



Argosy

Intermodal

Enhancing Port & Yard Efficiency

(A GAME CHANGING APPROACH BY LEVERAGING MOBILE AUTOMATION)

Shipping Container Statistics



- Shipping containers account for about 90% of the non bulk cargo transported in the world
- Last year the world's container ports moved 560 million 20-foot containers
- There are currently over 17 million shipping containers in the world
 - Every day 5 or 6 million containers are concurrently shipping around the world on vessels, trucks, and trains.
 - In total, they make around 200 million trips a year.
 - On average a single container will have up to 13 chain of custody transfer events per shipment. Each event will require a container to be tracked and inspected!

Why OCR should be part of your solution

Today's OCR technology provides visibility not only to equipment presence at key points within the supply chain but also the recording of an object's visual condition at the time of handling.

Key ROI benefits recognized using OCR for Intermodal shipping:

- Network asset visibility - associated with multiple operations or nodes in a widespread network
- Operational Control – improves productivity and efficiency
- Safety – reduces attendant inventory time in the yard
- Security – uniquely identifies each asset and provides high resolution images to detect security seals, locked doors, holes, etc.

Markets supported by mobile OCR

- ✓ Vessel Operating Common Carriers (VOCCs)
- ✓ Intermodal Terminal Operators
- ✓ Near Port and Container Logistics
- ✓ Rail yards
- ✓ RORO Facilities
- ✓ Chassis Pools
- ✓ Customs and Border Protection Agencies
- ✓ Security Firms



RAF's Mobile OCR Solution

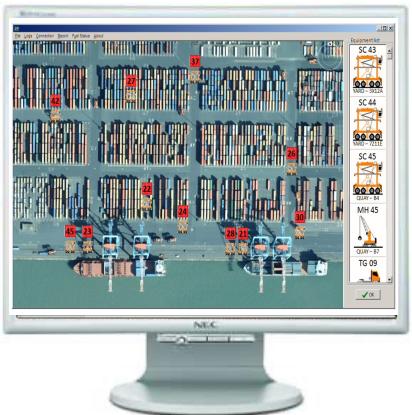


- Can easily be integrated into existing depot management systems through a simple API
- Is a low cost alternative to fixed OCR solutions
- Provides a Thick and Thin client SDK which supports a wide variety of mobile devices such as PC's, tablets, smartphones, and mobile computers
- Supports all major operating systems such as Android, IOS, and Windows
- Uniquely packaged to provide **real-time in-field data** (e.g. OCR results, GPS coordinates, pictures, signature capture, electronic mark-sense forms, etc...)



Network Workflow & Integration Overview

ARGOSY
INTERMODAL



Tracking System

*RAF's solution is hardware agnostic and can operate on any device for thick and thin client applications

Port



Container Scan #1

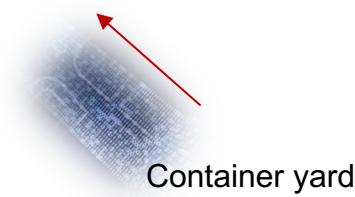


Container Scan #2

Container Scan #3



ISO Code Validation
from Manifest Data



Container yard



Container Scan #4

Use case example #1 (OCR Containers & Safety Seals)



Problem:

Manual entry of data at Gate-in

- On average requires about 4 minutes to complete each vehicle check-in
- Is labor intensive and generally requires two employee's to complete the task at each gate
- Generates high error rates (most common errors are recording the wrong container ID or Safety Seal ID)
- Negatively impacts turnaround times
- Creates gate congestion (Especially during Peak)



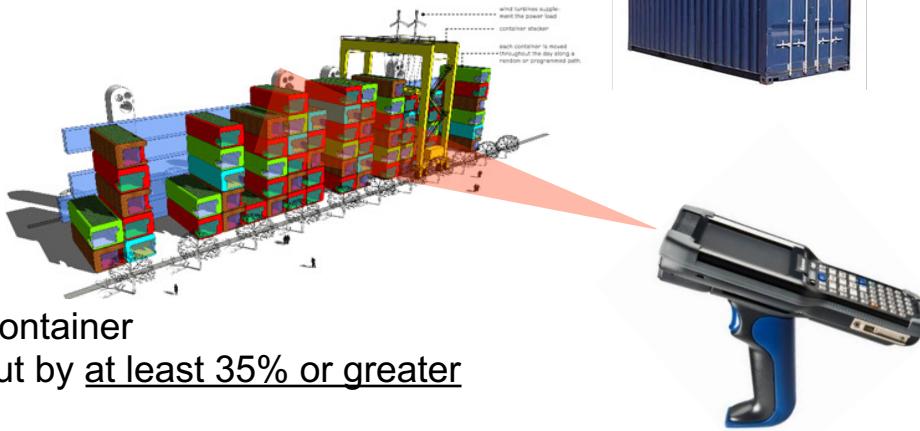
Use case example #1 (OCR Containers & Safety Seals)



Solution:

The inspector uses OCR to capture the following:

- Container ISO Code
- Dimensions
- Security Seal
- GPS coordinate data
- Provides high resolution images of the physical container
- Increase gate productivity for labor and throughput by at least 35% or greater



ISO6346 Code

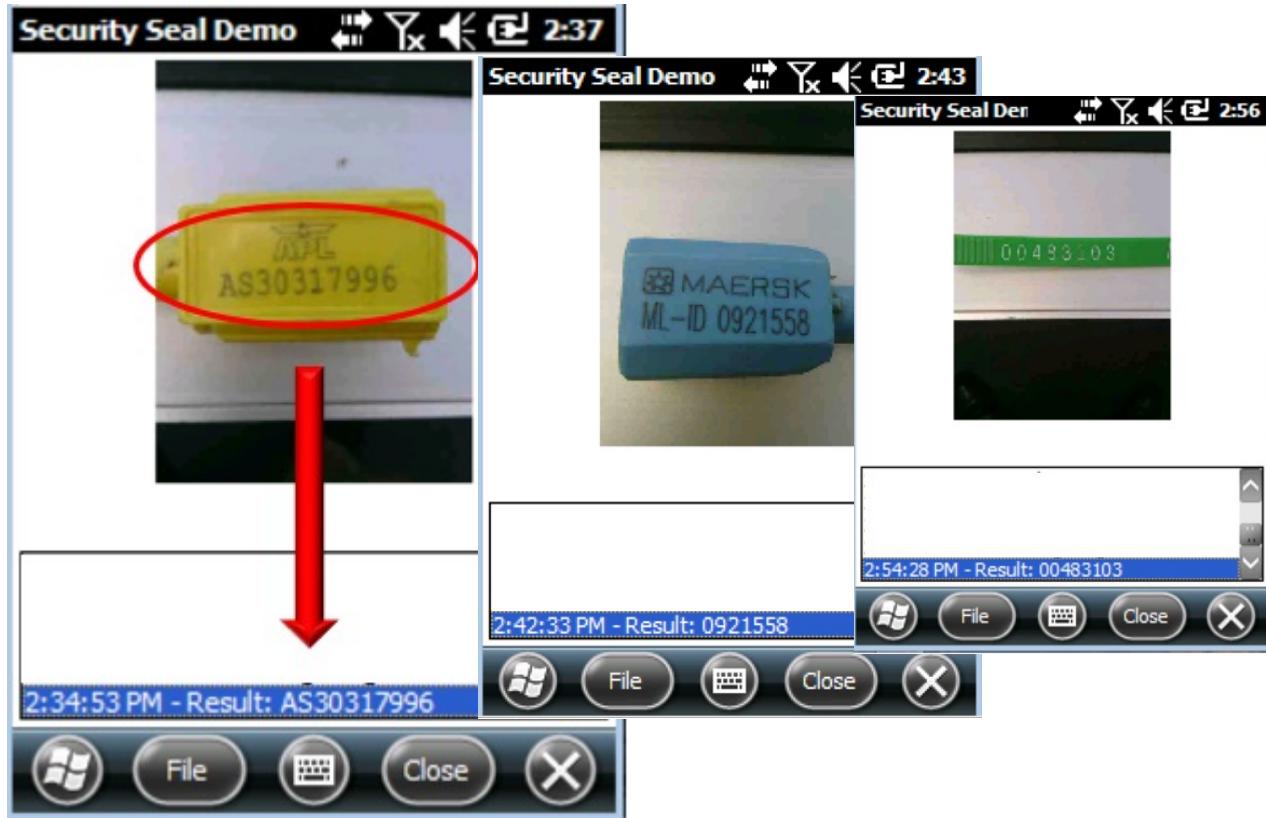


Security Seals
ISO/PAS 17712



OCR safety seal scanning

Wide variety of shapes and styles supported



ROI Benefit



Side-by-Side comparison between a manual gate-in process versus automated using Argosy Intermodal OCR software:

Manual

- 2 Employees/Gate 
- 4 Minutes/Truck
- 150 Gate Passes Issued/Day
- 4 Gates Required
- Est. Cost/Gate = \$520K/Yr.

Automated

- 1-2 Employees/Gate 
- 2.5 Minutes/Truck
- 231 Gate Passes Issued/Day
- 3 Gates Required
- Est. Cost/Gate = \$394K/Yr.



**24%
Cost
Reduction**

Use case example #2 (Safety seal authentication)

(mouse over to launch hyperlink)

Current Challenges and Threats:

<https://www.securingindustry.com/clothing-and-accessories/cargo-thieves-increasingly-using-3d-printing-says-g4s/s107/a2785/>

According to G4S in a recent May 16, 2016 article published in Security Industry criminals are using 3D-Printed security devices to disguise cargo thefts.

New technology allows thieves to make counterfeit copies of devices such as ISO 17712 high security cargo seals and locks/padlocks in as little as 10 minutes allowing them to hide signs of tampering making it difficult to identify the location or time of the theft.

“It is important that companies recognize that this new threat means they need to improve their supply chain security and lower their vulnerability to this emerging treat”

Use case example #2 (Safety seal authentication)

Current Manual Approach to Inspecting Seals



Use case example #2 (Safety seal authentication)

Key Manual Points of Seal Inspection

- Scratches
- Burn/Weld Marks
- Tampered Bolts/Rivets
- Fresh Grease
- Fresh Paint
- Silicone
- Fiberglass Patchwork
- Odor Masking Substances
- After Market Modifications



Use case example #2 (Safety seal authentication)

Solution:

- RAF along with our affiliated sister company Authentect have developed a solution which can identify and authenticate a safety seal for automated track-and-trace even in the absence of added identifying information.
- Provides a complete closed loop track & trace system easily integrated into your current YMS



The Featureprint™

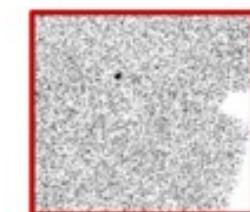
Instantly confirms an object's identity, authenticity, and pedigree at any location



A Featureprint is unique

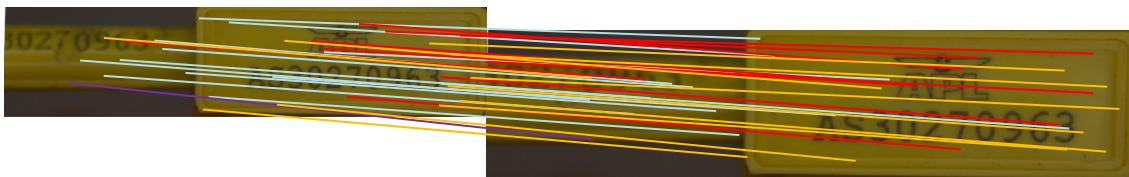
As every person has unique fingerprints, every object has unique surface properties that make it distinct from all other similar items.

Our patented Featureprinting process extracts minute hyperspectral details that clearly distinguish even objects apparently identical to the human eye. This hyperspectral image transformation collects and processes information from across the electromagnetic spectrum to uniquely classify and interrelate all the pixels of the region of interest and establishes a unique, verifiable identity of the object.

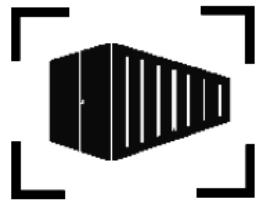


Approximate representation
of what the computer sees

Seal Authentication:

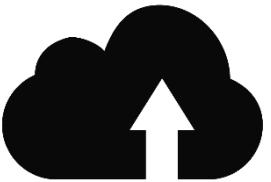


Workflow Overview



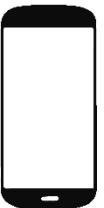
INDUCTION

Capture reference images and data at the point of provenance.



AUTHENTECT CLOUD SERVICES

Our cloud platform extracts the Featureprint from the image. Featureprints are stored and available to be referenced for authentication.



AUTHENTICATION

Smart, connected imaging devices facilitate our authentication services.



TRACK & TRACE

Seals can be tracked through your system with each Featureprint verification.

Use case example #3 (Verifying manifest records)



OCR can also be used for IMO/Hazardous Placard Detection



International Maritime Dangerous Goods (IMDG) Code Recognition (example)

- ✓ Class 1 – Explosives
- ✓ Class 2 – Gases
- ✓ Class 3 – Flammable Liquids
- ✓ Class 4 – Flammable Solids
- ✓ Class 5 – Oxidizing substances and organic peroxides
- ✓ Class 6 – Toxic and infectious substances
- ✓ Class 7 – Radioactive material
- ✓ Class 8 – Corrosive substances
- ✓ Class 9 – Miscellaneous dangerous substances and articles

Use case example #4 (Inventory, MTCE, and repair)



Truck Chassis



- Manage Current Inventory
- Record in real-time Availability & Location
- Link all Trailer Inspection records
- Track Ongoing Maintenance & Repair

Container yard checks and rail yard transfers

- OCR can reduce the amount of time spent in the yard
- Expands labor productivity to increase the frequency of inspections which will improve inventory management accuracy
- Increases yard driver moves and reduces tractor expenses
- Offers real-time verification for inventory scanned and can alert any discrepancies from railroad EDI train records received
- Enhances load plan accuracy and typically reduces annual administrative costs due to errors by 10% or more



What are the additional benefits gained using a Mobile OCR solution

- Argosy Mobile is a very low cost alternative to fixed camera systems
- Mobile OCR applications are ideally suited for intermodal terminal operators looking to improve asset visibility and tracking
- Mobile OCR provides scalable gate control to eliminate backups during peak traffic periods by increasing labor productivity
- Increases gate-in capacity greater than 35% without adding additional personnel
- Significantly reduces errors caused by manual data entry which can lower your daily administrative costs

What are the additional benefits gained using a Mobile OCR solution (Continued...)

- Provides high resolution images for containers, chassis, and safety seals along with location/coordinate which can be easily be linked into your database for each transaction recorded
- Automatically detects fraudulent safety seals in real-time
- Delivers the highest quality OCR read rates which are typically >95% with errors <2%
- Offers complete visibility during chain of custody tracking at points where fixed camera systems are impractical
- OCR provides a complete solution which enhances other technologies such as real time location systems or RFID



**FOR MORE INFORMATION
PLEASE CONTACT:**

Sales@raf.com

or call our office

+1(425) 867-0700

OR VISIT OUR WEBSITE WWW.RAF.COM

Thank You!

Argosy
Intermodal

