



**accenture**

**BUSINESS CASE WHITE PAPERS**

**AUTO-ID CENTER**

**BOARD MEETING**

**CAMBRIDGE, MA**

**NOVEMBER 13, 2002**



# OUTLINE

- Overview
- 3 Current Business Cases
  - Auto-ID on Demand: The Value of Auto-ID Technology in Consumer Packaged Goods
  - Auto-ID on Delivery: The Value of Auto-ID Technology in the Retail Supply Chain
  - Auto-ID on the Move: The Value of Auto-ID Technology in Freight Transportation



# AUTO-ID VALUE CREATION ACROSS THE GLOBAL VALUE CHAIN - MANUFACTURING TO THE

	FUNCTION / ACTIVITY	AUTO-ID FINANCIAL BENEFITS			ACCENTURE WHITE PAPERS
		INCREASED SALES	REDUCED COSTS	REDUCED WC	
<b>A- CROSS-VALUE CHAIN</b>	DEMAND PLANNING	X		X	<b>AUTO-ID IN THE VALUE CHAIN</b> <b>AUTO-ID ON DEMAND</b>  FEBRUARY 2003
	ITEM / LOT TRACKING	X	X		
	SECURITY	X	X		
<b>B- MANUFACTURING</b>	PROCUREMENT & MATERIAL STORAGE		X	X	<b>AUTO-ID ON DELIVERY</b>   <b>AUTO-ID ON THE MOVE</b>
	PRODUCTION		X	X	
<b>C- WAREHOUSING / DISTRIBUTION</b>	RECEIVING		X	X	
	PICKING / ORDER SELECTION	X	X		
	SHIPPING		X		
	EXCEPTION PRODUCT LOCATION	X	X		
	LOSS PREVENTION	X	X		
<b>D- TRANSPORTATION</b>	ASSET UTILIZATION		X	X	
	ASSET MANAGEMENT		X	X	
	YARD MANAGEMENT		X	X	
	CONTRACT COMPLIANCE		X		
<b>E- STORE OPERATIONS</b>	ROUTING		X		
	RECEIVING	X	X	X	FEBRUARY 2003
	STORE PLANOGRAMMING	X			
	EXCEPTION MERCHANDISE	X	X		
	LOSS PREVENTION	X	X		
	SHELF MAINTENANCE	X	X	X	
	CHECKOUT		X	X	
	RETURNS & REVERSE LOGISTICS		X		
POST-SALES SERVICE		X			



# COMMON BUSINESS CASE STRUCTURE

- Future Industry Scenario
- Executive Summary
- Acknowledgements
- Introduction
- Core Content
  - The Business Problem
  - Solutions Using Auto-ID Technologies
  - Benefit/Cost Scenarios
- Conclusion
- Next Steps: Auto-ID Adoption Path
  - Value Targeting / Business Cases
  - Deployment Models
  - Pilots
  - Implementation
- Appendix
  - Auto-ID Technology Primer
  - Challenges
  - The Elements of Cost



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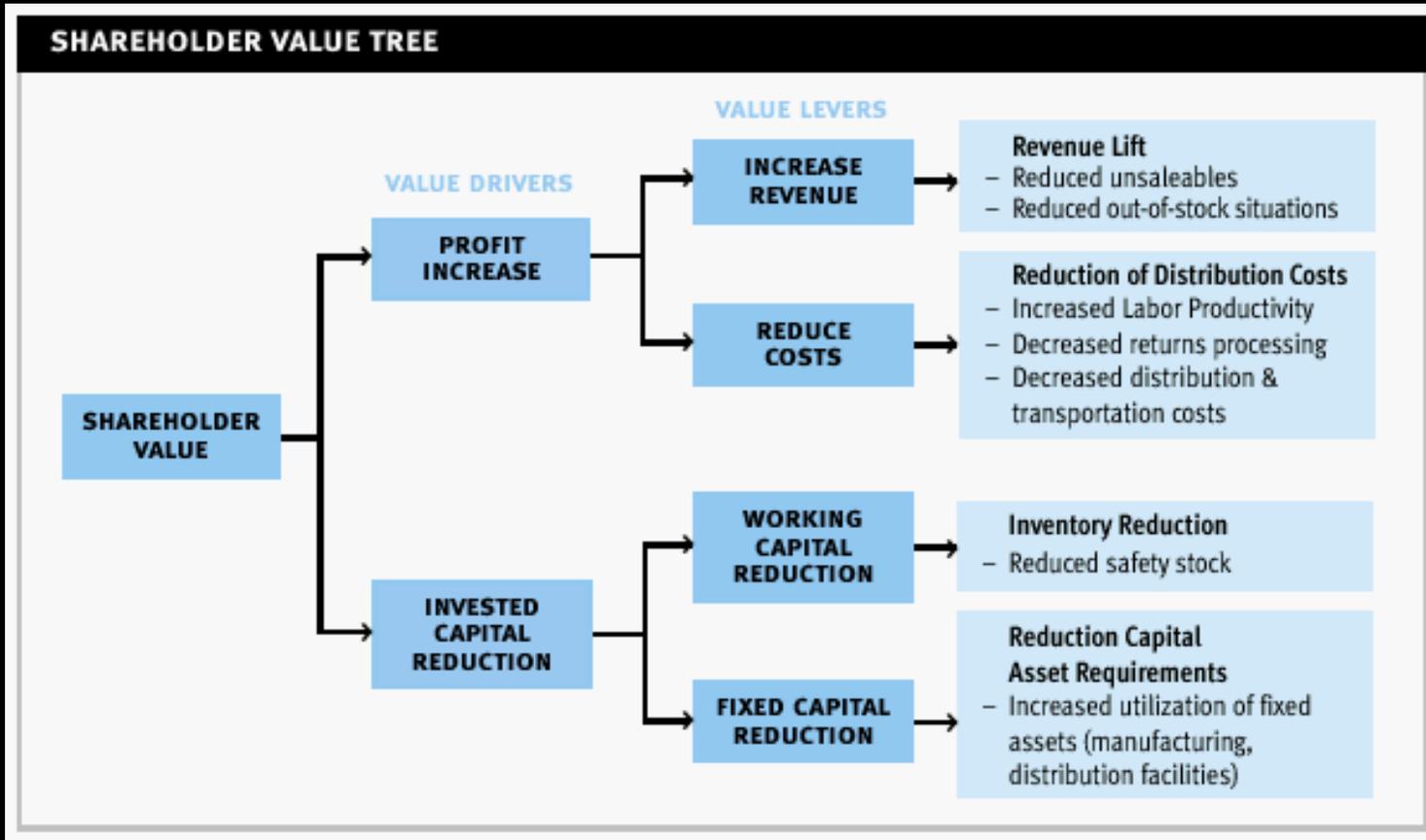
# AUTO-ID ON DEMAND: THE VALUE OF AUTO-ID TECHNOLOGY IN CONSUMER PACKAGED GOODS

- Demand planning impacts:
  - What, where, and when a product is made and distributed
  - Unsaleables, out-of-stocks, invoice accuracy, asset utilization, COGS
- The problem:
  - Availability and accuracy of information used to conduct demand planning
- The answer is certainty
  - Automated data collection
  - Visibility to inventory levels throughout supply chain
  - Information shared between trading partners
- The impact of certainty
  - Accurate, granular, and timely data
  - Forecast accuracy improvement



# AUTO-ID ON DEMAND: THE VALUE OF AUTO-ID TECHNOLOGY IN CONSUMER PACKAGED GOODS

## The Impact of Certainty

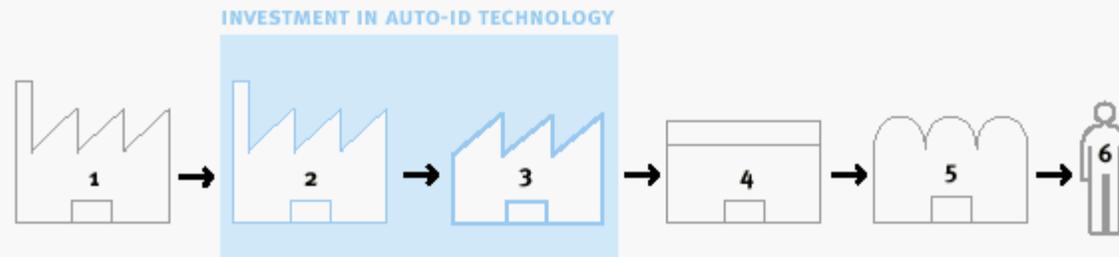




# AUTO-ID ON DEMAND: THE VALUE OF AUTO-ID TECHNOLOGY IN CONSUMER PACKAGED

Goods

## SHIP TO CUSTOMER WAREHOUSE SCENARIO



Scenario  
(cosmetics  
manufacturer)

Costs

CATEGORY	COSTS	UNITS	TOTAL
Initial Tags	\$0.40	700,000	\$280,000
Reader	\$500	215	\$107,500
Read Point*	\$3,000	215	\$645,000
Data Management Software	\$30,000	1	\$30,000
System Integration	\$4,250,000	1	\$4,250,000
<b>TOTAL</b>			<b>\$5,312,500</b>
Recurring Tags & Other Costs <sup>†</sup>	18%	1	\$956,250

Benefits

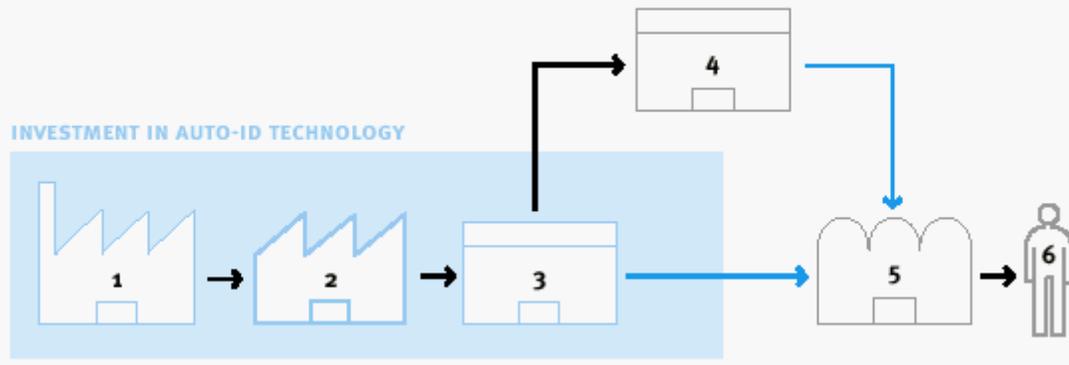
AREA	CURRENT AMOUNT	%	ADJUSTMENT	AMOUNT	IMPROVEMENT
Finished Goods Inventory	\$300,000,000	5%	Decrease	\$15,000,000	Working capital
Sales	\$4,000,000,000	1%	Increase	\$40,000,000	Reducing out-of-stocks
Unsaleables	\$45,600,000	5%	Decrease	\$2,280,000	Eliminate waste



# AUTO-ID ON DEMAND: THE VALUE OF AUTO-ID TECHNOLOGY IN CONSUMER PACKAGED GOODS

Scenario  
(bottler)

## DIRECT STORE DELIVERY SCENARIO



Costs

CATEGORY	COSTS	UNITS	TOTAL
Initial Tags	\$0.40	500,000	\$200,000
Reader	\$500	100	\$50,000
Read Point*	\$3,000	100	\$300,000
Data Management Software	\$30,000	1	\$30,000
System Integration	\$1,740,000	1	\$1,740,000
<b>TOTAL</b>			<b>\$2,320,000</b>
Recurring Tags & Other Costs <sup>†</sup>	18%	1	\$417,600

Benefits

AREA	CURRENT AMOUNT	%	ADJUSTMENT	AMOUNT	IMPROVEMENT
Finished Goods Inventory	\$5,000,000	10%	Decrease	\$500,000	Working capital
Sales	\$80,000,000	2%	Increase	\$1,600,000	Reducing out-of-stocks
Unsaleables	\$912,000	25%	Decrease	\$228,000	Eliminate waste



# AUTO-ID ON DEMAND: THE VALUE OF AUTO-ID TECHNOLOGY IN CONSUMER PACKAGED GOODS

- Auto-ID technology can enable increased certainty of demand signals throughout the CPG supply chain, improving demand planning forecast accuracy by 10-20%
- Summary Benefits
  - 1-2% increased sales from fewer out-of-stocks and lower costs, due to unsaleables
  - 10-30% decrease in inventory due to decreased safety stock, resulting in improved use of precious working capital
  - More effective manufacturing and distribution capacity, improving asset utilization and reducing capital expenditure needs



# AUTO-ID ON DEMAND: THE VALUE OF AUTO-ID TECHNOLOGY IN CONSUMER PACKAGED GOODS

- Industry Considerations
  - Technical Infrastructure
  - Information Sharing Practices
  - Product Category Economics



# AUTO-ID ON DEMAND: THE VALUE OF AUTO-ID TECHNOLOGY IN CONSUMER PACKAGED GOODS

## OUR CONCLUSION

All stakeholders in the supply chain (suppliers, manufacturers, distributors, retailers and service providers) who embrace Auto-ID standards and collaborate with their trading partners, can achieve significant improvements in top line growth, bottom line profitability and consumer satisfaction.



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# AUTO-ID ON DELIVERY: THE VALUE OF AUTO-ID TECHNOLOGY IN THE RETAIL SUPPLY

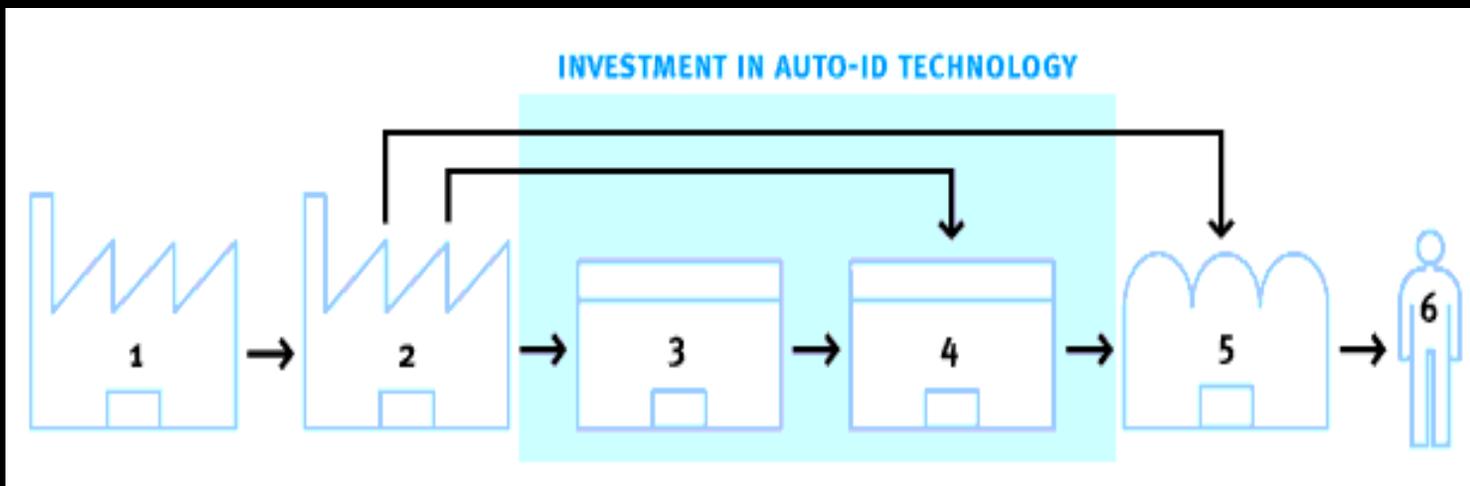
- Retail Supply Chain for this paper encompasses:
  - Transportation from the vendor manufacturing or distribution point to the retail DC or store
  - Processes inside the retail DC including cross-docking, receiving, picking and shipping
- Problems:
  - Supply Chain costs are approximately 10% of sales; an increasingly competitive labor market
  - Product spends a significant amount of time in the retail supply chain
- Solutions:
  - Automate processes to improve labor productivity
  - Automate data capture to improve visibility to the movement of product allowing better management of exceptions
- Impact:
  - More efficient use of labor
  - Ability to move goods through the supply chain faster, reducing the amount of safety stock required



# AUTO-ID ON DELIVERY: THE VALUE OF AUTO-ID TECHNOLOGY IN THE RETAIL SUPPLY

## Scenarios

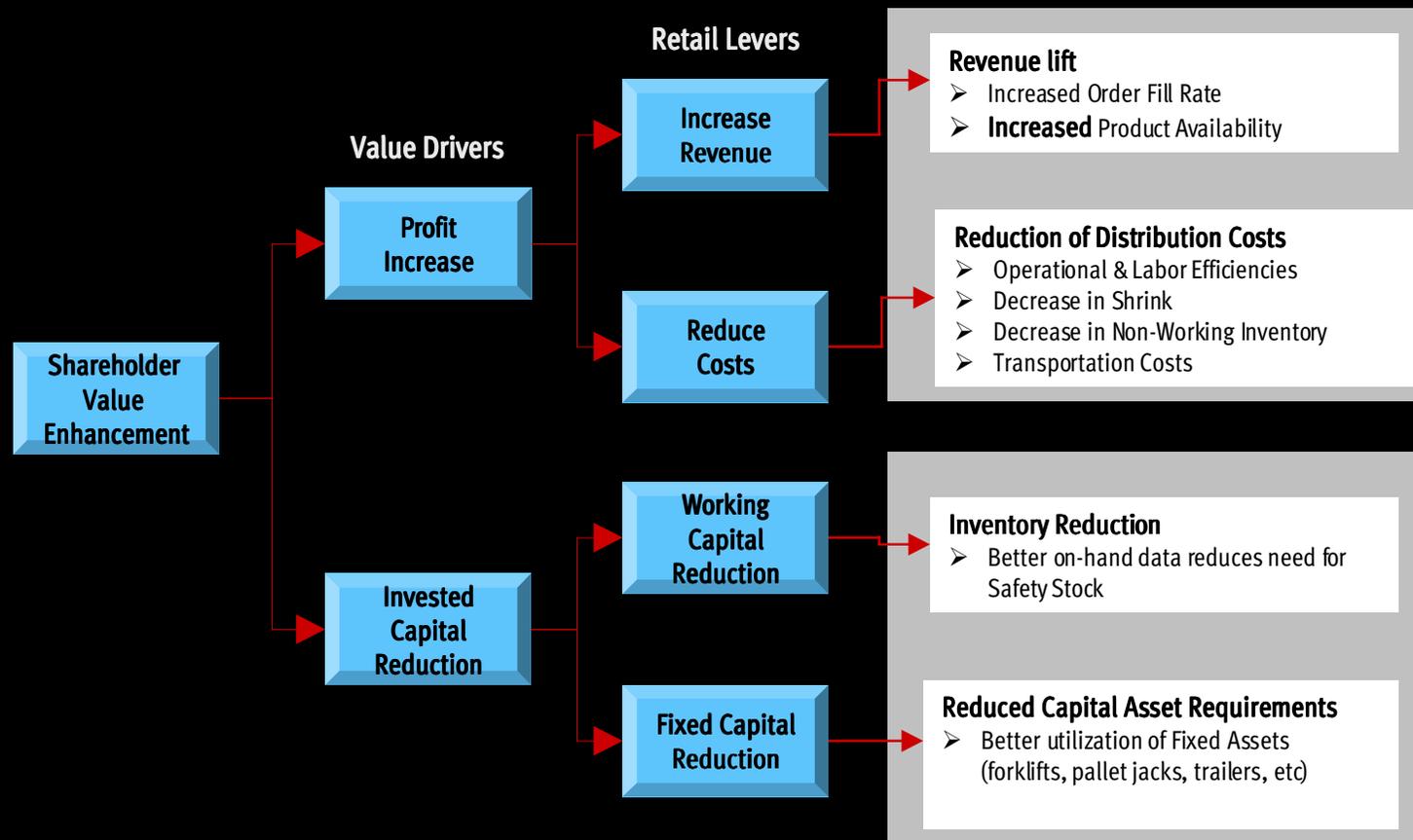
- Vendor to Store (DSD)
- Vendor to DC





# AUTO-ID ON DELIVERY: THE VALUE OF AUTO-ID TECHNOLOGY IN THE RETAIL SUPPLY

## The Impact of Speed, Efficiency, Accuracy

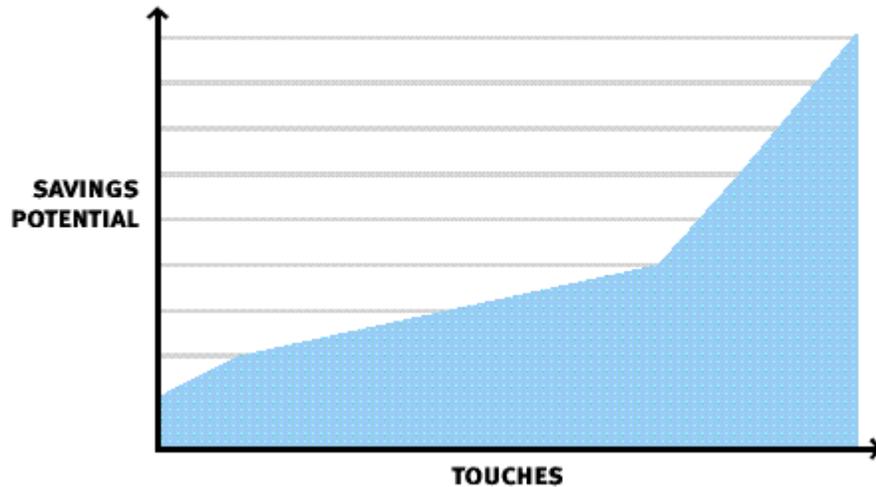




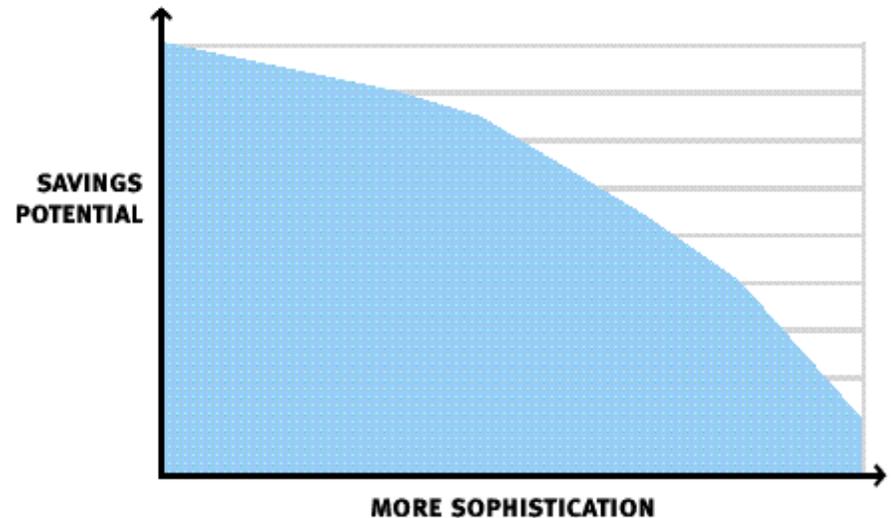
# AUTO-ID ON DELIVERY: THE VALUE OF AUTO-ID TECHNOLOGY IN THE RETAIL SUPPLY

## Benefits of RFID in Retail Distribution

RELATIONSHIP BETWEEN PRODUCT TOUCHES AND SAVINGS POTENTIAL



RELATIONSHIP BETWEEN CURRENT PROCESS AUTOMATION AND SAVINGS





# AUTO-ID ON DELIVERY: THE VALUE OF AUTO-ID TECHNOLOGY IN THE RETAIL SUPPLY CHAIN

## Case Study: Distribution

FUNCTION	CURRENT BUDGET	% IMPROVEMENT	NEW BUDGET	SAVINGS
Receiving	\$2,599,721	0%	\$2,599,721	-
Check-in	\$17,017,341	80%	\$3,403,468	\$13,613,873
Putaway & Replenishment	\$15,760,272	15%	\$13,396,231	\$2,364,041
Order Filling	\$10,667,587	7%	\$9,920,856	\$746,731
Shipping	\$1,955,080	0%	\$1,955,080	-
<b>TOTAL</b>	<b>\$48,000,000</b>	<b>35%</b>	<b>\$31,275,356</b>	<b>\$16,724,644</b>

AREA	CURRENT EXPENSE	% REDUCTION	NEW EXPENSE	SAVINGS
Administrative & Paperwork	\$5,763,000	85%	\$864,450	\$4,898,550
Vendor	\$2,034,000	100%	-	\$2,034,000
Employee Theft	\$15,255,000	0%	\$15,255,000	-
Shoplifting	\$10,848,000	0%	\$10,848,000	-
<b>TOTAL</b>	<b>\$33,900,000</b>	<b>-</b>	<b>\$26,967,450</b>	<b>\$6,932,550</b>

CATEGORY	COSTS	UNITS	TOTAL
Readers	\$500	100	\$50,000
Reader Peripherals (Antenna, Multiplexers, etc)	\$3,500	100	\$350,000
Reader Installation	\$1,000	100	\$100,000
Controllers	\$1,500	100	\$150,000
Location Tags (Using Powered Tags)	\$2.00	60,000	\$120,000
Installing Location Tags	\$50.00	60,000	\$3,000,000
Data Management Software	\$30,000	1	\$30,000
Software Integration	\$4,000,000	1	\$4,000,000
<b>TOTAL</b>	<b>-</b>	<b>-</b>	<b>\$7,800,000</b>

Labor Savings

Shrink Reductions

Implementation Costs



# AUTO-ID ON DELIVERY: THE VALUE OF AUTO-ID TECHNOLOGY IN THE RETAIL SUPPLY CHAIN

## Case Study: Transportation

AREA	CURRENT BUDGET	SAVINGS AMOUNT	NEW BUDGET	SAVINGS
Asset Depreciation	\$3,750,000	10%	\$3,375,000	\$375,000
Inventory Carrying Costs for Safety Stock	\$10,150,000	4 Days	\$4,350,000	\$5,800,000
Detention and Demurrage Charges	\$711,000	65%	\$430,769	\$280,000
<b>TOTAL</b>	<b>\$14,611,000</b>	<b>-</b>	<b>\$8,155,769</b>	<b>\$6,455,231</b>

Annual Savings

AREA	SAVINGS	SAVINGS
Asset Reduction	10%	\$2,500,000
Safety Stock Reduction	4 Days	\$58,000,000
<b>TOTAL</b>	<b>-</b>	<b>\$60,500,000</b>

One-Time Savings

CATEGORY	COSTS	UNITS	TOTAL
Readers	\$500	30	\$15,000
Reader Peripherals*	\$3,500	30	\$105,000
Reader installation	\$1,000	30	\$30,000
Controllers	\$1,500	30	\$45,000
Installing Asset Tags	\$2.00	60,000	\$120,000
Data Management Software	\$30,000	1	\$30,000
Software Integration	\$1,000,000	1	\$1,000,000
<b>TOTAL</b>	<b>-</b>	<b>-</b>	<b>\$1,345,000</b>

Implementation Costs



# AUTO-ID ON DELIVERY: THE VALUE OF AUTO-ID TECHNOLOGY IN THE RETAIL SUPPLY CHAIN

## OUR CONCLUSION

By implementing Auto-ID solutions, Retailers have the potential to achieve tremendous benefits across the supply chain:

- Reduced Safety-Stock Inventory
- Labor Reductions
- Reduced Shrink
- Increased Product Visibility



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# AUTO-ID ON THE MOVE: THE VALUE OF AUTO-ID TECHNOLOGY IN FREIGHT TRANSPORTATION

We investigated how Auto-ID would impact the following capabilities:

- Asset management (vehicles/containers/labor)
- Tracking and locating vehicles/containers in the yard
- Locating specific shipments within a facility e.g. oldest shipment, specific shipper/consignee
- Locating “missing” shipments within a facility
- Tracking shipment movements within a facility (tags passing by readers)



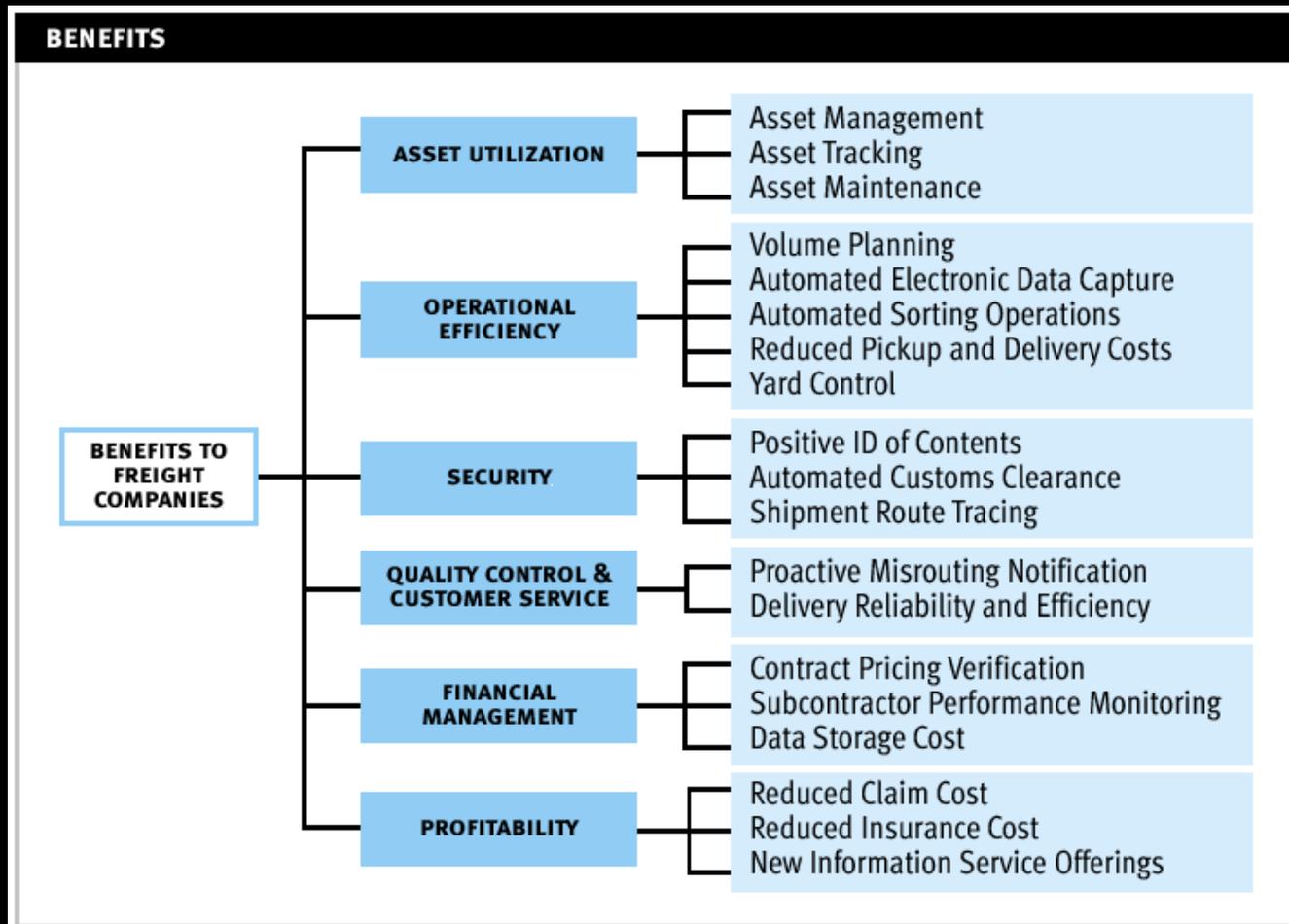
## AUTO-ID ON THE MOVE: THE VALUE OF AUTO-ID TECHNOLOGY IN FREIGHT TRANSPORTATION

- How would Auto-ID impact the ability to create value / reduce cost in the following areas:
  - Shipment handling / delivery cost
  - Shipment theft / loss
  - Automation of manual activities
- What are the key challenges/issues that you are facing in the following areas:
  - Shipment security
  - Dangerous goods
  - High-value shipments



# AUTO-ID ON THE MOVE: THE VALUE OF AUTO-ID TECHNOLOGY IN FREIGHT

## Key Benefit Areas:





# AUTO-ID ON THE MOVE: THE VALUE OF AUTO-ID TECHNOLOGY IN FREIGHT

## Case Study: Asset Tracking

Improvements in asset utilization can provide a significant cost reduction and a compelling ROI.

ASSET UTILIZATION AND OPERATIONAL EFFICIENCY CALCULATION		
<b>CAPACITY UTILIZATION</b>	- Reduction of the number of required existing assets (Fleet and Trailer) which can be resold	\$8,200,000
	- Reduction in the number of annual new asset purchases	\$3,300,000
<b>ASSET TRACKING</b>	- Reduction in shrinkage of Trailer asset inventory	\$150,000
	- Reduction in replacement expenditures due to damage	\$172,025
<b>COSTS</b>	- Initial Tagging	\$275,000
	- Reader Systems	\$3,000,000
	- Controllers	\$280,000
	- Installation	\$400,000
	- Software & Integration	\$2,000,000
	- Recurring	\$17,500
<b>TOTAL RFID COSTS</b>		<b>\$5,972,500</b>
<b>ROI – YEAR 1</b>		<b>198%</b>



# AUTO-ID ON THE MOVE: THE VALUE OF AUTO-ID TECHNOLOGY IN FREIGHT

## Case Study: Delivery

When manufacturers and retailers use Auto-ID for inventory check-in/out, transportation companies will save time in the yard and at the dock, at no cost.

REDUCED DELIVERY COSTS CALCULATION		
REDUCED DELIVERY COSTS	– Reduction in labor costs due to the increase in the amount of deliveries made per day due to consignee RFID infrastructure	\$4,500,000
	– Reduction in the number of delivery tractors required due to the increase in the amount of deliveries made per day due to consignee RFID infrastructure	\$6,750,000
	– Reduction in the number of dry pickup and delivery trailers required due to the increase in the amount of deliveries made per delivery vehicle due to consignee RFID infrastructure	\$6,750,000
COSTS	– All costs assumed by other parties in the supply chain	\$0



# AUTO-ID ON THE MOVE: THE VALUE OF AUTO-ID TECHNOLOGY IN FREIGHT

## Case Study: Insurance

Reductions in claims will have a direct impact on operational costs through reduction in claims paid and insurance premiums.

PROFITABILITY CALCULATION		
<b>REDUCED CLAIM COSTS</b>	- Reduction in claim costs due to decrease in misplaced packages	\$980,000
	- Reduction in claim costs due to more accurate value determination using EPC™	\$101,000
<b>REDUCED INSURANCE COSTS</b>	- Reduction in insurance premium costs by reducing total number of claims	\$200,000
<b>COSTS</b>	- Initial Tagging	\$2,600,000
	- Reader Systems	\$3,500,000
	- Controllers	\$700,000
	- Installation	\$1,000,000
	- Software & Integration	\$2,000,000
	- Recurring	\$13,000
<b>TOTAL RFID COSTS</b>		<b>\$9,813,000</b>
<b>ROI – YEAR 1</b>		<b>13.05%</b>



# AUTO-ID ON THE MOVE: THE VALUE OF AUTO-ID TECHNOLOGY IN FREIGHT

Immediate Auto-ID benefits will come from improved internal operations. Additional benefits become available after widespread item-level adoption of the EPC™.

## Immediate Benefits

- Asset Management
- Asset Tracking
- Asset Maintenance
- Volume Planning
- Yard Control
- Reduced Claims Costs

## Future Benefits

- Automated Sorting Operations
- Reduced Pick-up and Delivery Costs
- Positive ID of Contents
- Automated Customs Clearing
- Shipment Route Tracing
- Proactive Misrouting Notification
- Delivery Reliability and Efficiency
- Contract Pricing Verification
- Subcontractor Performance Monitoring
- Automated Electronic Data Capture
- Data Storage Costs
- New Information Services Offerings



## AUTO-ID ON THE MOVE: THE VALUE OF AUTO-ID TECHNOLOGY IN FREIGHT

The scenarios that are most likely to cause the industry to embrace EPC™ for shipment level tracking in the near future are limited to cases where:

- Pressure is applied from other areas of the value chain
- A governmental body mandates the use of EPC™ for customs, safety, or other regulatory purposes
- The EPC™ gains such widespread global acceptance that freight transportation companies willingly build ‘redundant’ tracking networks in order to differentiate themselves
- A carrier experiences significant loss related to high value shipments, and implements the technology to track these specific items.



# AUTO-ID ON THE MOVE: THE VALUE OF AUTO-ID TECHNOLOGY IN FREIGHT TRANSPORTATION

- Challenges
  - Pre-existing Automatic Identification Standards
  - Pre-existing Automatic Identification Processes and Infrastructure
  - EPC™ Proliferation



# AUTO-ID ON THE MOVE: THE VALUE OF AUTO-ID TECHNOLOGY IN FREIGHT TRANSPORTATION

## OUR CONCLUSION

We feel that there is compelling evidence that benefits are available across all transportation modes. Whether you need to better manage cardboard trays, ocean containers or locomotives, there is significant value waiting to be realized across the freight transportation industry.



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