:** any joint venture between an organization that has developed technology with BMDO funding and an outside concern, so long as the purpose of the venture is to help further the commercial prospects of a technology in some form. Examples of such ventures include licensing agreements, joint R&D, and marketing assistance.