American Association of Port Authorities

Serving the Ports of Canada, the Caribbean, Latin America and the United States

INFORMATION TECHNOLOGY AWARDS

ENTRY FORM

This form must be submitted with each Information Technology Award application. AAPA will send an e-mail notification when the submission has been received and processed. Please complete this form and include it with your electronic submission.

PROJECT NAME Security and Control Systems

CATEGORY Port Operations and Management Systems

PORT Port of Miami

CONTACT PERSON Louis A. Noriega

PHONE (305) 347-4921 **FAX** (305) 347-4915 **E-MAIL** LAN@MIAMIDADE.GOV

PERSON TO RECEIVE AWARD Charles Towsley

AAPA may post my application summary on its Web site (Check One) ✓ YES _____ NO

AAPA may post my complete application on its Web site (Check One) ✓ YES _____ NO

ENTRY CHECKLIST

1. Determine appropriate award category.
2. Follow application guidelines
3. E-mail your one-page application summary and your full application
4. Send your entry fee of $45, made payable to "American Association of Port Authorities," with this entry form to:

   Scott Brotemarkle
   Information Technology Awards Program
   American Association of Port Authorities
   1010 Duke Street
   Alexandria, VA 22314-3589

5. Do observe the July 26, 2002, deadline.

DATE RECEIVED _____ **AAPA INITIAL** _____

American Association of Port Authorities

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INFORMATION TECHNOLOGY AWARDS

AWARD CATEGORIES

1. Port Operations and Management Systems

   Including, but not limited to: new innovations in technology to enhance data flow for port operations; technologies to improve the safety and productivity of cargo and container handling; technological innovations for the tracking and maintenance of chassis, containers, cranes, and other yard handling equipment; methods to improve traffic flow and improve truck turnaround time entering and leaving a terminal.

2. Improvements in Intermodal Freight Transportation

   Including, but not limited to: technologies to improve vessel transportation safety within a harbor or port, including approaches to the port; the application of intelligent transportation system (ITS) technologies to enhance intermodal freight movement; technologies to enable the effective tracking and tracing of cargo from the port to the consignee.

APPLICATION GUIDELINES

The guidelines for submitting an application for an AAPA Information Technology Award are:

1. A **Cover Letter** from the individual consisting of a summary of the project.

2. The **Application** should be double-spaced and should not exceed 15 pages. Detailed reports, analyses, and photographs are not required, although, if available, may be included as an appendix. ***Application must be provided in PDF electronic format.***

The winning entries will be displayed at the AAPA Annual Convention. Displays should not be sent until after winners have been notified.

Additionally, any electronic media may be used for display and/or presentations, but provision of such is the sole responsibility of the winning entrant.

3. **The Application should be organized into the following Sections:**
   a. Cover Page:
      - Title of Report
      - Name of Applicant
      - Contact and Job Title
      - Date Submitted
      - Listing of Partners with Contact Information

   b. Table of Contents
   c. Port Description
   d. Introduction – Paper Highlights
   e. Goals and Objectives/Business Problem
   f. Discussion:
      - Background
      - Objectives and Methodology
      - Hardware/software used
      - Project Cost
      - Performance Measures
      - How the project fulfills the Award Criteria

   g. Conclusion

4. **Applications will be accepted only for those projects (or beneficial increments) or programs, which have been designed, planned, and approved by all applicable regulatory agencies, and constructed or implemented.** The application should indicate the current status of the project.

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INFORMATION TECHNOLOGY AWARDS

AWARD CRITERIA

1. There are five (5) general award criteria used to evaluate the entries in the competition. The project application should attempt to address these criteria explicitly.
   - **a.** The level and nature of benefits;
   - **b.** The creativity of the solutions or programs;
   - **c.** Whether the project or program results are apparent;
   - **d.** The cost effectiveness of the activity or the program; and,
   - **e.** The transferability of the technology or idea to the port industry.
2. **All Corporate members are eligible for recognition,** including members from the U.S., Canada, Caribbean and Latin America.

FEE AND DEADLINES

1. **The fee for each entry is $45.** Checks should be made payable to the "American Association of Port Authorities" and must accompany each entry.
2. Applications must be received by **Friday, July 26, 2002** and be mailed to:

   Scott Brotemarkle
   Information Technology Awards Program
   American Association of Port Authorities
   1010 Duke Street
   Alexandria, VA 22314-3589
3. Award winners will be displayed and citations presented at the Annual Convention during the Awards Luncheon.
4. In the event that a port is submitting more than one project, a separate application should accompany each project.
5. For more information contact:

   Scott Brotemarkle
   Manager of Information Systems
   American Association of Port Authorities
   (703) 706-4712
   sbrotemarkle@aapa-ports.org

Port of Miami

OFFICE OF THE DIRECTOR • 1015 NORTH AMERICA WAY • 2ND FLOOR • MIAMI, FLORIDA 33132-2081 • PHONE (305) 371-PORT (371-7678) • FAX (305) 347-4843

July 26, 2002

American Association of Port Authorities
1010 Duke Street
Alexandria, VA. 22314

Dear Mr. Brotemarkle,

The Port of Miami is pleased to submit this entry to the American Association of Port Authorities 2002 Information Technology Awards. We are very proud of all of our Information Technology (IT) accomplishments during the past several years, but in light of the events of September 11, we would like to nominate our Security and Control Systems for the award. These systems provide a seamless flow of information for security purposes, and support the Miami-Dade County Police Department and the Port of Miami Security Division. They have allowed the Port of Miami to monitor and restrict access to restricted areas of the Port without delaying the flow of commerce

Many representatives from federal, state, and local law enforcement agencies, as well as visitors from national and international Ports have visited the Port of Miami to obtain information and receive demonstrations of our Security and Control Systems. The Florida Ports Council is currently using the Port of Miami as a model for a statewide identification and access control system..

Sincerely,

Charles Towsley
Director, Port of Miami-Dade

portofmiami@co.miami-dade.fl.us
MIAMI-DADE COUNTY FLORIDA **SEAPORT** DEPARTMENT
www.co.miami-dade.fl.us/portofmiami

Table of Contents

Miami-Dade County
Seaport Department
Miami, Florida

AAPA 2002 Information Technology
Award Nomination
Title: Security Application Systems

Port Description:

Port of Miami

A department of Miami-Dade County, the Port of Miami ("Port") is the recognized world leader in the cruise industry, and a major gateway for cargo shipments in the Americas.

The Port has approximately 520 acres dedicated to rolling stock, container yards, refrigerated warehouse space, gantry crane facilities, 9 modern cruise terminals, and administration offices for the Port, government agencies, several shipping lines, maritime organizations and cruise lines.

Today, eighteen cruise vessels are homeported in Miami, offering vacationers a wide array of destinations in the Caribbean, Europe, Central and South America. Our cargo business is just as exciting, with close to 40 shipping lines calling from over 100 countries and more than 250 ports around the globe. Together, the Port's cruise and cargo businesses are responsible for in excess of 45,000 jobs in the community, and have an economic impact exceeding $8 billion per year.

Part of the success of the Port can be attributed to its strategic geographic location, which places it at the crossroads of the major shipping lanes in the hemisphere; and its close proximity to many popular cruise destinations.

An important force behind the development of the Port to world-class status, however, has been the unwavering support of its elected officials and civic leaders.

Early on, they recognized the importance of the Port of Miami to the economic wellbeing of this community. As a result, Port management has been able to develop the infrastructure, acquire the equipment, and implement the latest technological innovations to meet the demands of its cruise and cargo customers.

Additionally, the Port benefits from Miami's emergence in recent years as the international business center of the Americas, with an increasingly sophisticated and diversified trade-supported community.

Miami-Dade County has the highest concentration (over 300) of freight forwarders in the United States. Moreover, the international trade mix also includes:

- 53 consulates;
- 33 bi-national chambers of commerce;
- 20 foreign trade offices;
- 13 Edge Act Corporations; and
- 38 foreign banks, ranking Miami as the second-largest financial center in the United States.

In summary, geography, infrastructure, and people have combined to make the Port of Miami the undisputed cargo *Gateway of the Americas,* and the *Cruise Capital of the World.*

Introduction

The benefits to the local economy from continued expansion in the cargo and cruise industries are substantial, as are the inherent responsibilities - especially in the area of security. In May 2001, the Florida legislature passed amendments to the security procedures established for ports throughout the state. However, owing to its focus on security issues over the past four years, the Port of Miami-Dade had already implemented similar or even more stringent measures.

As an example, Chapter 28-A of the Code of Miami-Dade County requires that all persons entering and working in restricted areas have a Port ID badge. This identification badge can be obtained only after a criminal background check that includes fingerprinting. Applicants not successfully passing the criminal background check are denied an identification card. There is, however, an established process for those applicants to appeal the decision.

Port of Miami security policies, above and beyond those mentioned in the County Code, require that company business

permit be validated before a company employee is issued an identification card by the VIIS, and by the Gate Security System before being allowed access to the restricted areas.

Four new application systems were implemented to fulfill the Port's identified security requirements. The first system, a identification credential process was satisfied by purchasing a ***Video Imaging Identification System (VIIS)*** and customizing it in-house to meet the Port's specific needs. The second, a new C***ompany Business*** **Permitting System** was designed and implemented in-house. The third, a new ***Gate Security System*** was also designed and implemented in-house. This system electronically validates the identification card produced from the VIIS and is used to monitor visitor access.

Within the last year the Port acquired four ***Stolen Automobile Recovery System (STARS)***. These units, which were installed at the security gate complex, made Miami the first seaport in the nation to implement the gamma ray technology. These units screen all incoming containers for undocumented or stolen vehicles and other items. An on-going capital improvement project will attempt to integrate the Gate Security System with the STARS units.

Goals and Objectives / Business Problem

The Port, as the largest container port in Florida, and the 10th largest container port in the U.S. for fiscal 2001, was faced with the implementation of necessary security requirements without 1) the availability of funding for additional security gates and 2) impacting the speedy movement of cargo in and out of the Port. Manual security systems were determined to be ineffective in meeting the challenges and would have negatively impacted the flow of commerce.

As mandated by Florida Statues, only individuals who have passed security background checks, or "authorized visitors" may enter restricted access areas of a port. Therefore the Port needed to create a dynamic screening system, that could be tied to both the permitting and the personal identification systems.

The company and the company employee must be validated and tracked. Business permit status, Company Insurance, Identification Card, Employee Company Registration, and Be On the Lookout (BOLO) lists must be substantiated prior to the issuance of a Gate Pass which signifies proper entry into the restricted areas. This verification must be performed together with the entry of equipment information (Container

Number, Chassis Number, etc.) within a processing time of less than one (1) minute.

Discussion

- Background

Due to the volume of vehicles that are processed through the security gates on a daily basis (2,300), the limited number of gates and a finite number of available security personnel, it was apparent that an automated system with rapid data entry and retrieval, requiring minimized keystrokes would be essential. Data capture peripherals would also be needed to meet the processing time requirements. Issues regarding the earning potential of the companies and drivers also had to be taken into consideration. Any significant lag time between the issuance of the ID Badge and allowing access via the Gate Security System to the controlled areas of the Port could cause a financial impact to the customers.

Another important consideration was system availability. The Port operates its security gates on a 24 hour 7 day a week basis, thus downtime must be kept to a minimum. To address this business requirement, a fault tolerant hardware and network infrastructure would be required with the capability to

process data at a backup site in the event data on the principal database servers became inaccessible.

- **Objectives and Methodology**

One of the primary goals of the new security applications was to expedite the capture and verification of information for all companies and persons requiring access to secure areas of the Port. Due to the complex composition of personal and company data, the project was developed through the active participation of liaisons from the Port of Miami Security Division, Miami-Dade Police Department (MDPD), U.S. Customs, Port of Miami Marketing Division, and the Port of Miami Finance Division. Representatives from these agencies attended Joint Application Design (JAD) Meetings in order to ensure that all of the identified objectives and needs were met.

The result of the analysis phase identified four major areas of concentration. These areas of concentration became distinct systems, which are now the Port's Permitting System, Video Identification Imaging System, Gate Security System and the Stolen Automobile Recovery System. A synopsis of each follows:

Company Permitting System: This application has multiple functions, one of which is company security. This function

validates required insurance coverage and documents a company's valid registration with the State of Florida. Company employees that must access the secure areas of the Port but are not conducting business (such as county vendors and governmental agencies) are granted company "registrations". A valid company permit and/or registration is one of the conditions for company employees to be issued a Port ID Card. Permits must be renewed on a yearly basis. Failure to renew a company permit invalidates all the ID cards issued to their employees.

Video Identification Imaging System (VIIS): Before the ID Card Badging process begins, a FCIC/NCIC background check is performed. Felony criminal convictions that can be associated with actions not conducive to port activities automatically terminate the ID Card issuance process. Those individuals with felony criminal convictions are referred to an appeal process. It is the purpose of the VIIS to capture personal data about the individual, the image (via software controlled digital camera) and signature (electronic signature pad). Once the information is captured and verified, a Port ID proximity card is printed which identifies the level of access granted. The company permit status and insurance is electronically validated within the VIIS. The drivers license number, which is

captured at this time, is a key field that is used in the Gate Security System to validate a visitor's entrance.

Gate Security System: The Port of Miami Security Gateway is the entry point to the cargo terminal yards, which are restricted areas of the Port. This application is composed of three major functions: Officer Session Control, Inbound Lanes, and Outbound Lanes.

Gate session control serves the purpose of accounting for moneys collected for the use of the truck scales that are integrated into the system via a hardware interface. The Inbound lane function validates the driver and company information and issues a gate pass. The processing time to complete this transaction averages less than 1 minute. Time and motion studies conducted during the design phase determined that processing times longer than 1 minute would create unacceptable traffic backups causing trucks to backup into Downtown Miami. The innovative use of technology allowed us to meet optimum processing times. As a truck approaches the security booth, the officer enters the tractor tag and state. Upon arrival at the booth the driver presents the ID Card to the proximity reader (outside the booth). Without any operator intervention the system validates the ID Card within 2 seconds and returns the driver information and image (captured in the

VIIS) to the officer. Any validation problems (expired card, invalidated card, BOLO, etc.) are returned to the officer in the form of an alert which negates the issuance of a Gate Pass. Once the officer verifies the image on the screen is indeed the driver in the truck, the registered company information is selected (via a drop down list) and validated for permit status and insurance expiration. The officer authenticates the company name on the screen is the name on the truck. At this point the security check is complete. As a service to the terminal operators, the type of equipment and its identification numbers (Container, Trailer, Chassis, etc.) are also entered. If requested by the trucker, the scale weight is captured (via a hardware/software weigand interface) and a scale weight certification fee (Cash or Credit) is generated. The officer is now ready to press a Pfkey that stores the gate pass in the database and prints it for verification at the terminal yard. This entire process takes less than 1 minute. The Outbound process is even faster. Once the gate pass number is entered, the system returns the driver's information and image to the screen for the officer to validate that the driver who entered is the driver that is exiting. The system validates the gate pass (checks to ensure that it has not already been processed outbound, the driver has spend exces-

sive time in terminal yard, etc.) and returns any exceptions via an alert on the screen. As a service to the terminal operators we enter the type of equipment and its identification numbers (Container, Trailer, Chassis, etc.). The officer is now ready to press a Pfkey that updates the gate pass information in the database. This process also takes less than 1 minute.

Stolen Automobile Recovery System: The Port of Miami is the first seaport in the nation to assist in the design and installation of gamma ray technology to scan the inside of a container. Once the officer (inbound lanes) provides the gate pass to the trucker, he is only required to press a button (on a control panel) to initiate the scanning process. As the truck pulls out of the lane, three digital pictures are taken to capture the container number. The container is scanned as it passes by the gamma ray source and detector. Once the sensors detect the truck is no longer there, the scanning ceases and the digital pictures with the gamma ray image is saved on disk for immediate review at an alternative location staffed by MDPD and/or U.S. Customs.

- **Hardware/Software Used**

Hardware - Server (Compaq Dual CPU Clustered Servers)

DASD storage technique - Raid 1 & Raid 5

Workstations - Wintel Machines

HID Proximity Cards and Readers

Cardinal Scales

Topaz Signature Pads

Software Controlled CCD Color Digital Cameras

Printers

Okidata Dot Matrix

Fargo PVC Mag Stripe encoding and over-laminate

HP DeskJet family

Network - Ethernet 10/100 megabit per second

Databases - Oracle 8i (Fail Safe and Replication)

MS Access

Development Languages - Oracle Developer 2000

MS Access Basic

Visual Basic

Operating Systems -

Servers (Windows NT 4 Server)

Workstations (Windows NT Workstation)

stress tested after September 11, when they issued over 120 ID Badges and over 2000 gate passes per day over a period of several weeks without the need to expand the security staff to operate these systems.

STARS has effectively eliminated the flow of stolen automobiles exported from the Port of Miami. Since its implementation, when warning signs were posted informing truck drivers that all containers entering the Port will be scanned, there have been no incidents of stolen automobiles, and only a few cases of improperly documented equipment. STARS has been an overwhelming success.

- **How the Project Fulfills the Award Criteria**

The Port of Miami Security and Control Systems fulfill the criteria of all of the items listed under the "Port Operations and Management Systems" category. Four distinct systems were identified and implemented. Three of them (Business Permitting, Video Identification Imaging and Gate Security) were integrated, allowing the Port to meet its security needs. This proved to be exceptionally challenging on both the business (disperse and incongruent manual interfaces) and technological basis (new ODBC Drivers were implemented). Processing time constraints were satisfied via hardware interfaces and rapid

data entry and retrieval techniques. These systems have allowed the Port to meet the tight security measures without impeding the flow of traffic and truck turn around time entering and leaving the Port.

Conclusion

The Port of Miami has been among the leaders in implementing interactive security systems. The use of all-available hardware technology; proximity cards, weigand readers, signature pads, digital cameras, and truck scale interfaces have been integrated into the software applications to speed the processing of data. The implementation of state of the art redundant database technology has made it possible to keep these applications available on a round the clock basis to support the Ports needs.

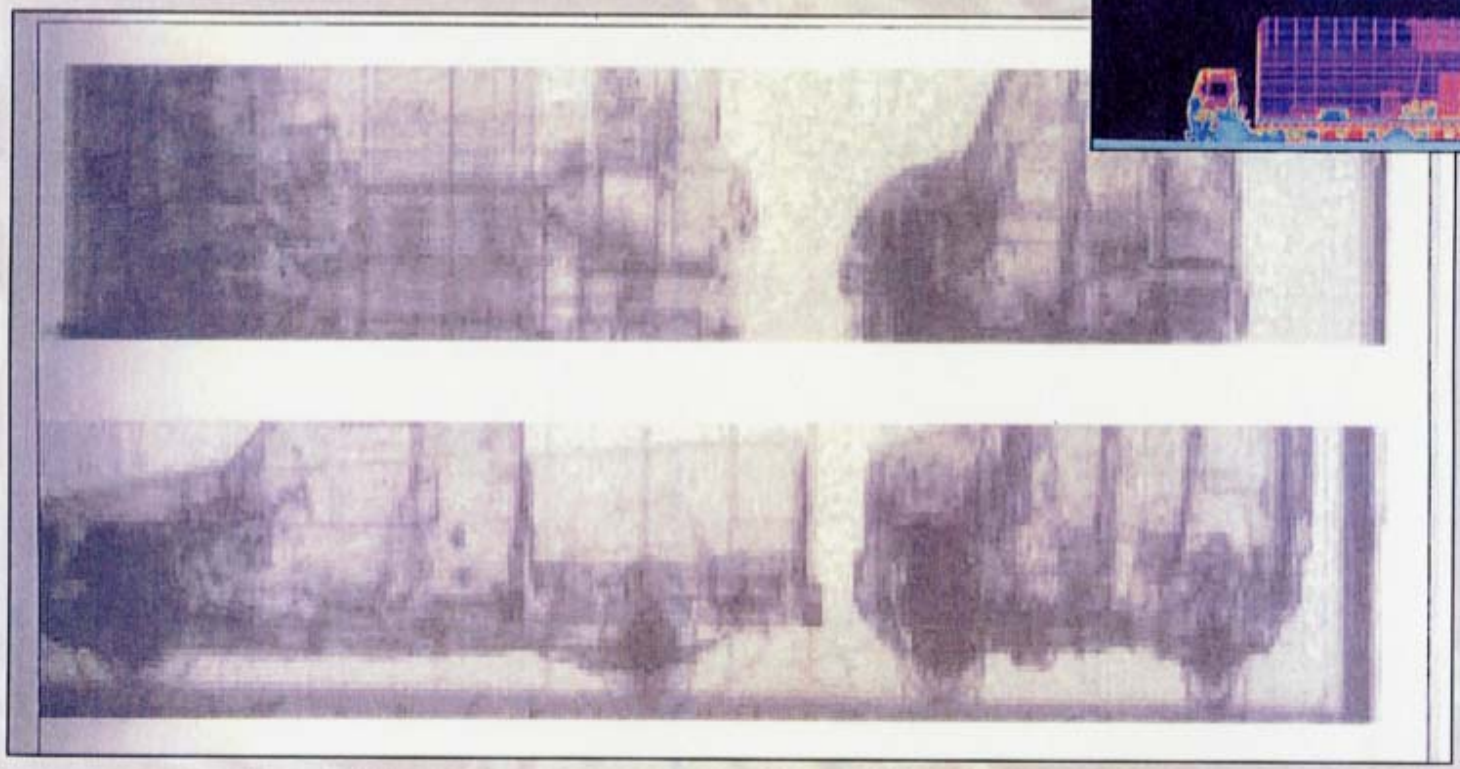
Integration between the VIIS and other Seaport applications has allowed the Port to meet its commerce needs, and at the same time conform to meet state and federal mandates prior to the actual mandate.

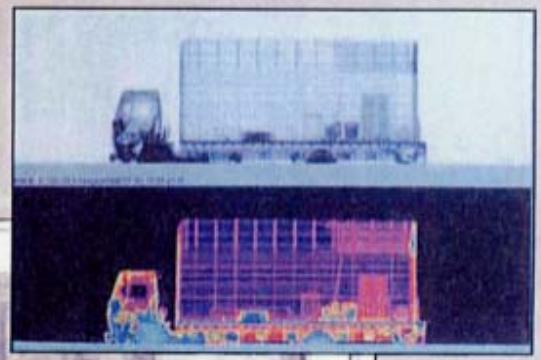
2. OPERATIONS AND TECHNOLOGY

a. GATE SECURITY SYSTEM

b. IDENTIFICATION CARD SYSTEM

Star





e. CCTV SYSTEM

SECURITY FEATURES INCLUDE: VOID PANTOGRAPH, ERASABLE INK IN AMOUNT AREA AND BLEED-THRU ARABIC AND MICR NUMBERING

MIAMI-DADE

FIRST UNION NATIONAL BANK
OF FLORIDA
MIAMI, FLORIDA 33131

MIAMI-DADE COUNTY, FLORIDA
GENERAL OPERATING ACCOUNT

108 -00068982

VOID OVER $45.00

DATE	CHECK NUMBER
07/24/2002	00068982

THE SUM OF ⊕45dols 00cts

63-643
670

AMOUNT
$ **********45.00

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Of

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