Present and Desired End States for

Air Cargo Security

and

Risk Discussion

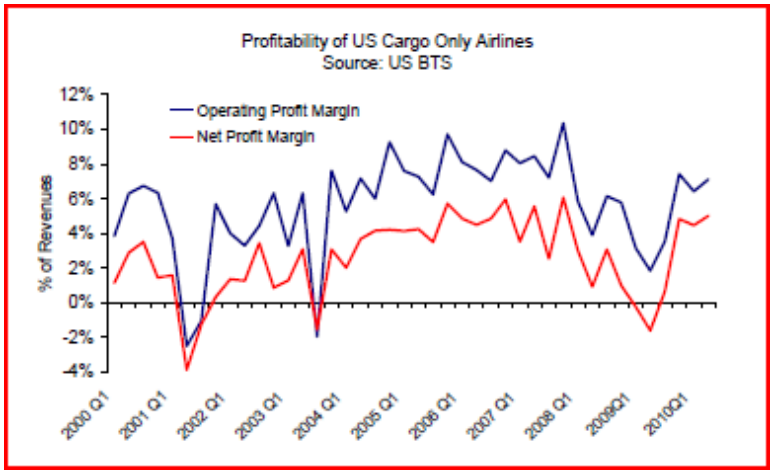
Doug Bauer, University of Connecticut

Presentation Outline

- Setting the Stage I: the Air Cargo Global Environment
- Setting the Stage II: the United States Air Cargo Security Environment
- Current State of U.S. Air Cargo Supply Chain Security
- Vision for U.S. Air Cargo Supply Chain Security
- A 3-pronged approach: Screening, Supply Chain Integrity Technology, and Data/Information Management
- Overview of Current Technology, Qualification Status, Limitations, and Gaps
- Summary of gaps
- Transitioning approach (business, technology)
- Risk Questions for Consideration
- Recommendations

Overview of the Air Cargo Business

- $50 Billion business
- 35% value of goods traded internationally
- 4% margin
- Growth 5.8% annually since 2001
  - Asia is ½ the business and it is booming
  - China has a 300% increase in volume
- Expected growth over the next two decades (2005 – 2025)
  - 5.3% through 6.9%
- Sea growing market share links to air cargo
  - Faster ships, lower prices, innovative solutions
  - ~11%
- 200-300 new wide-bodies come into the market each year
  - More bulk cargo
- Import operations in Canada, Singapore, and Australia
- Export operations in India, China, Taipei, Columbia, and Israel
- Flight departs every 3.5 seconds
- Freight volume is highly variable due to seasonal variations in commodity mix and national/local economy



Low profit margins; Linked to other modes; Smaller weight high value goods; Moving towards specialized operations; Fast, Varied commodities

Challenges of Global Supply Chain Security

- Security must be cost sensitive
- Security impacts commerce/business
- Security program must be stable and predictable
- Security must integrate Technology, Procedures and Processes

Understanding the challenges of the air cargo environment and constraints facing industry is key to improving air cargo security

Air Cargo Supply Chain Security: Status

- Fragmented
  - Supply chain operators
  - Individual operators are taking on the responsibility based on resource availability
- Limited/No technology standards
  - Still based on baggage, screening and supply chain integrity technologies are slowly being qualified
- No security data standards
- No security process standards
- No accreditation standards
- No integration standards
- Less than ½ industry have electronic messaging system (e-Freight)
- Global cargo security regulatory framework
  - ICAO (190 states participate)
  - However, it is not clear who has implemented cargo security?
  - How many are integrated with customs?
  - How many have Harmonized programs?
- One Nation's accreditation standards not accepted by another

Current Screening Technology:

- Explosive Detection System
  - Computed Tomography
- X-Ray Technology
  - Non-CT transmission X-Rays
  - Back scattered X-Rays
  - Extremely low-dose X-Ray devices
  - Coherent X-Ray scattering
  - Duel Energy X-Ray
  - Gamma Ray systems
- Explosive Trace Detectors
- Electromagnetic Metal Detectors
- Nonlinear Junction Device Detectors
- Stowaway Detection Technology
  - Heartbeat monitors
  - CO2 detectors
- Non-SSI website for qualified technologies: **https://www.tsa.gov/certified-cargo-srenning-program**

Current Screening Technology (cont'd)

- Improvised Explosive Device (IED) Detection & Defeat Technology
  - Detectors
  - Disruptors
- Acoustic Technology
- Colormetrics Technology
- Vapor-based Explosives Detection Trace Portal (Puffers)
- Millimeter-Wave and Terahertz Technology
- Containerized Cargo Screening Technologies:
  - Pulsed Fast Neutron Analysis (PFNA)
  - Pressure Activated Screening System (PASS-C)
  - Quadrupole Resonance/Trace (QRT)
  - Megavolt Computed Tomography (MCT)
- Canine & Propriety Canine

Transitioning Approaches:

What is our starting point?

- The air cargo supply chain network has piecemeal screening solutions
- No solutions currently exist to continuously maintain chain of custody of previously screened cargo
- There is no transparency in the supply chain for outbound and inbound cargo
- No international data standards or harmonization requirements are implemented globally

Transitioning Approaches: Where do we want to be?

Desired End State: a fully integrated, secure global supply chain network that allows seamless movement between transportation modes:

- The supply chain network has transparent screening for outbound and inbound cargo. At all times, systems knows
- International data standards and harmonization requirements are implemented globally
- The supply chain network has comprehensive, effective, affordable screening solutions
- The supply chain network maintains chain of custody of previously screened cargo at all times

Risk Questions for Consideration

- 3 Kinds
  - Explicit
  - Implicit
  - Perceived

- 2 Categories of Risks
  - Internalized
  - Externalized

* For Government Relevant Stakeholder: Traveler

Buying Down Risk

- Public should pay for internalized risk reduction
- Stakeholder vendors set prices
- Public costs brought down by incremental risk reduction investment
- A-priori risk: perceived risk affects political receptivity
- Precedents
  - FAA Safety Program
  - Integrated Resources Planning (IRP) for electric utilities

Other Questions for Consideration

- Commence initiatives of Security improvements

- Collective Action in Security:
  - EPRI
  - GRI
  - NRRI

Proposed Research Areas

- Neutron Technology with smaller footprint
  - Application to pallets characterization

- Risk Quantification for Air Cargo
  - Create and Alert
  - DHS - BMD & EXD
  - DHS/S&T & TSA

- Supply Chain Integrity
  - Short Fall of Present System
  - Technical
  - Cost ?

Recommendations

- The U.S. should lead an effort to create international air cargo data standards and harmonization

- DHS should develop an Air Cargo Security Knowledge Center.

- DHS should develop a formal road map for implementing these recommendations. Road map development would include convening a panel of subject matter experts in each area to aid in drafting and annually reviewing the path forward.