

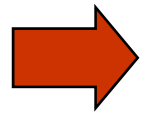
# Agriculture and Food Safety & Security through Intelligent Asset Management

Homaira Akbari, SkyBitz CEO



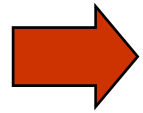
## Vulnerability Throughout the Food Chain

There are a number of vulnerabilities in food chain **transportation**

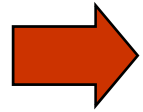


High risk of contamination

- Intentional contamination
- Un-intentional contamination



Low Visibility in transportation, transshipment and warehousing of food



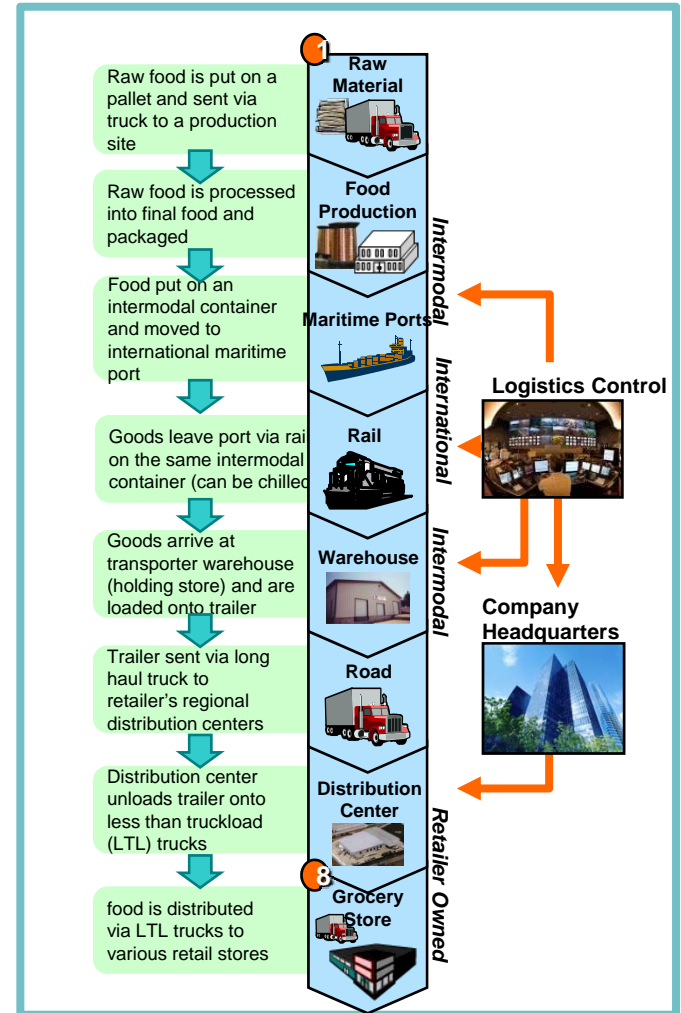
Lack of Control in the Supply Chain Management

## Vulnerability Throughout the Food Chain a few example statistics

- 1** \$35 billion (2006 industry estimates) of annual food waste in the supply chain in the U.S. alone
  - Human error accounts for up to 80% of cargo losses during transport
- 2** 33% of all perishable freight is wasted during transport
  - 1/5 of a fruits and vegetables spoil before reaching the market
- 3** Temperature is the 2<sup>nd</sup> most important factor leading to food borne illness
  - surpassed only by contamination as a casual factor

# Complex Chain of Food Transportation

- With globalization, the supply chain, food transportation and transshipment is becoming complex and vulnerable
  - Many factors in the food chain
  - Many modes of transportation: rail, marine, truck, resulting in several loading and unloading
  - Many and varied quality control critical points: temperature within a shipping container can vary up to 35 percent!



## Why does the Cold Chain Fail?

- High initial product temperature
- Warm loading conditions
- Lack of supply chain visibility and control
- Leaky door seals, damaged insulation and old insulation
- Operators and drivers

## Food Safety & Security Post 9/11

- Legislation
  - The Bioterrorism Act Of 2002 June 2002
- Implementation Programs
  - Food Safety & Inspection Service (USDA) May 2003
  - Center For Food Safety & Applied Nutrition (FDA) Under Way
  - FSIS Food safety and Inspection Service (USDA) current

The food industry in 2007 will spend **\$25+ billion dollars** to support various compliance programs such as the U.S. Bioterrorism Act, the Can-Trace Initiative in Canada, the European Global Food Law, and the Japanese Agricultural Standards in Japan.

## Other Considerations for Food Transportation, Transshipment and Warehousing

- Shelf Life
  - Not just for cold chain and perishable goods but for almost all products
- Inventory management from production to shelf
  - What products to send where and when
- Transportation asset utilization and competitiveness
  - Low operating and capital expenses
- Customer satisfaction
- Theft prevention

## Remote Asset Management Solution Leadership to address Food Transportation Requirements

Technology has advanced dramatically over the last 12-14 months; the best solutions combine three types of technologies:

1. Sensing technologies of the load or the container
1. Real-time remote tracking and monitoring technologies of the load and the container
3. Real-time control technologies to reset parameters of the container or re-direct the container and the load



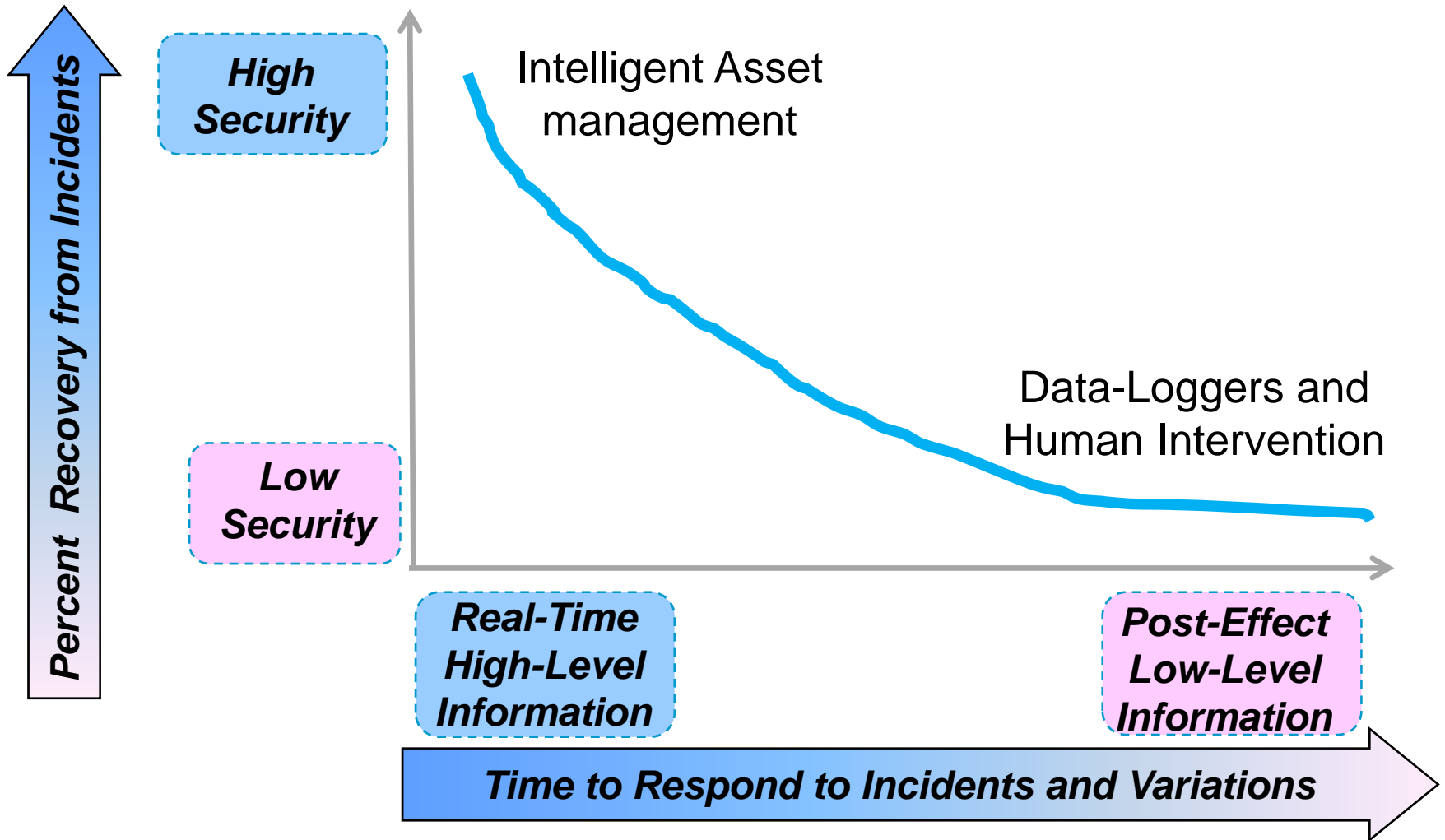
## Suite of Intelligent Sensors Required

- **Temperature sensor**
  - Log the information about temperature of the load
- **Reefer Monitor and Control Module**
  - Monitor, control and send notifications for temperature conditions
- **Door Sensor and RFID Seal**
  - Door open or close and tampering notifications
- **Smart Sensor**
  - Automatic and geo-fenced departure and arrival notifications
- **Cargo Sensor**
  - Accurate load data
- **Tractor/Trailer I.D. and RFID-Tag I.D.**
  - Asset and hauler identifications through several technologies
- **Mileage, Pressure, Tire Pressure, and Humidity Sensors**
  - Available for various configurations

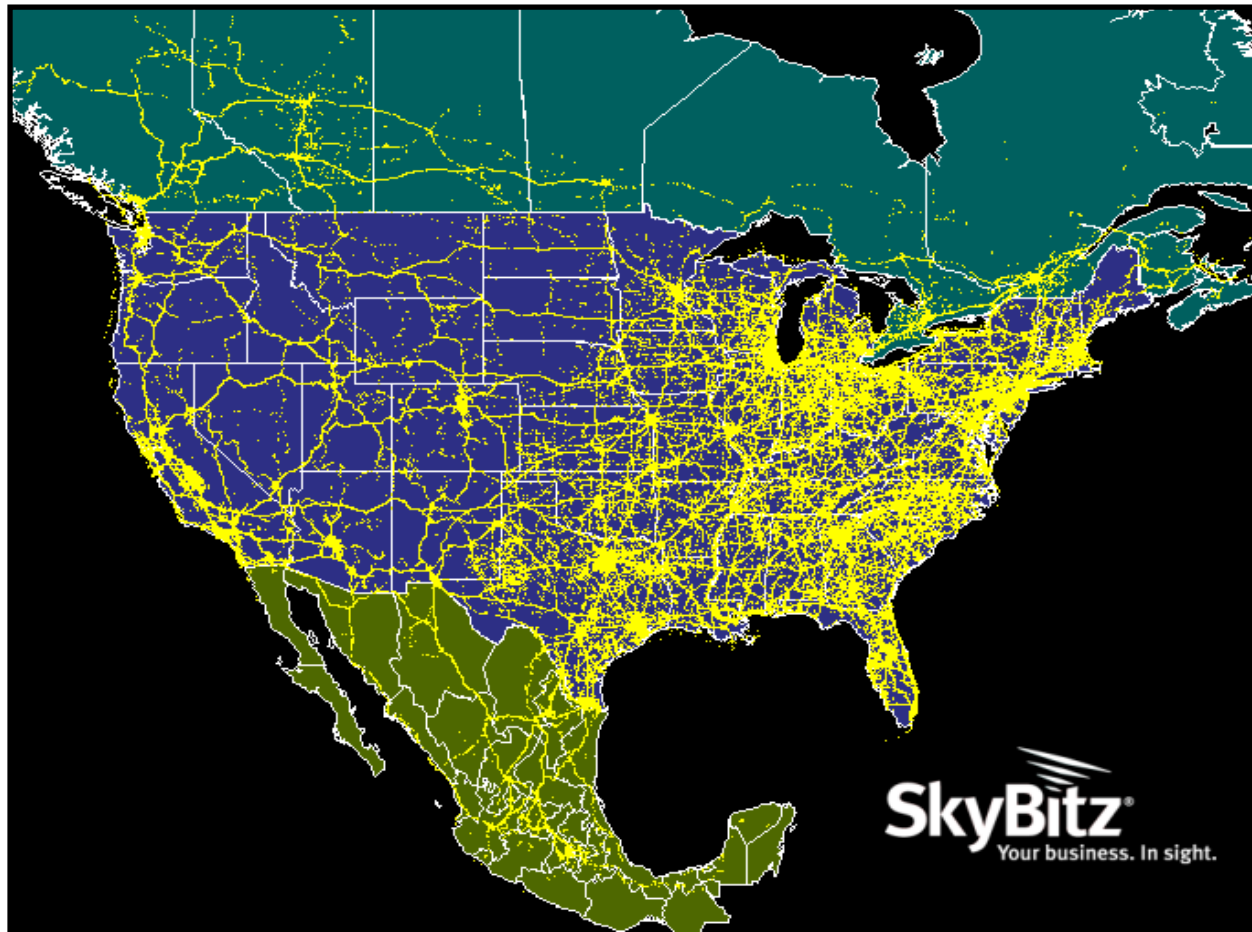
## Real-time Tracking, Monitoring and Control Solution Required

- Ubiquitous global coverage through multiple communications providers
  - Satellite coverage is essential to ensure continuity and availability of food transportation during crisis and natural disaster recovery
- Long autonomous location and communications hardware on each food container
  - Long battery lifetimes of 4 to 7 years without recharging (no solar panels)
- Full capability of remote monitoring, control and configuration of sensors and food container parameters
  - Easy to use and manage system
- Single application platform and asset management tools to set operating procedures and to achieve an integrated supply chain
  - Ability to interface with all sensors across different vendors and players in the supply chain

# Advancements in Remote Asset Management

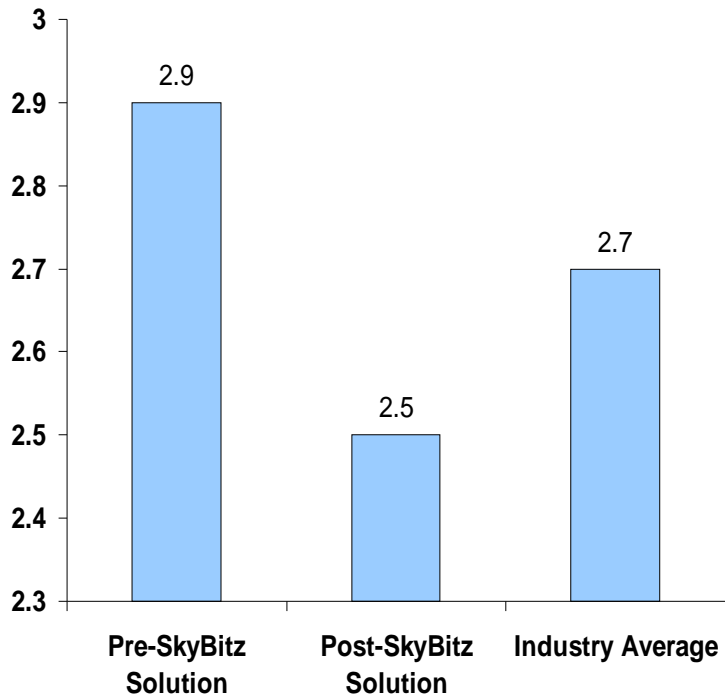


## Sharing SkyBitz Experience

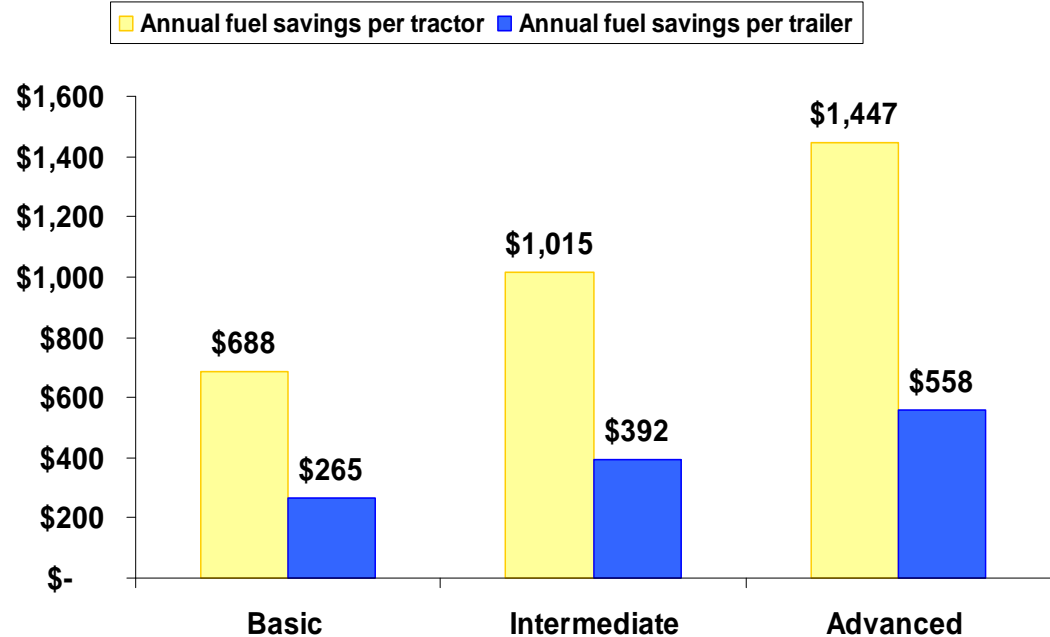


# Benefits to Food Hauling Trucking Companies

**Average Trailer to Tractor Ratio**



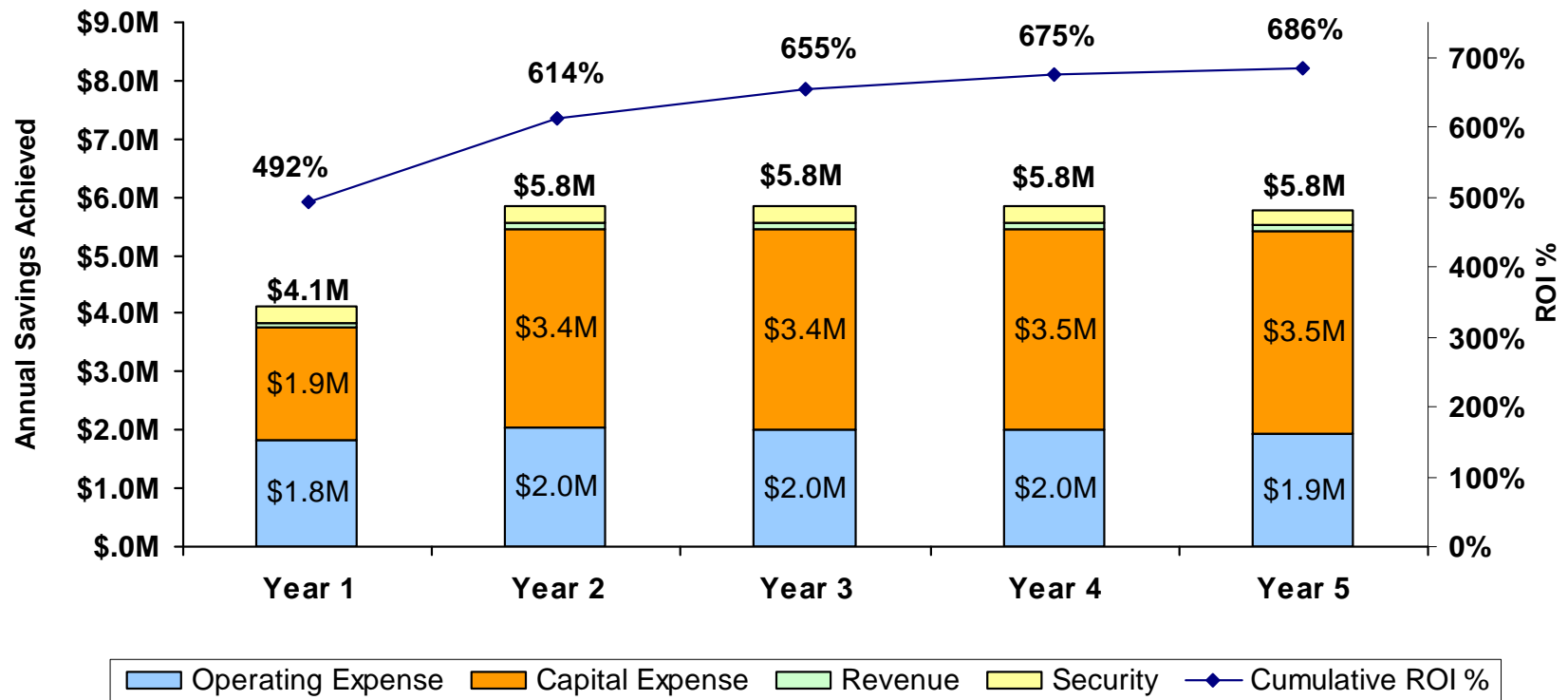
**Average Fuel Savings per Tractor and Trailer**



**Complexity of Remote Asset management solution** →

# Benefits to Food Hauling Trucking Companies

**Annual Savings by Category of ROI: \$27.3 Million Total Savings over 5 Years  
(Cumulative ROI of 686% per \$ Invested)**



## Benefits to (Food) Shippers

### INVENTORY MANAGEMENT

Reduced theft in inventory management

↓ **38%**

Reduced excess inventory

↓ **14%**

### CUSTOMER SERVICE AND RELATIONS

Improved on-time shipping to customers

↑ **30%**

Reduced customer attrition

↓ **26%**

### EFFICIENCY

Reduced customer inspections

↓ **48%**

Increased automated  
handling of imports

↑ **43%**

Reduction in  
transit times

↓ **29%**

### VISIBILITY

Improved asset visibility in the supply chain

**50%**

Reduced time taken to identify problems

**21%**