Abstract

As air cargo volumes increase, managing them can prove to be a logistic headache, unless you have the technological backbone to manage the growing freight traffic. To stay one step ahead, you will need new ideas that deliver more value. An intelligent, integrated, and innovative cargo management system such as COSYS lays a strong foundation for your cargo operation ensuring speed, quality, efficiency and reliability—the four pillars of success for any cargo operation.

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The Many Challenges of Growth

Air cargo traffic has increased significantly, creating unique management challenges for airlines and cargo handling companies. For instance, a recent International Air Transport Association (IATA) press report states that despite an extremely difficult economic environment in 2013, there was a clear improvement trend. With freight load factors in 2013 at 45.3% and 1.4% expansion of global freight ton kilometers (FTKs), IATA stated that it was clear that airlines were continuing to push and drive efficiencies to a different level.

More importantly, IATA has raised the cargo traffic growth forecast. It is more optimistic for air cargo than previously, due to a higher world GDP growth forecast and rising business confidence. In January 2014, global freight ton kilometers had recovered to the previous peak of early 2010. IATA has increased its cargo traffic growth forecast for 2014 from 2.1% to 4.0%, although it says that cargo growth could be closer to 8%. IATA has also raised its cargo yield growth forecast from -2.1% to -1.5%. Overall, its cargo revenue forecast for 2014 is 5% higher than before. In growth terms, it forecasts total revenues to be 5.2% higher in 2014 than in 2013.

As volumes rise, it becomes extremely important for airlines to raise their efficiency levels. Typically, ground handling systems consume significant amount of time and cost in an air cargo operation. With rapid increase in air cargo volumes, involvement of various stakeholders, multiple flights, different warehouses, and different locations, cargo handling has become extremely complex and unpredictable. Additionally, disparate or lack of cargo operation terminal systems can lead to process redundancies, lack of visibility, and control over processes.

Additional challenges arise due to the nature of the cargo, as in the case of perishable goods and goods having specific handling requirements (pharmaceutical-related goods may require cold or refrigerated environments, new smartphone launches have time-sensitive requirements). These challenges if not addressed through efficient handling of these precious and time sensitive commodities could result in major business loses for shippers and freight forwarders.

As per IATA’s Director General Cargo and CEO, Tony Tyler, “The dynamics in which the air cargo industry operates are changing, but air cargo’s basic value proposition remains the same. Customers still need speed, quality, reliability and efficiency. And we need to get better at delivering it through improved technology and modern processes...”

In summary, the multibillion dollar freight transportation industry is a critical element in the developing network of businesses around the world. As supply chains grow in complexity and demand for time-definite service increases, the efficient delivery and handling of freight through efficient processes and support by technology becomes of paramount importance.

When it is about Speed, Keep Your Eyes on the Ground

The key to improving freight handling time lies in simplifying ground handling processes. This can be enabled by smart cargo management systems. Such systems not only provide essential cargo handling and shipment tracking information on a near real-time basis, but also significantly facilitate speedier cargo handling, which is the key to improved revenue realization. Three major benefits are— improved serviceability, reduced ground handling time, and real-time cargo tracking in the terminal.
Integration Makes All the Difference

By seamlessly integrating with all connected functions, a cargo operations system can reduce warehouse holding period, increase throughput, and prevent damage due to mishandling. In short, a cargo handling solution can enable better monitoring and greater control over operations.

A smart cargo handling system can provide greater visibility and control over the daily operations of a terminal by managing documentation and integrating with the material handling system.

Similarly, smart cargo management systems can provide visibility to enable higher space utilization. This leads to increased flexibility to attract more airlines and allows cargo handling companies the ability to offer superior services and increase speed-to-market of new product offerings. This can significantly improve customer service by minimizing processing time and effort by 20% to 30%.

The Need for Efficient Communication

Smart cargo handling systems can enable airlines to reduce connection time for trans-shipsments. Transparent and efficient communication of cargo load leads to lesser delays and improved aircraft utilization. Ground handling time is also reduced as smart systems enable compliance and adherence to the rules of customs and excise. The electronic data interface between agents, customs, ground handler, and airlines at each touch point enables transparency and communication which leads to reduction in handling time. In some cases, we have seen improvements of close to 40 percent.

Where is My Cargo? Enabling Real-time Tracking for Informed Decisions

Automation enables agents to have real-time and speedy access to cargo information. Smart cargo management systems allow agents and freight forwarders to book truck docks and alert the cargo terminal with advance information before bringing the cargo to the terminal. Hence, ground handlers are able to make informed decisions with more accurate data.

Is Your Cargo Management Smart?

The cargo operations system should seamlessly integrate with all connected functions to reduce warehouse holding period, increase throughput, and prevent damage due to mishandling. Any cargo handling solution should, therefore, enable better monitoring and greater control over operations. Some other key characteristics of a smart cargo managements system are: configurability, stability, user-friendliness, and accessibility.

Be Prepared for Uniqueness: Build in Easy Configurability

As cargo management processes are unique for different firms, a smart cargo management system must be easily configurable. This is extremely important and would greatly impact the agility of the firm. A highly parameterized and configurable system ensures greater operational scalability and expansion.

Stability is Key

It is crucial that these systems are always available, as any downtime can severely impact the operations which could lead to significant losses in revenues.

The Right Information, Just a Click Away

The user interface must allow fast navigation and must be designed to enable multitasking. This will enable information seekers to quickly access the right information to complete a transaction quickly. Online help must be provided at important stages, with the ability to quickly access important functions through short keys. Systems must also have the option of multilingual support. Within a cargo terminal, it will also help if these systems can be accessed via handhelds. Equipped with handhelds, workers can scan goods quickly and feed information automatically into corporate systems.

High Accessibility, Robust Security

The system must be highly accessible via web-based functions with robust security. Access to the application and data should be designed to suit the requirements of the agent, airlines and other government bodies so that the information and content presented is precise and meets their operational requirements.
COSYS, a Smart Cargo Management System

COSYS is an example of a smart cargo system. COSYS was co-developed by NIIT Technologies for SATS, a complete cargo handling platform that automates and simplifies the process. Short for Cargo Operations System—Intelligent Solutions, COSYS-IS a proven warehouse management system specifically designed for cargo ground handling agents and cargo carriers. With COSYS, you can manage the following functions:

- Export operations
- Import operations
- Transshipment handling for hub operations
- AWB management
- ULD management
- Track and trace functionality
- Flight management
- Warehouse management
- Billing
- Incidence management
- Report generation (Cargo tonnage, AWB, staff productivity, mishandling, etc.)

The system has some innovative features such as truck control system and planning module.

Real-time View of Every Truck in the Terminal

Truck control system is a first-of-its-kind solution which uses a combination of radio frequency (RF) device signals and fuzzy logic to give the operators in the terminal control center a real-time view of every truck in the terminal. It includes:

- A real-time truck park and truck dock allocation system
- A unique GUI for tracking of truck movements through RF device tracking at vantage points across the terminal using flash

Capacity Planning Made Easy

COSYS is a unique solution that assists the cargo terminal operator to plan, monitor, and manage operations efficiently and ensure SLA compliance through optimal usage of the capacity of the facility. Planning is the process of allocating tasks (work to be done) using resources (used for performing the task) with constraints on the possible resources that can be allocated for a task. Additionally, tasks have constraints on allocation on the timeline, with an Earliest Start Time (EST) and Latest Completion Time (LCT). This solution has a unique UI, which provides a graphical representation of the data and an interactive ‘what if’ analysis feature for the duty managers and supervisors, allowing user intervention and ensuring SLA compliance during delays and weather inclemency.

Some benefits include:

- Cargo planning based on Heuristic algorithms
- ‘What if’ analysis functionality
- Ability to use of historical information in the absence of real-time inputs
- Assurance of SLA compliance
Cases in Point: Proven to Make a Difference

Implemented at five cargo terminals at four of the biggest airports in the world, COSYS is a proven smart cargo management system. Here is a brief overview of three key installations:

**Singapore Airport Terminal Services (SATS), Singapore**

With more than 50 years of experience in the air cargo business, SATS is one of the busiest cargo and mail handlers in the world providing airfreight, mail, express, and courier services to more than 300 international and local freight forwarders in Singapore.

SATS is the leading provider of gateway services and food solutions in the Asian region. Consistently rated the best Air Cargo Terminal Operator in Asia, SATS is one of the most modern in the world combining the latest computer technology with a fully mechanized material handling system. It has the capacity to handle 2 million tons of cargo per year. The cargo and mail handling services are ISO-9002 certified.

In 2000, we co-developed and implemented COSYS for SATS in Singapore. Subsequently, the system underwent upgrades technologically and functionally. Presently, it supports not only SATS cargo operations in Singapore, but also the SATS Joint ventures in Beijing, Taiwan, Indonesia, India, and Vietnam.

NIIT has a strategic partnership with SATS to jointly market and implement COSYS Intelligent Solutions to help air cargo ground handling agents improve their cargo handling capabilities.

**Cathay Pacific Cargo Terminal, Hong Kong**

In 2008, Cathay Pacific Services Ltd. (CPSL) embarked on a plan to build the most efficient cargo terminal in the region. The terminal planned was more vertically designed to save land and construction costs.

NIIT Technologies has designed, configured, and enhanced the core COSYS system using open, component-based, n-tier architecture, which is highly flexible, scalable and efficient. With innovative modules like truck control system, planning, booking, SLA, performance, and real-time monitoring transshipment integrated with the most advanced Material Handling System, the system ensures that the terminal meets its programs goals of increased efficiency.

With a handling capacity of 2.6 million tons per annum, this terminal is specially designed for a ‘just-in-time’ operation and facilitates hub transfer handling, reducing the waiting time between connections.

The terminal and the system are designed to offer customer airlines the advantage of extended cutoff times, last-minute cargo acceptance, and reduced connection handling time for transshipments due to a strategic mix of just-in-time operations and advanced technology.

**PT Jasa Angkasa Semesta Tbk, Indonesia**

NIIT Technologies has implemented COSYS to support the cargo handling operations at Jakarta, Surabaya, Denpasar and Medan airports in Indonesia for PT JAS. COSYS facilitates better monitoring and enhanced control of the end-to-end cargo handling operations.

COSYS for PT JAS was configured and enhanced to interface completely with the local customs, thereby improving staff productivity by reducing process redundancies. COSYS has helped PT JAS and its customers with the benefits of faster cargo turnaround and improved operational efficiency, leading to reduced costs, reduced cargo mishandling, faster and accurate information exchange, and enhanced customer service.
The NIIT Thought Board: Power Ahead with Smart Cargo Management

What are the Major Challenges in Cargo Management?

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<th>Complex and Unpredictable</th>
<th>Lack of Visibility</th>
<th>Handle with Care</th>
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<tr>
<td>Increase in air cargo volumes, involvement of various stakeholders, multiple flights, different warehouses, and different locations have made cargo handling extremely complex and unpredictable</td>
<td>Disparate or lack of cargo operation terminal systems gives rise to process redundancies, lack of visibility and control over processes</td>
<td>Some cargo are time sensitive and have specific handling requirements such as perishable goods, pharmaceutical-related goods, etc</td>
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How can Companies Achieve Speed, Quality, Reliability, and Efficiency?

The need is a cargo management system that enables:

<table>
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<th>Seamless Integration</th>
<th>Efficient Communication</th>
<th>Real-time Tracking</th>
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<tr>
<td>A solution that communicates with all connected functions to enable better monitoring and greater visibility and control over operations</td>
<td>Provides an electronic data interface between agents, customs, ground handler, and airlines at every touchpoint, enabling transparency and communication, in turn reducing handling time</td>
<td>Provides real-time and speedy access to cargo information enabling informed decision-making</td>
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Which Capabilities Make for a Smart Cargo Management System?

<table>
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<th>Highly Parameterized and Configurable</th>
<th>Always available</th>
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<tr>
<td>Allows for fast navigation and multitasking, supports multiple languages</td>
<td>Highly accessible via web-based functions with robust security</td>
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How have Cargo Terminals Benefited with a Smart Solution?

NIIT Technologies has implemented COSYS, a complete cargo handling platform at major terminals across the globe. Here is a summary of the benefits realized by various terminals.

<table>
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<th>Singapore Airport Terminal Services (SATS), Singapore</th>
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<td>Comprehensive support not only SATS cargo operations in Singapore, but also the SATS Joint ventures in Beijing, Taiwan, Indonesia, India and Vietnam</td>
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Smarter Cargo Handling Systems Promise a New Era of Efficiency

At NIIT Technologies, we see airports grappling to quickly facilitate movement of large volumes of cargo traffic and airline and cargo ground handling firms struggling to find the right IT system that enable them to manage operations efficiently. Our endeavor has always been to deliver new ideas and more value. With COSYS, we have developed a smart cargo management system that enhances service capabilities, simplifies the cargo handling process, and help firms greatly improve their overall customer service. Additionally, the smart cargo handling system handles all cargo ground handling agents and airlines from one front-end, provides EDI Messaging, monitors bottlenecks in workflow, improves service levels, and provides flexibility to operate in a multi-warehouse, multi-location environment.

Clearly, a smart cargo management system can enable quicker cargo turnaround rate, provide easy integration with a diverse system landscape including partner networks, and most importantly, ensure a future-ready infrastructure in terms of scalability and enhancements.

Sources:
NIIT Technologies is a leading global IT solutions organization, differentiated on the strength of domain expertise; it services clients in travel and transportation, banking and financial services, insurance, manufacturing, and media verticals. Leading with its service vision “New Ideas, More Value,” NIIT Technologies is committed to delivering new ideas combined with operational excellence to provide exceptional value to its clients. The Company is focused on helping businesses design sustainable, optimizable and winning digital operating models, enabling them to become agile, scalable, and flexible. Visit us at www.niit-tech.com

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