A Comprehensive Approach to Cargo Container Security

Dr. George Markowsky
Ayers Island, LLC & U. Maine
Capt. Dennis Egan USCG Ret.
System Planning Corporation
Outline

• Ayers Island Homeland Security Center
• Operation Safe Commerce
• Summary of Accomplishments
• Ayers Island Testbed
• Ukrainian/Soviet Technology Adapted for Cargo Security
• Future Steps
Ayers Island Homeland Security Training and R&D Center
Ayers Island

- Ayers Island is a 60 acre island located in Orono Maine, the hometown of the University of Maine
- On the island is an old mill with 360,000 square feet
- Ayers Island is in the Penobscot River, just 2 miles from the campus of the University of Maine
University of Maine
Ayers Island
Ayers Island
The Ayers Island Project

• In 1998 the Town of Orono asked me for suggestions on how to develop Ayers Island
• Striars Manufacturing had shutdown in 1996
• Taxes and water bills were unpaid
• Had been declared a Brownfield site
• Worked out a proposal and began working in June 1999
Goal

• To develop Ayers Island into a unique environment for training and development of comprehensive Homeland Security Solutions

• We want to develop solutions that work even when the facility is open to the public
  – This is the real problem
  – Much easier to protect a place that inaccessible to everyone

• Will feature many sub-environments for training and R&D
Home Security Sensor and Software Labs, Agent Institute Home, Incubator & Office Rental 3 Stories -- 32,000 sq. ft.

Virtual & Augmented Reality Center 18,000 sq. ft.

Exhibit Area – Public Entrance

Homeland Security Training, Exhibit Area and Storage Area
Support of First Responders

- Orono Fire Department
- Dirigo Search and Rescue
- National Guard Civil Support Team
- Orono Police Department
- Old Town Fire Department
Cultural & Educational Activities

- Sculpture Shows
- Environmental Interpretation & Tourism Class
- Civil Engineering Senior Project Class
- Concerts
- ACM Student Chapter
- Boy Scouts
- Orono Historical Society
- Orono Land Trust
- Photographers and Movie Makers
- Maine Audubon Society
Lots of Visitors

Ayers Island President
George Markowsky

UMaine President Peter Hoff

U. S. Senator Susan Collins
<table>
<thead>
<tr>
<th>Investment to Date</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Ayers Island, LLC</td>
<td>$600,000</td>
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<tr>
<td>EPA Studies</td>
<td>$180,000</td>
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<tr>
<td>EDA Grant</td>
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<td>CDBG Grant</td>
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<td>MDOT Bridge Grant</td>
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<td><strong>Total Received</strong></td>
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Projects

- Operation Safe Commerce Projects
- STAR Center
- Augmented/Virtual Reality Training & Research Facility
- The Intelligent Island™ Project
  - Sensor Networks
  - Ultra Bridge Project
- NBC Shelters
The University of Maine -- Homeland Security Lab Projects

- Interoperability
- US/Canada Border Project
- The Web Neighborhood Watch
New Supercomputing Center Expands UMaine Research Capacity

In collaboration with Applied Thermal Sciences (ATS) of Sanford, UMaine has constructed a new supercomputing center at the Target Technology Center in Orono. The U.S. Department of Defense funds the project. In addition to benefiting Maine’s defense subcontractors, the supercomputing center will support bioinformatics research for Maine’s nonprofit biomedical research institutions. Associate professor Bruce Segee is one of the researchers responsible for making the cluster of over 200 computers work together. And 200 is only the start.
Operation Safe Commerce

- Grant program administered through Ports of NY/NJ and Seattle/Tacoma by the Transportation Security Administration.
- Supply chain participants partner with technology providers and compete for funding from ports.
- Contracts won by System Planning Corp. with Ayers Island as a subcontractor.
Operation Safe Commerce

- Initial award was about $3.4 million
- Final paperwork just concluded in March 2004.
- One supply chain leads from Turkey to NY/NJ and then to New England
- The other supply originates in Nagoya, Japan and goes through Tacoma/Seattle on its way to the Midwest
News Release: The National Volunteer Fire Council (NVFC) has released a report entitled "The Role of the Volunteer Fire Service in the September 11, 2001 Terrorist Attacks." (Link to NVFC Press Release) (Link to article) TriData Corporation, a wholly owned subsidiary of SPC, performed the research and analysis for this study.

Featured Product: eFAST Helps you manage all aspects of your acquisition and contract management needs. Our software can take the pain out of the selection process.
Our Partners

- Not all partners want to be named because of security concerns.
- The following is a partial list of the people working with us on this grant program.
- Activities start in April 2004.
Around the world

TAG24

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Welcome to eLogicity.

The core business of eLogicity is the provision of global track and trace solutions to all parties within the supply chain management process.

Critical to any business' success is its ready access to reliable, relevant and timely information for quick decision-making. This is particularly true in this day and age of "Just In Time" management when applied to cargo information. eLogicity provides to shippers or consignees information about their in-transit cargo allowing them to react to and plan for any contingency. This is achieved by the use of worldwide physical track-and-trace infrastructure joined to an extensive network of
Welcome to allset.se
the home of superior products for lashing and tracking of containers

:: All Set Marine Lashing
:: All Set Wireless Tracking
Top News

02/27/03: Quake Global selects u-blox ANTARIS GPS chipset for use in its new compact satellite modem, the Q1400

02/27/03: Stellar Satellite Communications introduces new STLite ORBCOMM modem

02/26/03: u-blox and Echoburst team up to provide seamless location services

02/12/03: Garmin's aviation weather application wins award

02/07/03: Maptech and SkyMate to Co-Develop wireless products for the marine industry

02/07/03: Boater's MiniWEB to change name to Skymate; Announces new safety features; Raises $400,000 from private investor group

01/23/03: Catch4 Technologies, Inc. announces partnership with ORBCOMM, LLC

01/22/03: Creative satellite-based monitoring solution found for facility in remote Sierra Nevada wilderness

01/09/03: ORBCOMM satellite network supports Atlantic Challenge Team

12/30/02: EchoBurst, Inc. Partners with ORBCOMM to Power Global Location

What's New

- NEW LEOSphere Configuration Files
- NEW Search for messaging services in your region.
- View Satellite Element Sets.
- How does the ORBCOMM system work?
- Need help with antenna designs?

Business Partner Site

ORBCOMM has established corporate relationships with industry leading Hardware Manufacturers, Software Developers, and Business Service Providers with a...
Globalstar Satellite Phones

WHAT'S NEW...

March 12, 2003
Globalstar Introduces Data Monitoring Service in North America [Details]
WELCOME TO
Marine Exchange of Alaska
Making Maritime Connections Across Alaska

We are a non-profit organization established to serve the Alaska Maritime Community by providing information, communications and services to ensure safe, secure, efficient and environmentally responsible maritime operations.

Latest News
- Coast Guard reminds “Ready for February 25
- MSNBC Interview With Ed Page on ASVTS February 25
- 100-yard Security Zone for Strait of Juan de Fuca February 08

Photo by Captain Ed Page.
Emergency Preparedness and Response

Daniel Kaniewski
Executive Director of the GWUMC Center for Emergency Preparedness
Kaniewski's homeland security experience in the executive and legislative branches makes him uniquely qualified to analyze the homeland security policymaking process. His published works calling for a House Select Committee on Homeland Security were circulated widely in the months before the eventual creation of this committee in the U.S. House of Representatives. Kaniewski also has extensive first responder experience, both as a firefighter/paramedic and as well as a policy advisor to first responder organizations.

Office: (202) 994-2437

Jack Harrald
Director of The George Washington University Institute for Crisis, Disaster, and Risk Management
Professor Harrald has been actively engaged in the fields of maritime safety, emergency management, and crisis management, as a researcher in his academic career and as a practitioner during his 22-year career in the U.S. Coast Guard. He has written and published in the fields of crisis management, management science, risk and vulnerability analysis, and maritime safety. Dr. Harrald is the co-ordinator of the Corporate Crisis Management Roundtable and is a founding member, director, and president of The International Emergency Management Society (TIEMS).

Office: (202) 994-7153
Additional Partners

- Berkeley Nucleonics
- Diaphonics
- OrbComm
- Panalpina
- Embarcadero Systems
- CSX,
- Freight Desk
- Burlington Northern-Santa Fe Railroad
Summary of Accomplishments

• Conducted integrated risk assessment on both supply chains.
• Identified and integrated the most promising candidate security systems.
• Included MEMS sensor clusters, satellite tracking and active RFI device tracking.
Summary of Accomplishments

• Prepared for static configuration tests of probability of detection of each system.
• Created a data fusion center to integrate and make actionable transportation security information accessible for each container.
• Established a voice recognition agent and information authentication system.
Ayers Island Testbed

• Ayers Island LLC will provide a full scale testbed for container security systems
• Using a full scale static container security system testing facility
• Configure containers with both manual and RFI network security devices.
Ayers Island Testbed

- Simulate container tampering to validate the threshold settings on MEMS sensor clusters and determine optimal simultaneous time-gated event declaration.
- Conduct tests in various cargo conditions.
- Evaluate the most effective internal sensor placement for various standard cargo loadings.
Ayers Island Testbed

- Various configurations to test a variety of sensor and tracking systems
- Find systems that will secure supply lanes of container shipping from acts of terrorism.
- Provide opportunities for response teams to gain greater experience and troubleshooting skills in dealing safely with suspicious containers.
Ayers Island LLC
A Long Term View

• Long-term demo facility for container security system evaluation and training even after Operation Safe Commerce is concluded.
Yangel Yuzhnoye State Design Office

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Designer General
Phone: +38(0562) 42-00-22
Fax: +38(056) 770-01-25
E-mail: kbu@public.ua.net
Web-site: www.yuzhnoye.dp.ua
Scope of Business design and engineering of satellite systems and space complexes

Yangel Yuzhnoye state design office is one of the leading enterprises on rocket complex and space rocket system development and one of the recognized world center of space rocket science and technologies.

Space rocket techniques developed by SDO Yuzhnoye with PA Yuzhmash is well known throughout the world.

Zenit, Cyclone launchers, different spacecraft ensure solving scientific and economical problems on study and use of outer space.

The enterprise is a leading participant of national and international rocket programs due to its great experience.
Holographic Flaw Detection

- Seeking to detect non-conventional entry methods into containers
- Have plans for a portable unit
- Can be used to determine structural integrity of various materials
Vibrodiagnostics

- Test integrity of containers
- Test for homogeneity of content
- In the process of development
Sensors

- Liquid Level and Flow Sensors
- Rotation Sensors
- Temperature Sensors
- Leak Detection Sensors
- Very rugged and space tested sensors
Absorbing Graphite

Oil sorption from water surface

Dry Decontamination
Robotics

- Must use robots for dangerous activities
- Yuzhnoye has built robots used in working on the Chernobyl disaster
- Many highly specialized robots are possible

The vehicle is designed for entering collapsed structures and removing debris and exploring the site
Future Steps

- AI-STAR Center (Ayers Island Security Training and Research) will continue to develop
- Will provide a broadly based approach to cargo security and homeland security in general
- Will develop new technologies as well as provide a training center where these technologies can be tested by first responders