The Leidos Advantage

With the acquisition of L3Harris’ security detection and automation businesses, Leidos is now one of the world’s leading supplier and integrator of advanced screening solutions and technology. We deliver cutting-edge systems with the flexibility, accuracy, speed and reliability needed across the spectrum of today’s complex, demanding inspection applications. With more than 24,000 systems deployed around the globe, Leidos develops and manufactures products used by the aviation and transportation industries, government and law enforcement agencies, commercial and other high-security facilities to screen people, vehicles, baggage, ports and borders and packages.

Designed to detect a variety of explosives, firearms, drugs and other contraband, our screening products incorporate a variety of proven technologies such as 3D computed tomography; automated, conventional and high-energy X-ray; active millimeter wave imaging; radiation detection; metal detection; and energetic materials detection for trace explosives.

As a flexible, full-service system integrator, we are globally recognized for exceptional commitment to customer care. Leidos leverages the strength and experience of one of the industry’s largest service organizations to provide unrivaled 24/7 support of our solutions and products throughout the world. From needs analysis, site survey planning, project management and financing to installation, customization, training, compliance and preventive maintenance, Leidos provides unsurpassed support at every step.

PURPOSE
The purpose of this document is to describe the advantages of Leidos’ CV 2™ solution; a scalable, networkable, operational tool. CV 2 leverages the capabilities of past technology investments to enhance the capabilities of customs agencies, providing substantial value at a reasonable cost.

INTRODUCTION
Economic security depends on companies and individuals having access to a safe, secure and efficient global supply chain. The likelihood of disruption increases, as does the risk of economic security, as the global supply chain grows in complexity.

Cargo security professionals face the challenge of keeping their countries safe and keeping up with the demands of today’s commercial expectations. These professionals are asked to improve on safety and efficiency, while reducing the costs of doing so. Minimizing impact on the flow of commerce continues to
be a major challenge in today’s security environment.

Many countries have made substantial investments in cargo security infrastructure. Most of this infrastructure remains largely unconnected. The result is a number of missed opportunities which put economic security at risk. This lack of connectivity stems from the way this infrastructure was initially purchased. Each new technology and system was thought of as independent and purchased to solve a specific problem. Each technology was delivered with its own software and operational concerns. This lead to a patchwork of detection technologies and software systems from many different manufacturers. Operators had to be trained on how to use the different equipment and interfaces they present, which lead to less familiarity with the systems operated to keep the country safe. We put the full burden on sorting information, identifying issues, and determining the correct course of action squarely on these operators.

LOOKING AT THE BIG PICTURE.

A customs organization has to look at a larger picture of national security. When different points of entry have different strengths, national oversight is endangered. It is the duty of a customs organization to address each weak point. High levels of scrutiny need to be addressed at each entry point to ensure the safety of the country. Potential dangers cannot pass through a country’s borders without being documented and stopped. But stopping dangers cannot come at the price of stopping legitimate commerce.

Existing non-intrusive inspection (NII) technologies have been deployed for more than 15 years. Each NII technology has its own unique algorithms and capabilities. A NII technology deployed in 2005 will not provide operators with the same imaging performance for a similar NII system deployed in 2013. Resources need to be fluid if an operation is going to adequately react to changing requirements. These changes could be due to catastrophic events or to short or medium-term demands.
WHAT IS CV 2

The CV 2 software solution was developed specifically for port, border and security applications. CV 2 allows customs and security operations to leverage their existing infrastructure, increase efficiency, lower resource costs and extend the useful life of diverse multi-vendor legacy screening systems.

The CV 2 software solution is both networkable and scalable. Image points to entry are linked to a central command. This central command has oversight and recall capabilities. It can either assist with the decision-making process, or can serve as a pool of additional resources, to be called upon to assist in image interpretation efforts when satellite locations are understaffed or at peak hours.

CV 2 ensures that raw data collected by multiple deployed assets, even among varied manufacturers or years, is filtered through the same industry-leading features and algorithms as well as the same interface. This ensures that consistent information is presented to the person(s) making critical decisions.

Instead of looking at the infrastructure as a patchwork of standalone detection technologies from multiple suppliers, we need to look at each as a series of resources. As sensors which provide important data into a larger network, and people acting on information available to them. This larger network requires accessibility and allows efficiencies. It also connects people, giving insight between users and supervisors or from organization to organization.

The CV 2 networking software solution brings relevant pieces of information into the same interface, ensuring that all this relevant information is available to an operator so that he is able to make a more informed decision.

Networking technology is essential to getting the most out of the resources already deployed. Adding either a wired or wireless connection allows data to be collected, managed and distributed. Once the sensors are connected, the next step is to display the resulting data in a coherent and organized fashion. In a networked environment, data may be viewed on a number of devices such as desktops, laptops, tablets or smartphones.

Using a networked solution, the power of many different sensors is available to aid in inspection through a unified system. CV 2 connects different methods of detection and identification leading to a unified solution.
BENEFITS OF NETWORKING

A networked solution drives efficiency among customs officials. When members of the team are working with the same information, tasks get accomplished with greater effectiveness. Having a connected system lends itself to a baseline level of scrutiny, where each possible threat is treated to the same rigorous testing. A connection of different facets of the screening process gives a customs system the ability to be completely vigilant with possible threats, while not impeding a prosperous flow of commerce.

A flexible architecture offers a number of advantages over existing, stand-alone inspection systems, including:

› Workload leveling – inspectors can be shared between scanning systems without having to be located at the system
› Simplified training – a common imaging workstation is used for networked equipment, allowing inspectors to analyze images from connected systems without requiring additional vendor-specific training
› Enhanced probability of detection – ability to develop algorithms specific for the customer and to deploy enterprise wide
› Enhanced probability of detection – allows threat intelligence to be shared between analysts at different locations
› Regional management of inspection assets – command center monitoring of usage, staffing, maintenance cycles and direct video chat over a secure network with assets located anywhere on the network
› Continuous improvement – applies big data techniques and metrics to improve process and direct training
› Scalability and workload leveling – number of inspections drives the image analyst resource requirement
› Human performance improvements – computer-based training
› Increases system availability – enterprise-wide system health

Figure 2  CV 2 Analysis User Interface

Figure 3  CV 2 approach is a tailored and phased solution
THE CV 2 USER INTERFACE
In addition to the advantages that networking provides, the CV 2 user interface provides the benefits of an intuitive display combined with accurate, proven analysis tools and algorithms. Using the CV 2 interface, analysts are able to quickly view enhanced data, and accurately assess cargo contents for contraband. The CV 2 user interface has a quick translation feature which allows users to switch between languages at the touch of a button.

CV 2 IMPLEMENTATION
Scalability is important when implementing complex networking solutions. Leidos’ approach is to provide a CV 2 foundation which would provide immediate user benefits and then expand on that platform with additional capabilities picked with the unique customer goals in mind.

An important feature of CV 2 is its Universal Analysis. This capability ensures that the same image modification algorithms are used across all connected sensors and manufacturers, and across all networked locations. Implementation of this capability ensures all efficiencies inherent with creating a baseline for how data is presented to an operator so users can quickly make go/no go decisions.

Once the different technologies to be displayed and locations are determined, workflow improvements may be implemented. The Leidos team can use existing CONOPS to determine where and when the scanning information would become more useful. Automated cueing can be implemented. Secondary screening can be managed. Targets can be tracked through the process based on plate number or container number. Centralized locations can be used as a final call on the most difficult decisions or as an additional resource pool during heavy traffic.

Capabilities can be increased further. Standardized interfaces and combined technologies allow for more meaningful data to be collected. These databases can be used to evolve training, as a recall for specific threats, as a tool to monitor operators, or even to establish patterns of sized contraband. An operation can determine what information is most relevant.

These databases don’t have to be limited to scanning operations. Other resourced “big data” can also be integrated to establish patterns and provide further information on suspected containers. Decision making processes can be refined to adjust the level of scrutiny on particular cargo based on outside information, such as tips, port origin, etc.

PROOF OF CONCEPT
CV 2 is operating in the Rotterdam Port at Maasvlakte 2. This CV 2 solution implements four different scanning
technologies: Leidos Radiation Portals and Leidos CX-Portal X-ray scanners, along with Smiths, Nuctech and Rapiscan systems.

NETWORKING
CV 2 transfers raw data from all existing scanners to the CV 2 network. Leidos provides analyst workstations installed in a Command Center, where the data will be received within minutes of the scan and translated by an Leidos designed converter. This conversion process will display both the imaging data and any associated data files in the CV 2 user interface.

INTERFACE
The dual screen CV 2 workstation located in the suggested Command Center will include most of the features and function of the CV 2 imaging interface (material discrimination will not be part of the proof of concept scope, but can be implemented at a later stage.) Using the raw data gathered from the OmniView system, an image will be displayed and can be manipulated using CV 2’s proprietary features and algorithms.

TRAINING
Once the workstation is provided and images are transferred, Leidos will provide a Computer-based CV 2 training module. This module walks through image enhancement and manipulation functions, and can be issued to multiple “test users.”

FUTURE STEPS
Once the CV 2 networking concept is established and proven, Leidos would be excited to discuss next steps. In support of a possible future full Integration effort, the Leidos team can discuss operational needs and requirements and recommend a complete CV 2 solution, optimized for your individual cargo screening operations.

Figure 5  CV 2 interface

Figure 6  CV 2 Command Center
Fast
Frictionless
Fully Integrated

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