

RFID Journal Live! 2006

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Putting RFID to Work

May 3, 2006



RFID, ROI and Process Improvement

Bill McBeath

Chief Research Officer
ChainLink Research



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RFID, ROI and Process Improvement in Manufacturing Industries

5/3/06

Bill McBeath
Chief Research Officer
ChainLink Research, Inc.

Dramatically improving supply chain performance through real-world research



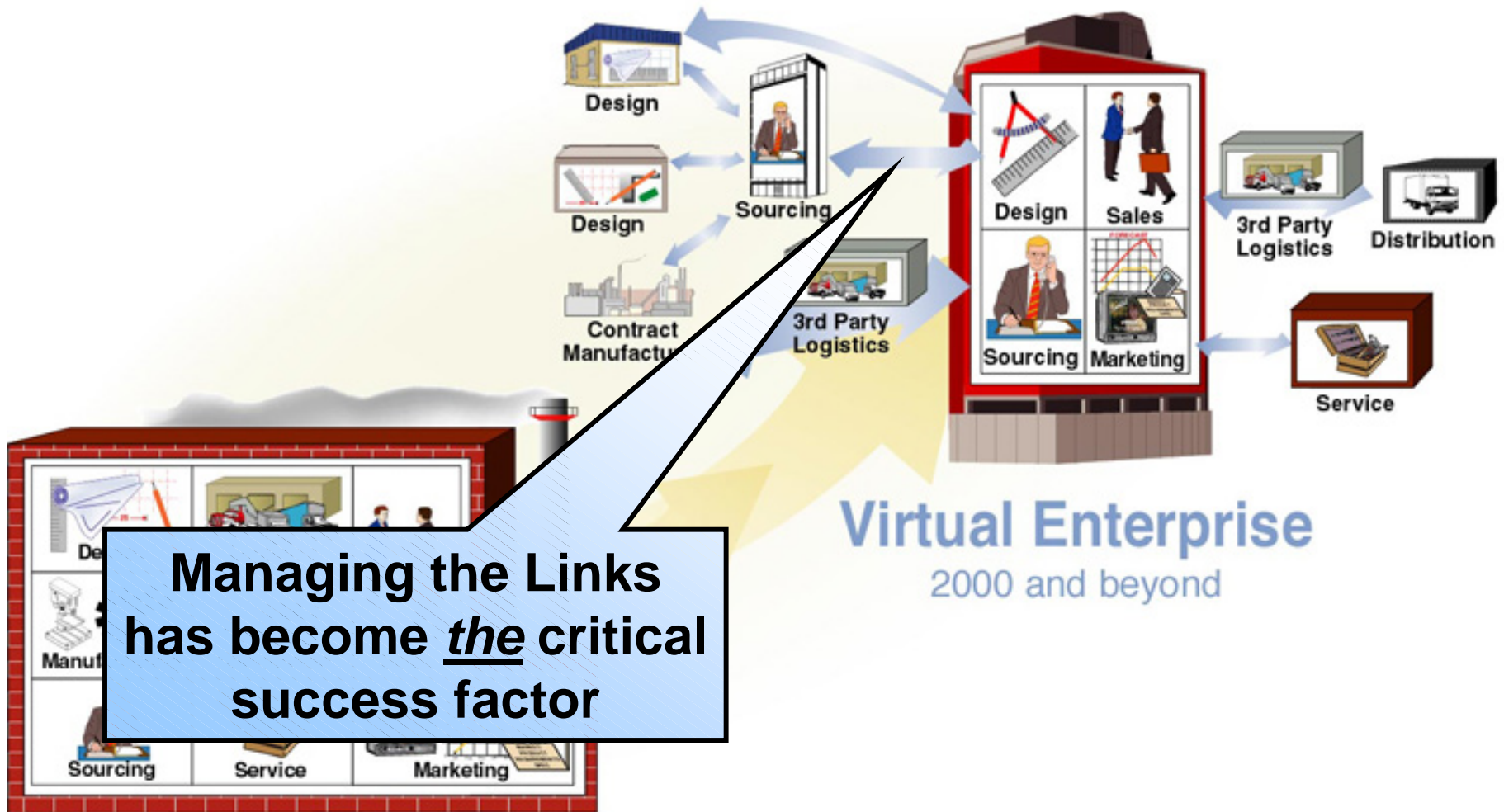
Agenda

- Research Background/Context
- RFID Implementation Plans & Drivers
- Process Improvement Areas
- Sharing Data with Trading Partners
- Conclusions





ChainLink Research: Supply Chain Research & Strategy Consulting



Vertical Integration
pre-1980's

Virtual Enterprise
2000 and beyond



A Tale of Two Research Projects



- **RFID in Manufacturing**

- 275 Survey Respondents
- 15 Interviews to-date (more scheduled)

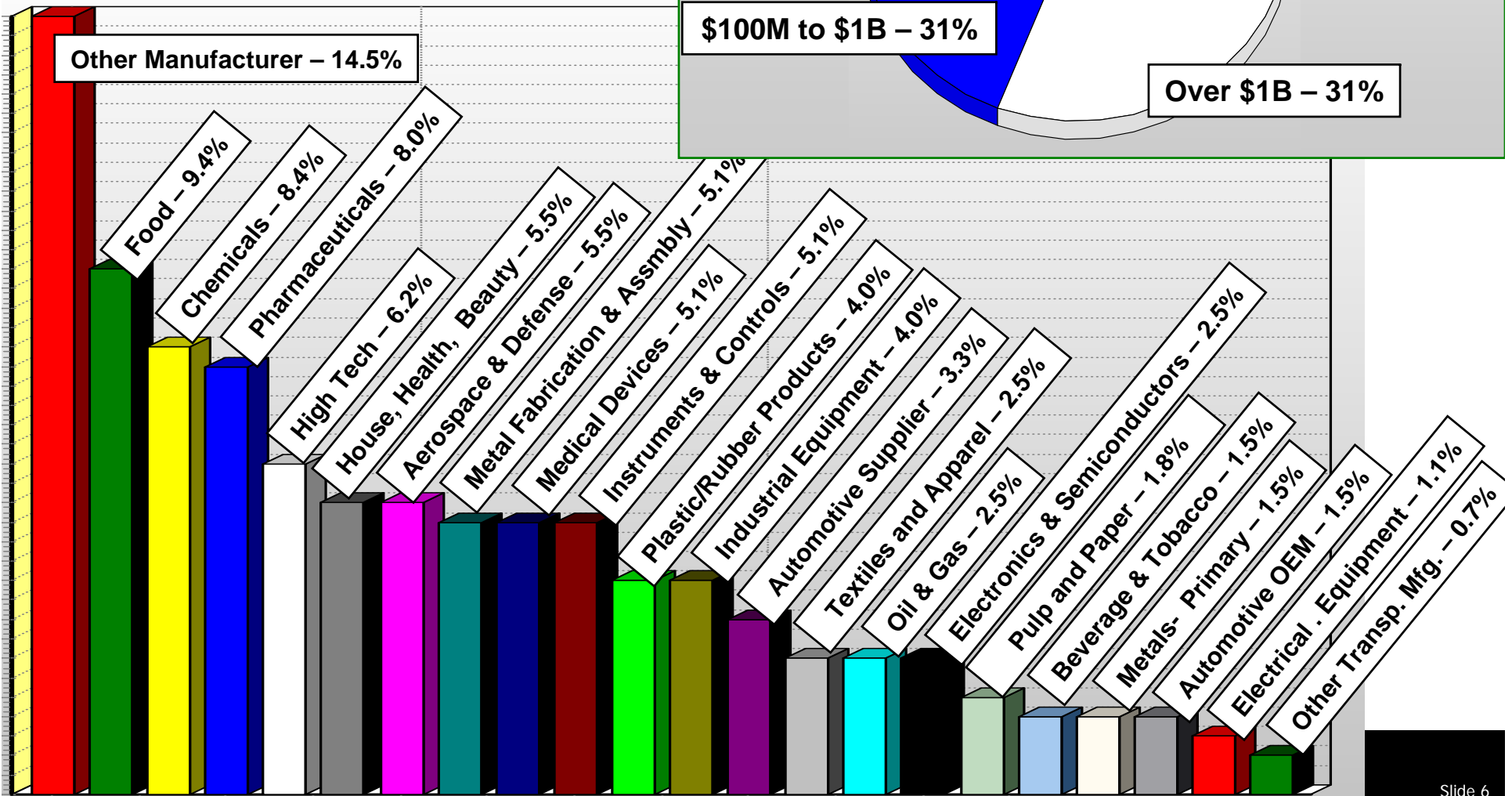
- **Interenterprise Data Sharing**

- 218 Survey Respondents
- 28 Interviewed Companies



RFID in Mfg. Survey Statistics

- 275 Respondents

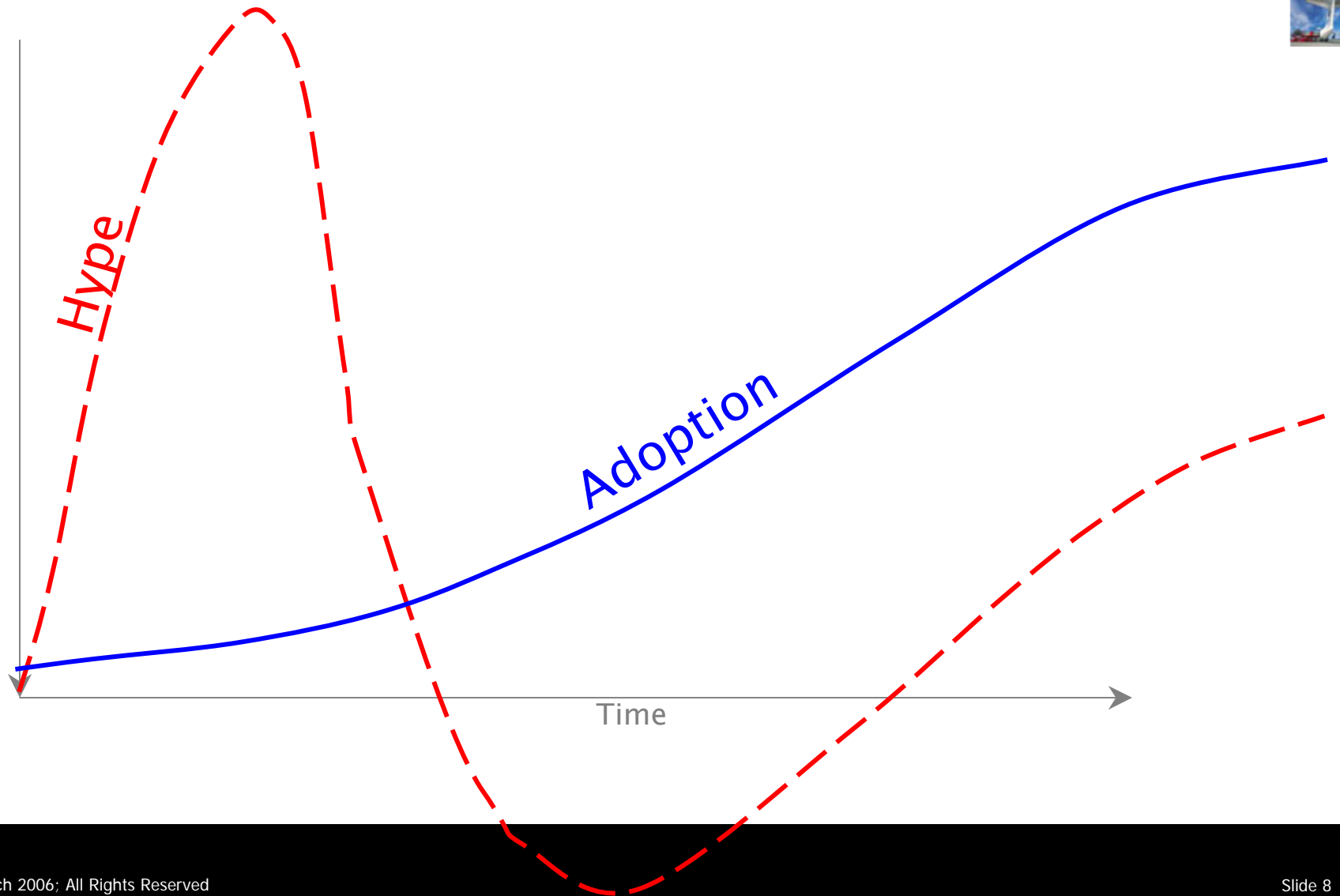




Implementation Plans and Drivers

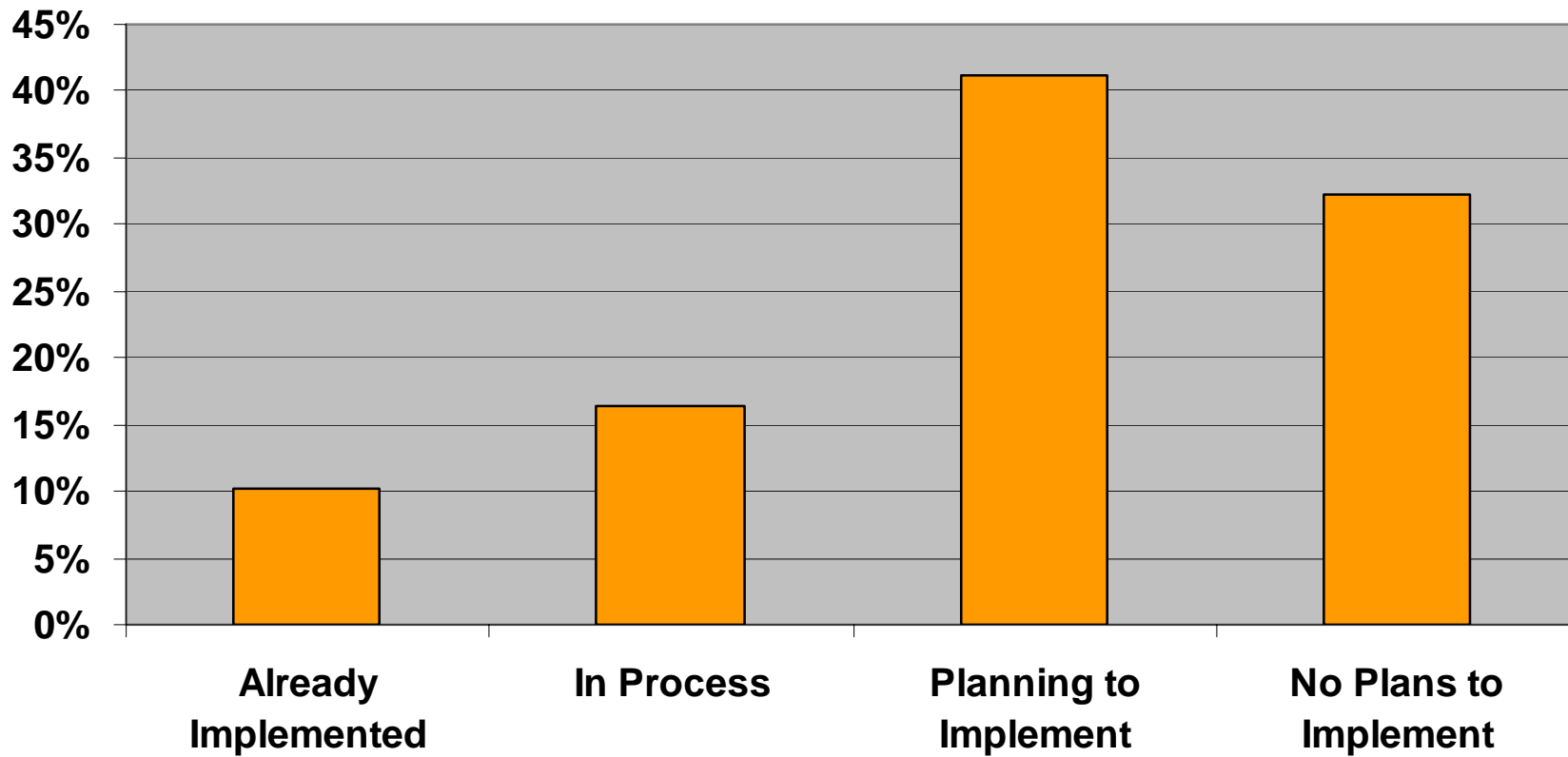


Hype vs. Adoption



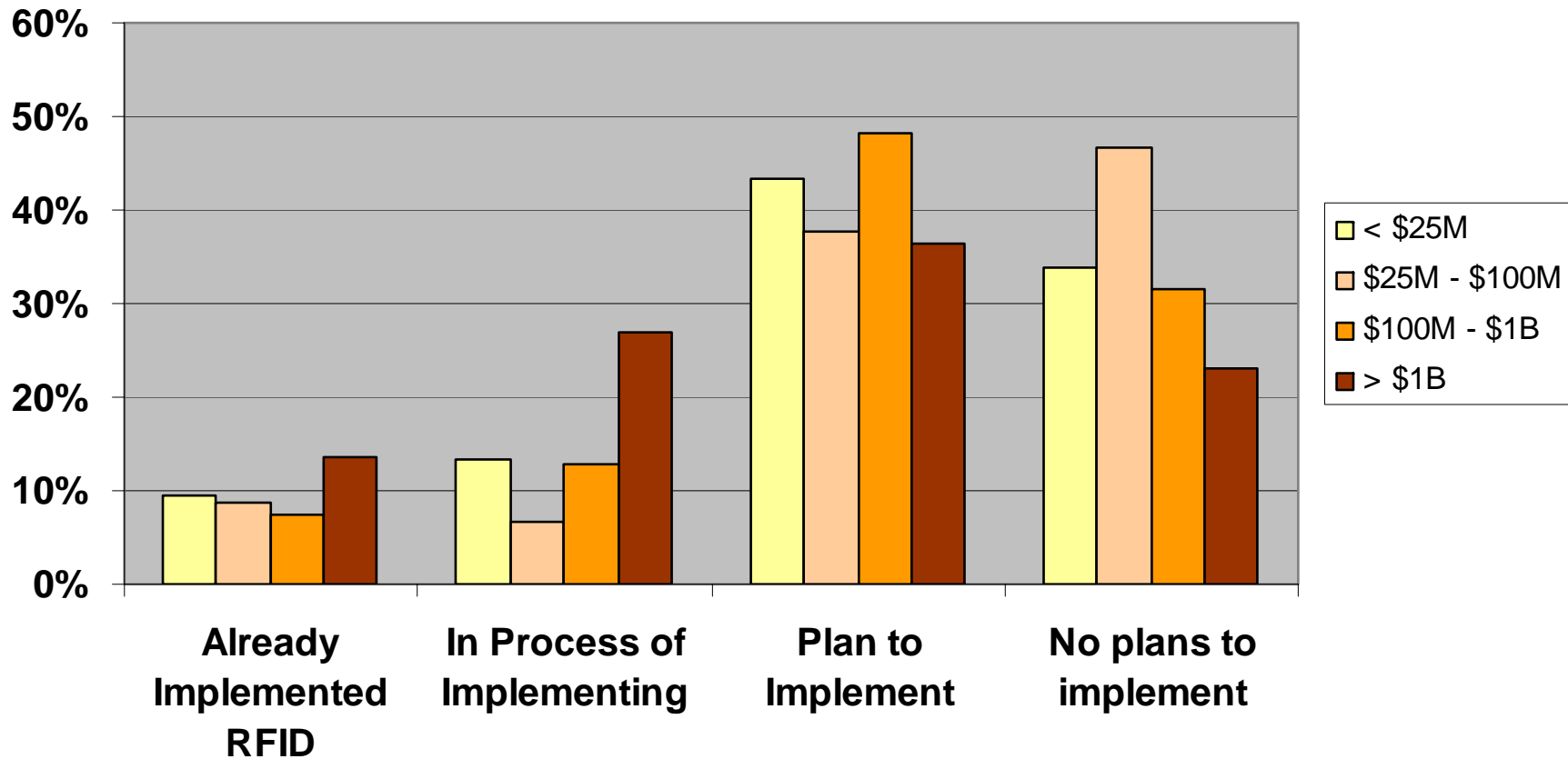


RFID Implementation Plans





Implementation Plans by Company Size





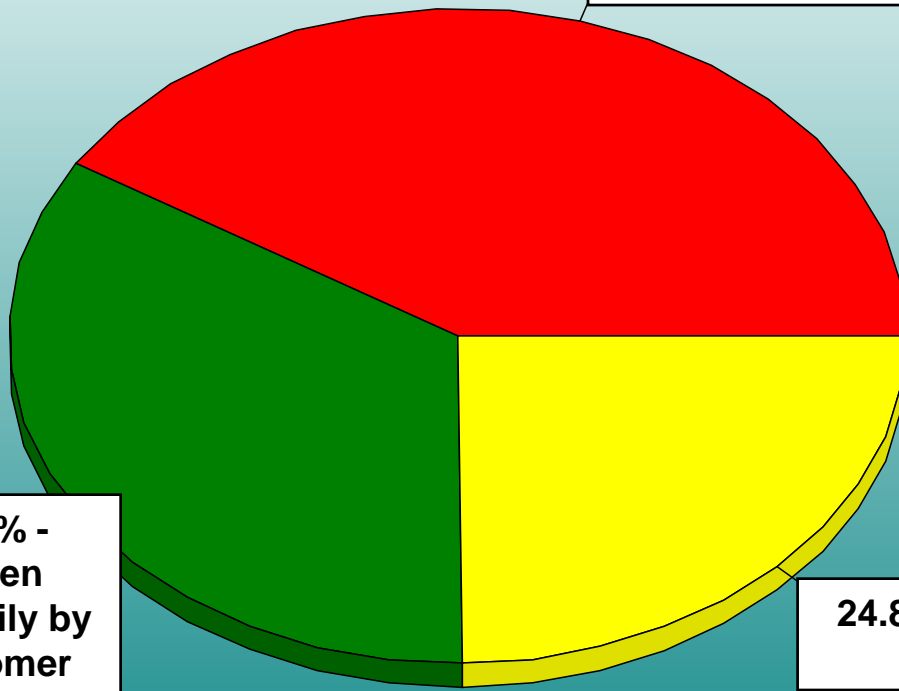
Driver: Mandate vs. Process Improvements



41.2% - Driven Primarily by Process and Operations Improvement Goals

34.0% - Driven Primarily by Customer Mandates

24.8% - Driven by Both Mandates and Process Improvement Goals

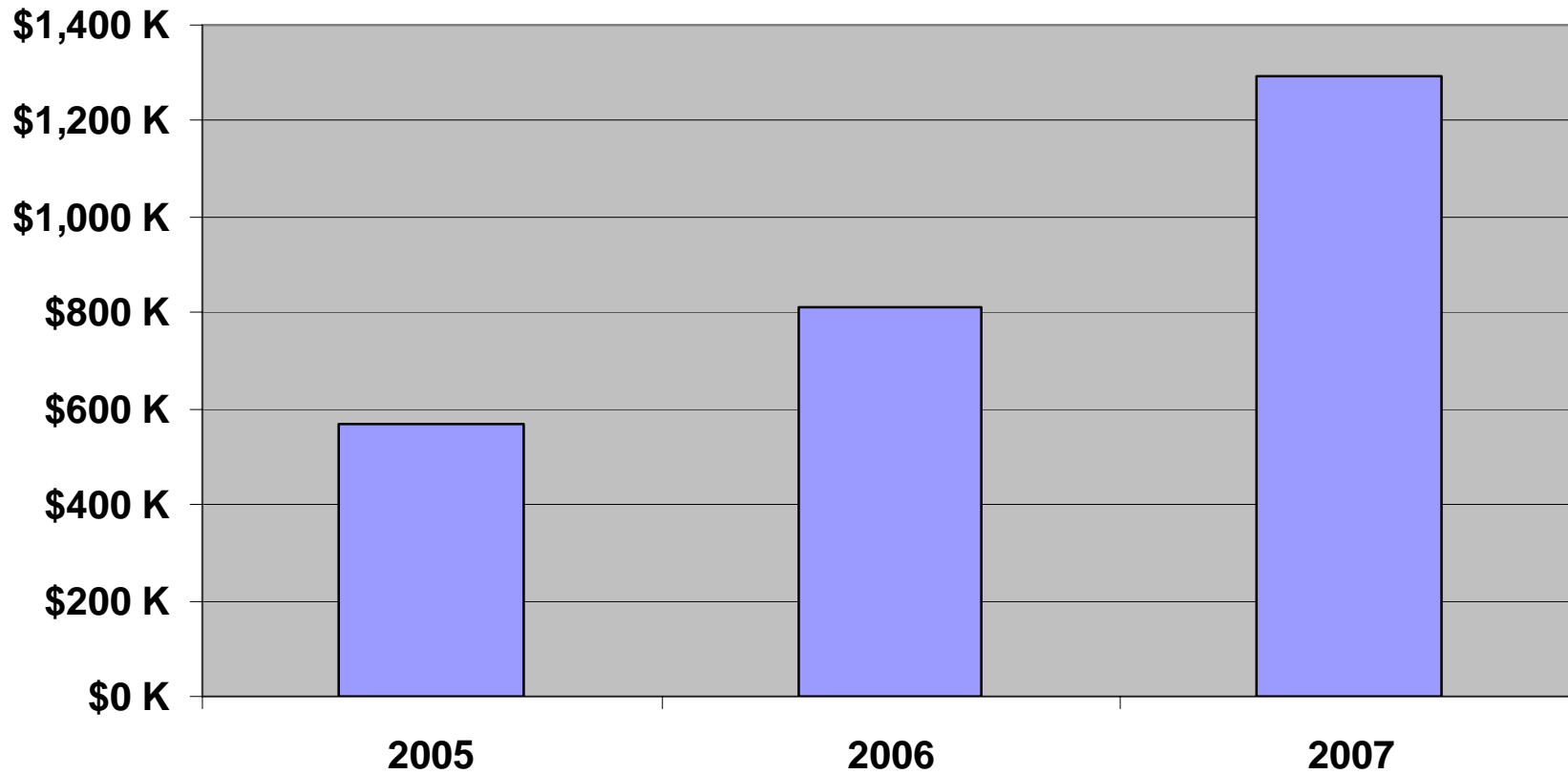




Average Total RFID Spend

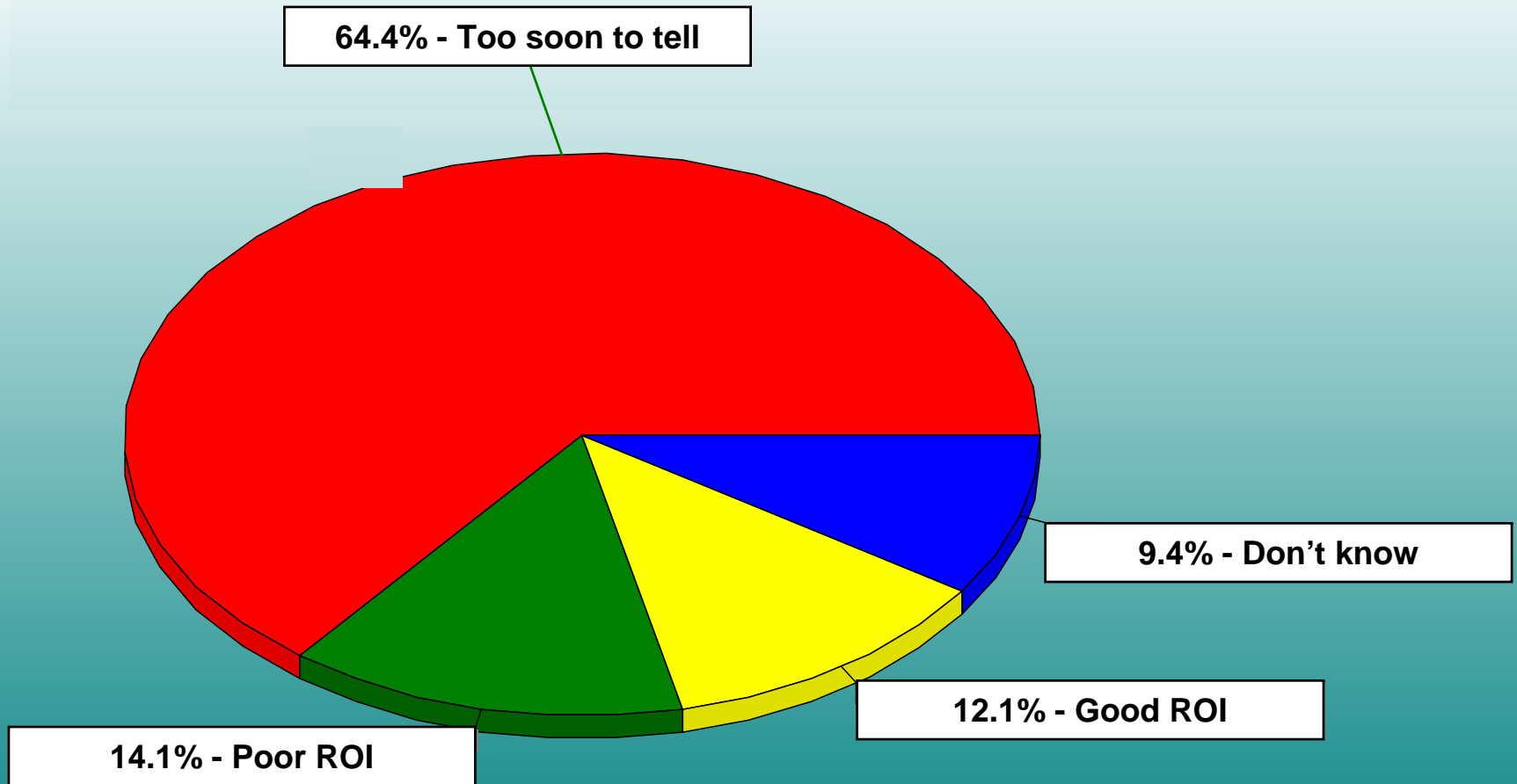


- Including hardware, software, integration, consulting, training, etc.



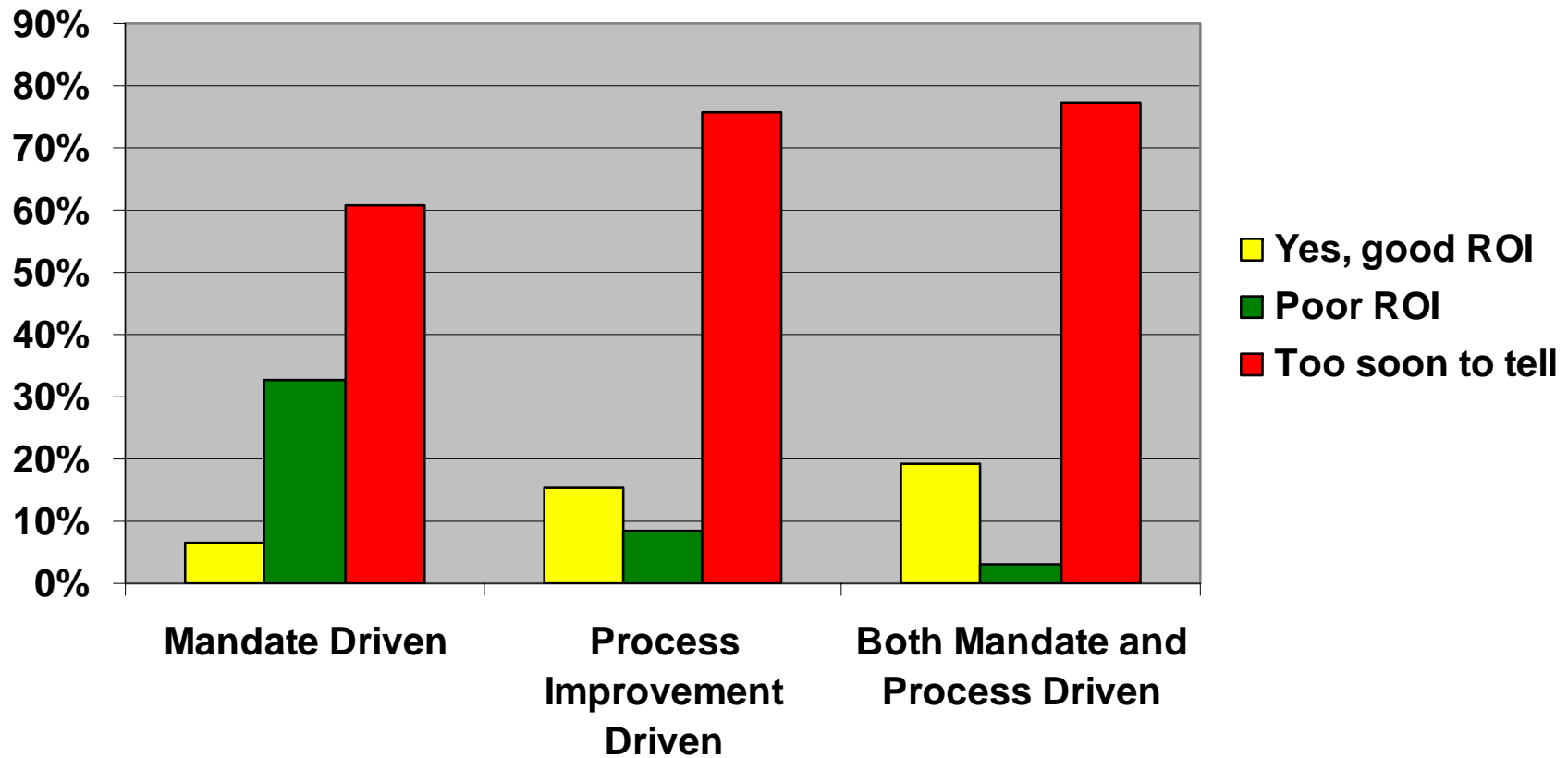


"Good" ROI?





ROI for Mandate vs. Process Driven Firms





Why Companies are Not Doing RFID



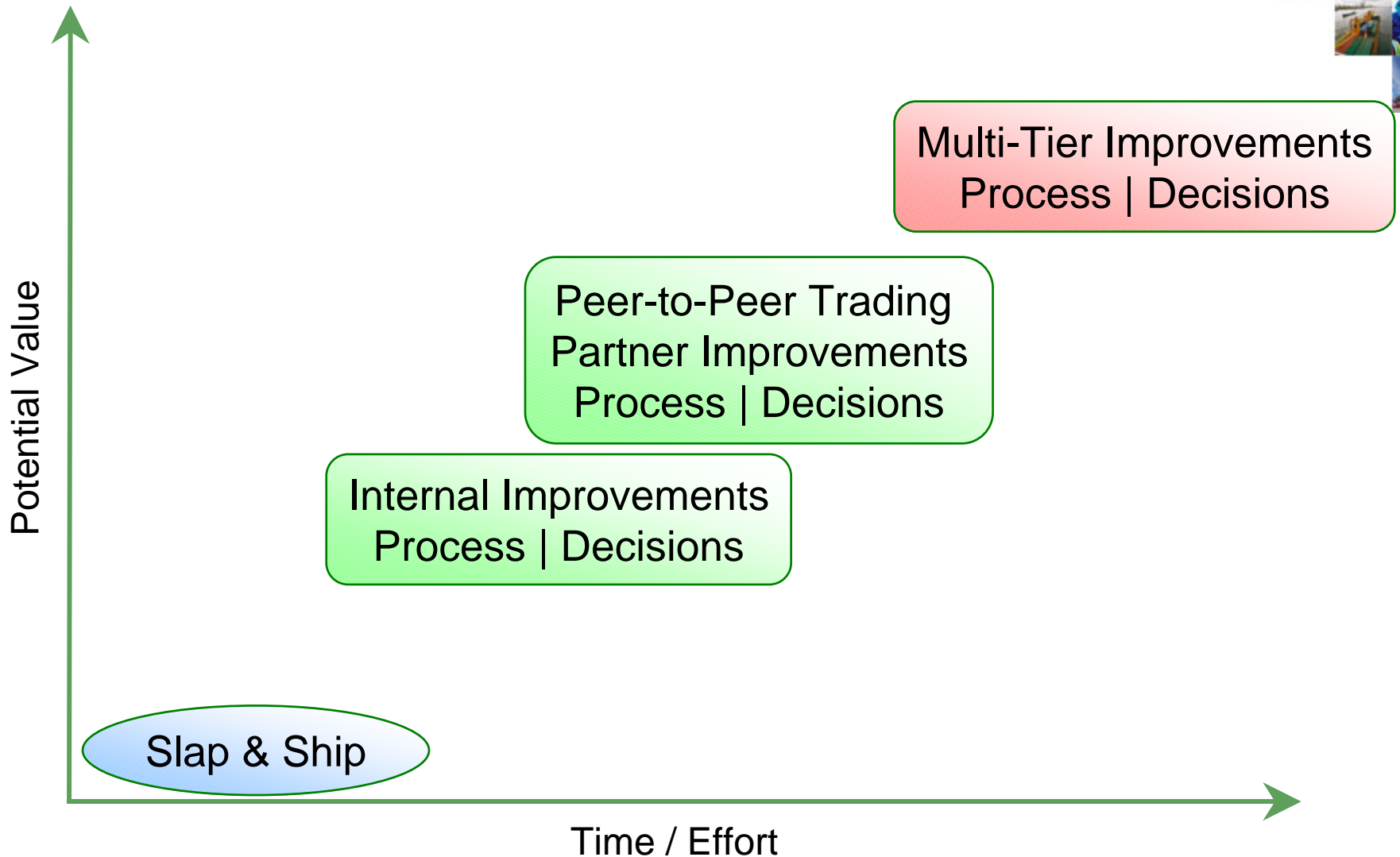
- **Cost/Insufficient ROI**
 - “Lower projected ROI than other more pressing business needs”
 - “No ROI - too expensive”
 - “Do not feel the expense is going to provide enough benefit for us.”
 - “No economic value, no market advantage. Technology that will not grow our top or bottom line for the foreseeable or ever possibly.”
- **Lack of Knowledge/Understanding**
 - “Still trying to get a handle on computer literacy. RFID is black magic to them at this point. They, therefore do not see the ROI.”
 - “Because the Director in charge did not have the experience/knowledge and time to see the benefits.”
- **Maturity of Company**
 - “It will be at least another 5 years before RFID is implemented here. Bar code reading just got implemented within the last two years and we're still struggling with that.”
 - “We plan to wait and implement in the wake of our industry leaders, seeing little if any advantage for us at this stage.”
 - “We'll wait as long as we can - we'll learn from others”
 - “Still waiting on costs to come down and for standards and tag-damage issues to be worked out”
- **Maturity of Technology/Marketplace**
 - “Too early in product life, market too small to benefit from startup costs”
 - “Issue with deploying tag on large metal surface”
 - “We tried... and run into issues (with cheap RFID system we were using) to use in an explosion proof environment (i.e. readers not allowed in that area)”



Process & Operational Improvements

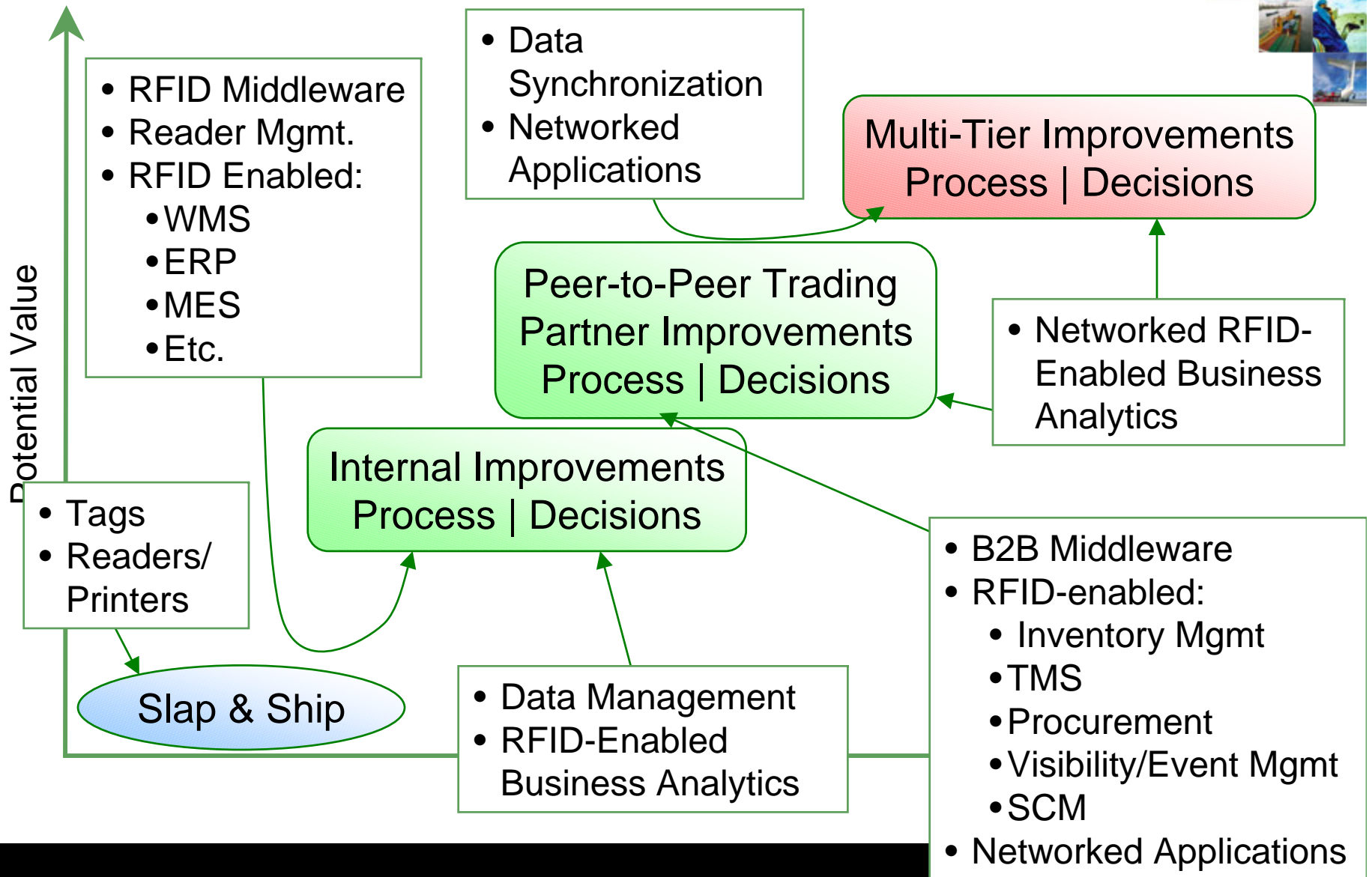


Progression to Value / ROI



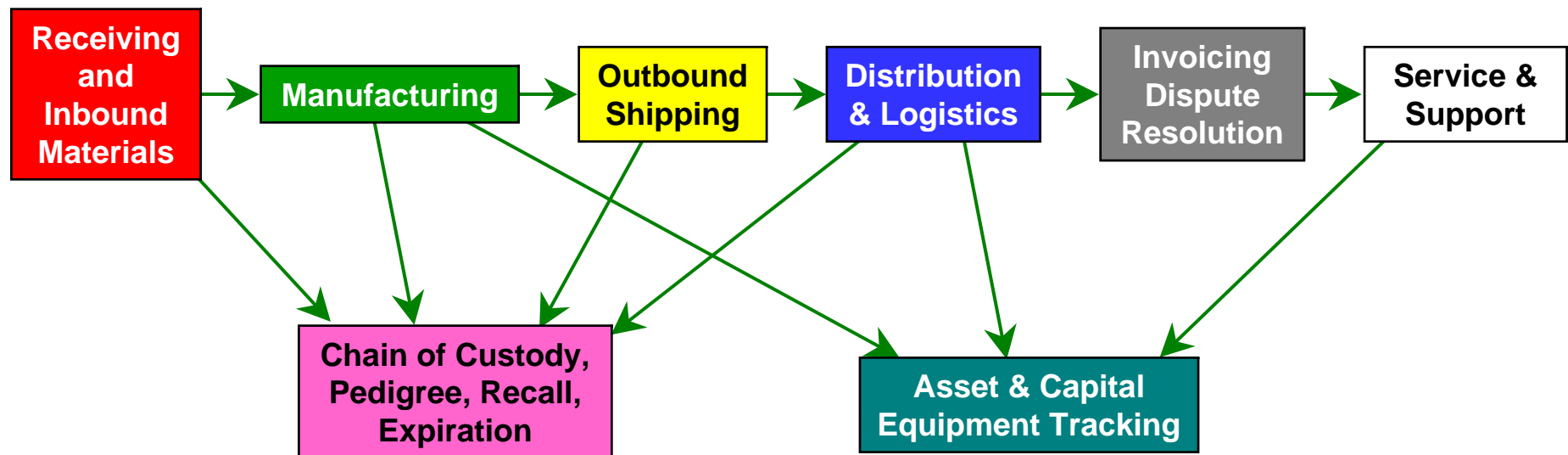


Underlying Technology Required



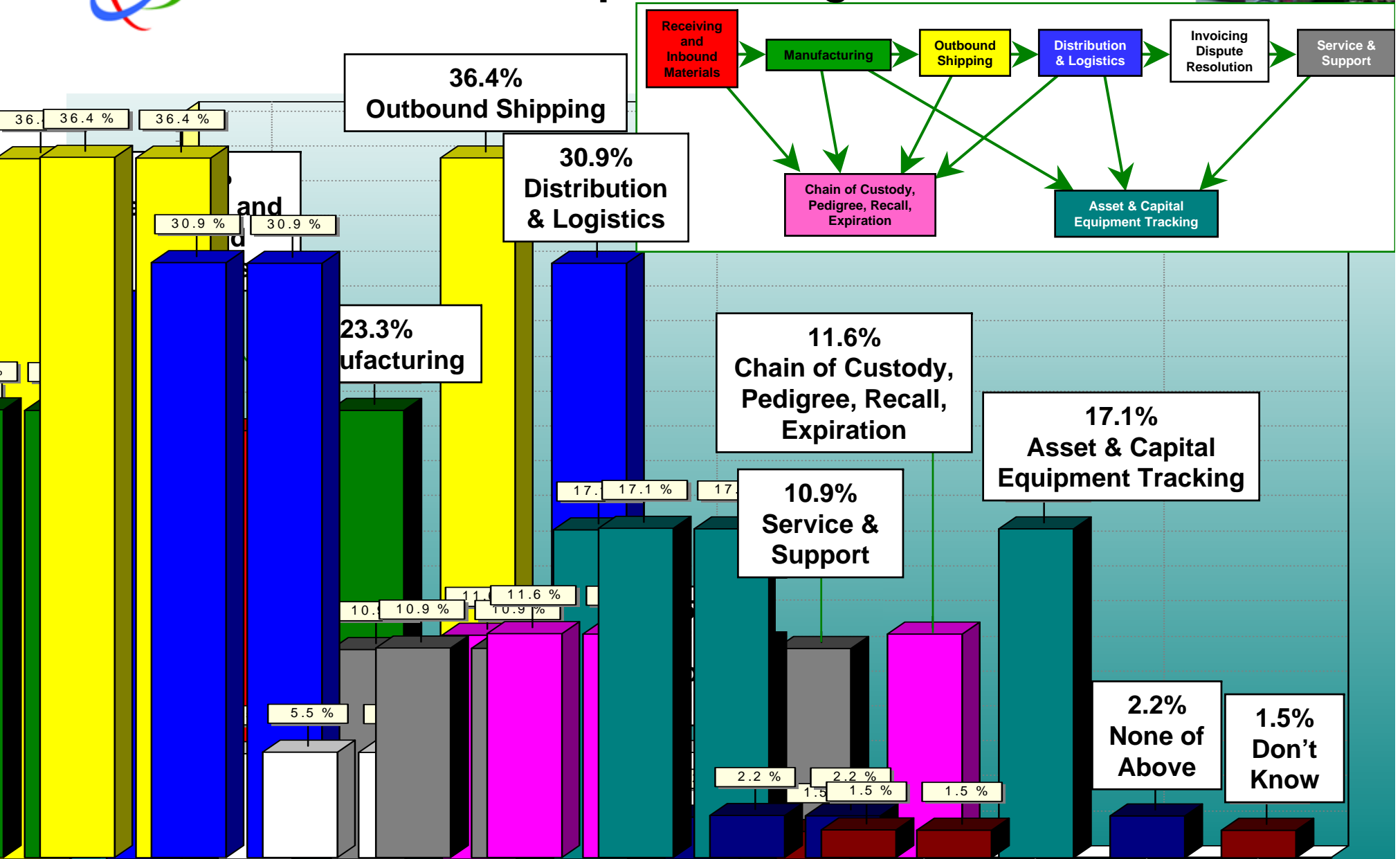


Process Improvement Areas





Process Areas Implementing RFID





Details per Process-Area



- Receiving/Inbound Materials
 - Receiving and putaway processes.
 - e-Kanban with suppliers
- Manufacturing
 - Closed-loop, WIP-tracking e.g. auto-routing, auto-Kanban, conveyance. Tags re-used.
 - Non-reusable WIP-tracking - Tags shipped with the product
 - RFID to record quality test results and/or sensor data
- Outbound / Shipping
 - Automate pick, packing processes
 - Automate shipment content verification
 - Automatically generate an ASN
 - Customer mandate / requirement
- Distribution and Logistics
 - Container security
 - Yard management
 - Container track and trace
 - Customs compliance & faster border crossing
 - Warehouse management
 - Inventory management
- Invoicing and Dispute Resolution
 - Electronic proof-of-delivery (e-POD).
 - RFID data to generate invoice
 - Reconcile order vs. delivery vs. invoice
- Service and Support
 - Track configuration of individual product (component S/N, rev levels)
 - Track service history and quality issues of an individual item
 - Track service history of a customer (associate product/service events to customer)
 - Track service parts inventory
 - Help your customers track their assets
 - RFID for improved failure analysis
- Chain of Custody, Pedigree, Recall, Expiration
 - Chain-of-custody at distributors and wholesalers
 - Chain-of-custody at retailers
 - Improved recall processes
 - Expiration date Management



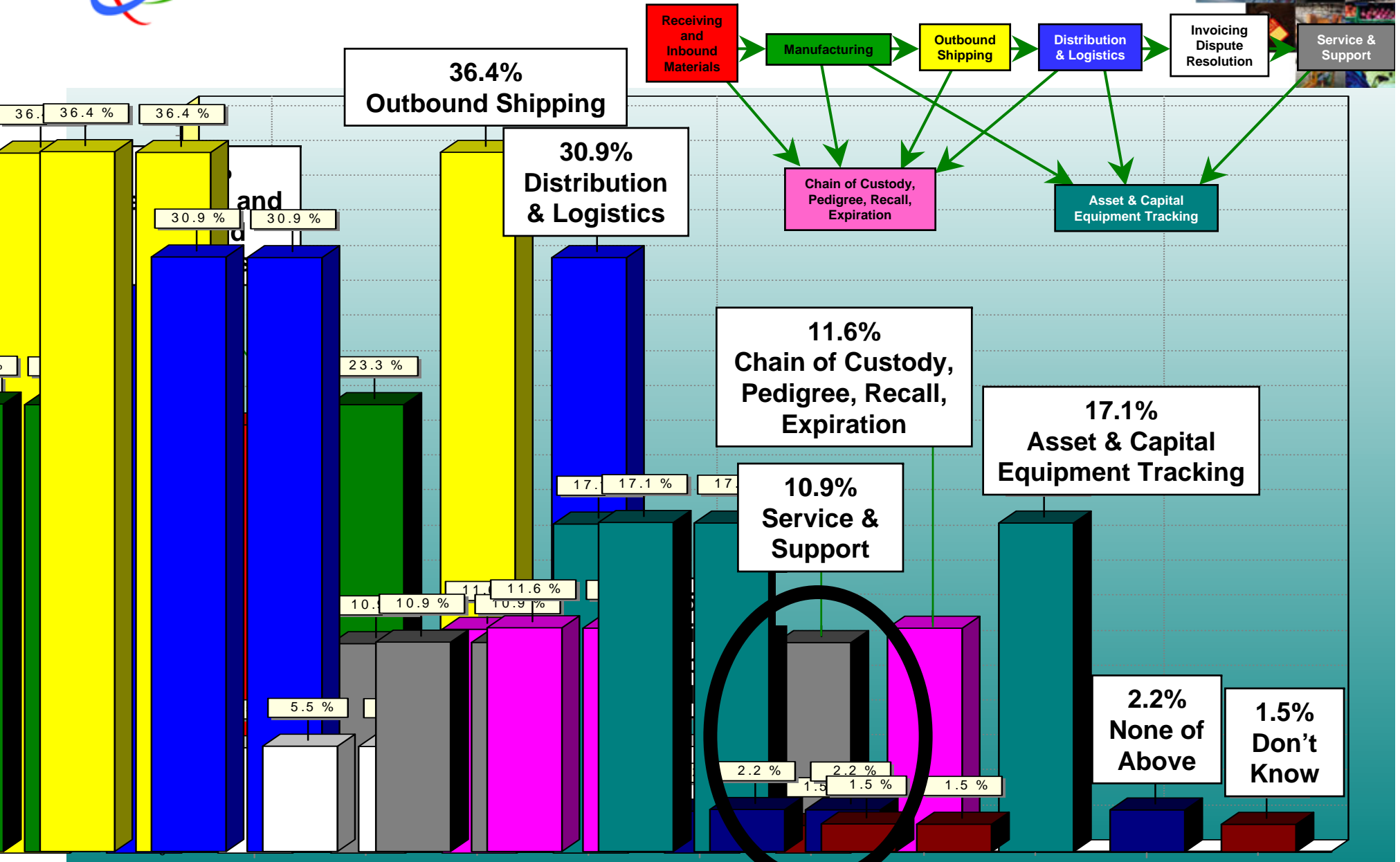
“Other” Processes



- Manufacturing Process Improvements
 - “If we can find an RFID tag that will withstand the rigors of bleaching and dying, we will use it to track inventory by the loom roll through the entire manufacturing process.”
 - “Using RFID and Vision system a fool proof system for tracking the manufacturing process in an automobile industry.”
- DC Improvements / Inventory Management
 - “Every evening in only few minutes, we can the do the inventory and now we have deterministic and "constant" time performance to access and manage the stores in the warehouse. So, finally, we can really optimize the logistic process!”
- e-Pedigree, Chain of Custody
 - “Closed distribution. Patient control over product pedigree”
- Loss Prevention
 - “Tracking of high dollar capital assets to mitigate "loss".”
- Asset Track & Trace / Improve Route Management
 - “Our interest is in piece count verification during the logistics process. RFID verification from factory ship, Freight Forwarder cross dock, and possibly "delivery truck" mobile units for POD.”
- Service
 - “End item embedded RFID for end item Identification and quality tracking of returned field failures”
 - “Would like to attach RFID button to product for identification, features and service history. Product material steel or cast iron creates RFID problem. We are looking for solution.”

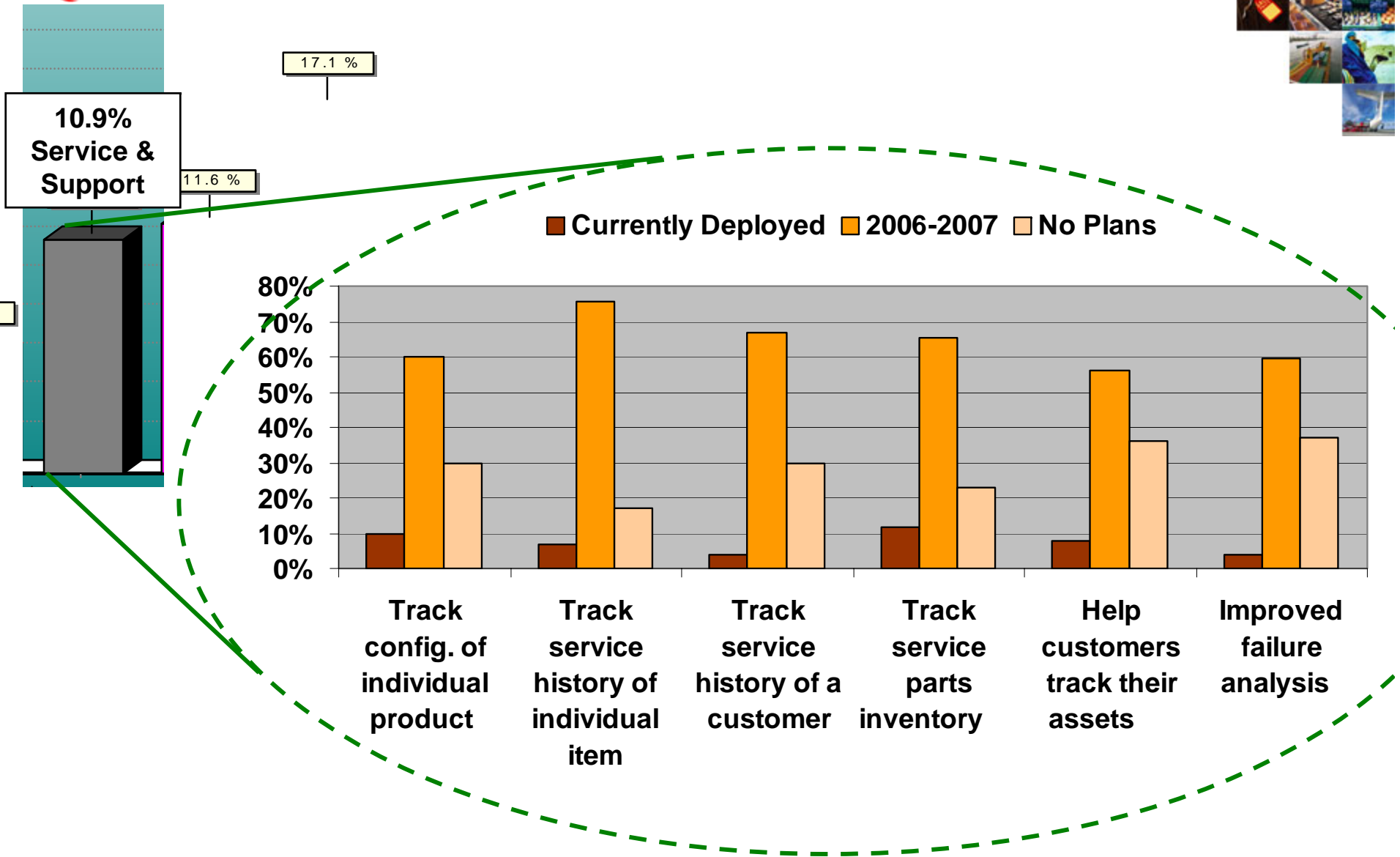


Process Areas Implementing RFID





RFID in Service and Support Processes





Other Comments



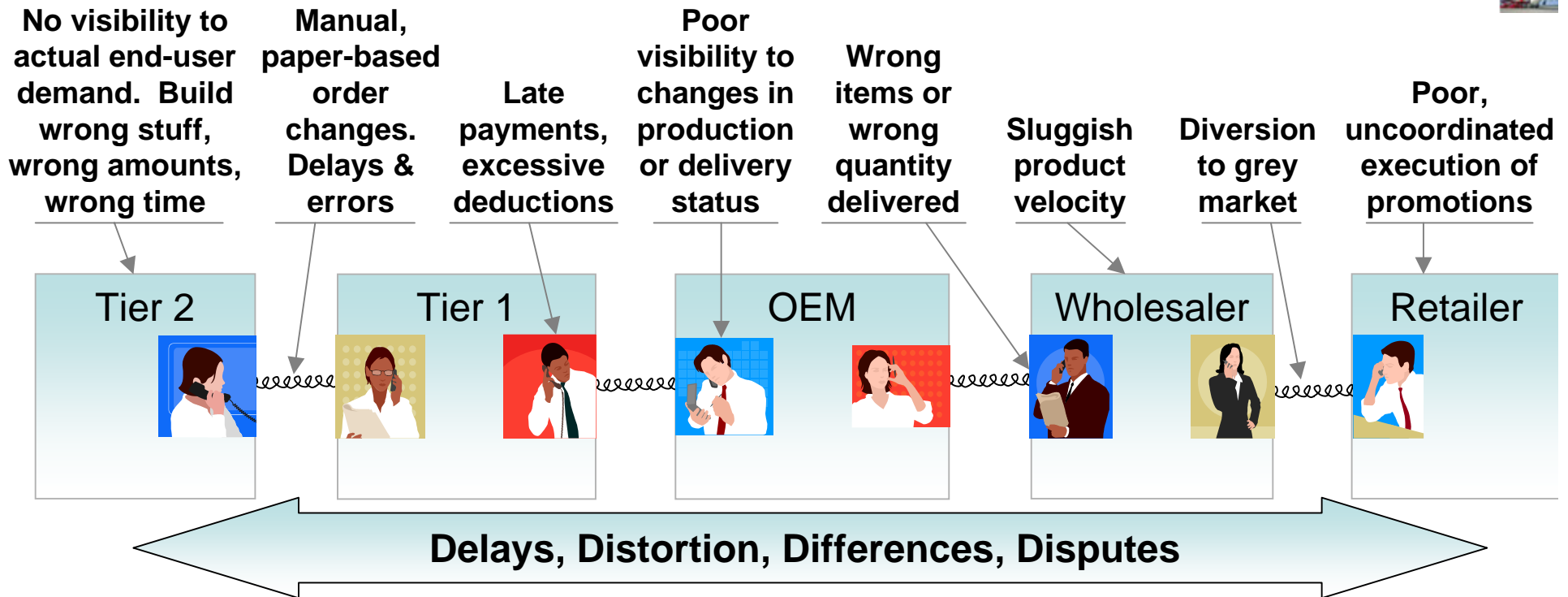
- Legal Requirements
 - “Due to discovery (which costs our company millions) the legal department mandates deletion of RF data for our manufacturing process. Our internal process control has been augmented with test points to ensure quality parts are delivered to our customer, The RF tags support this activity but do not stretch beyond this legal void - ever.”
- Concerns about technology
 - “The ability for RFID tags to withstand sterilization methods (gamma, ethylene oxide, electron beam, steam)”
- Cost
 - “As I wrote earlier, for end users like manufacturers of chemicals, the promised cheap tags have not materialized, standards are multiple and readers have several problems”
- Decision making process
 - “The impact of China's compliance and/or participation in RFID is going to dictate a lot of the future. Our Pilot project is primarily to keep the mandates at bay, and to provide us with some intelligence around RFID in anticipation that it's heyday is still a ways off.”



Interenterprise Data Sharing

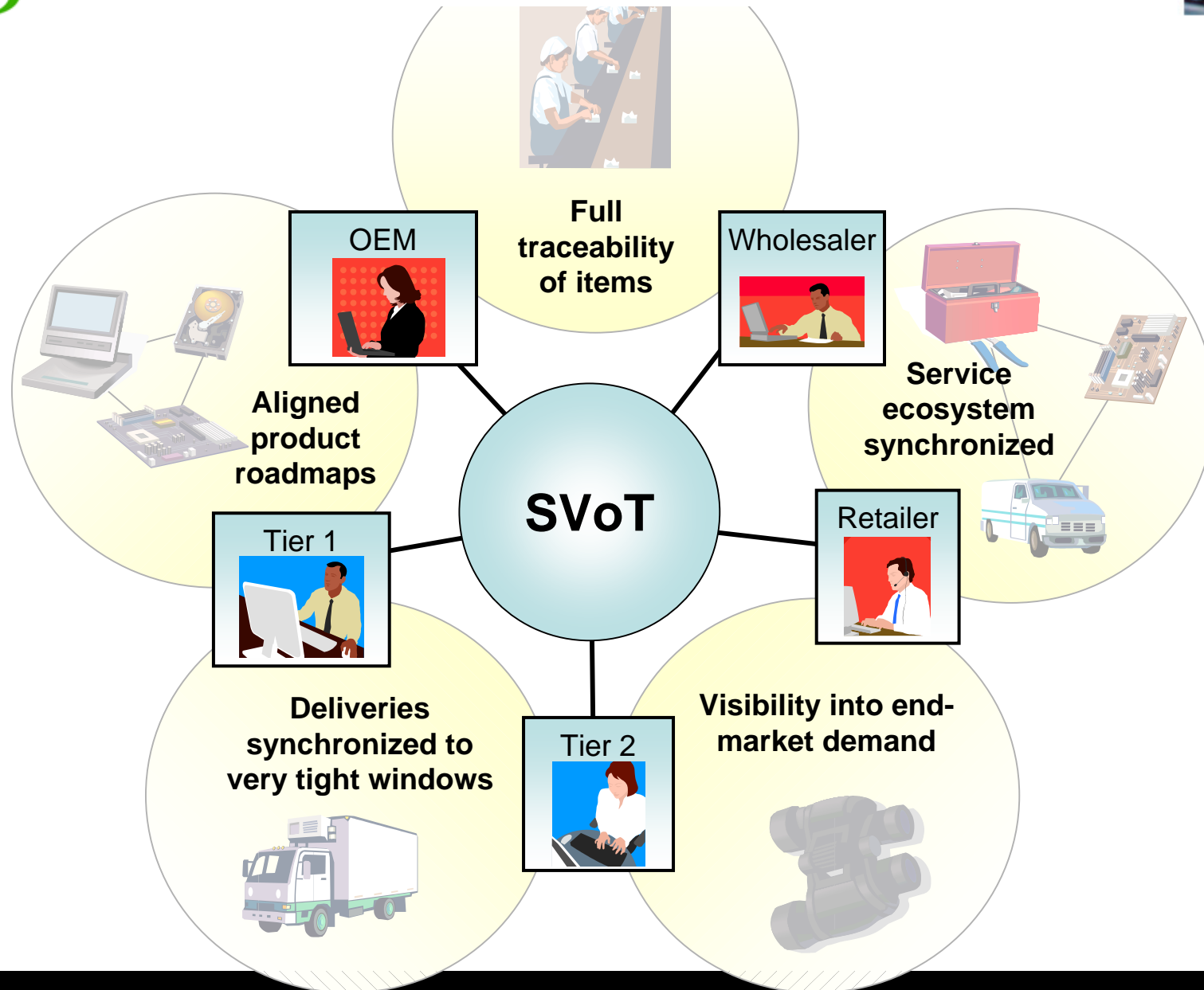


The Problem with Linear/Point-to-Point



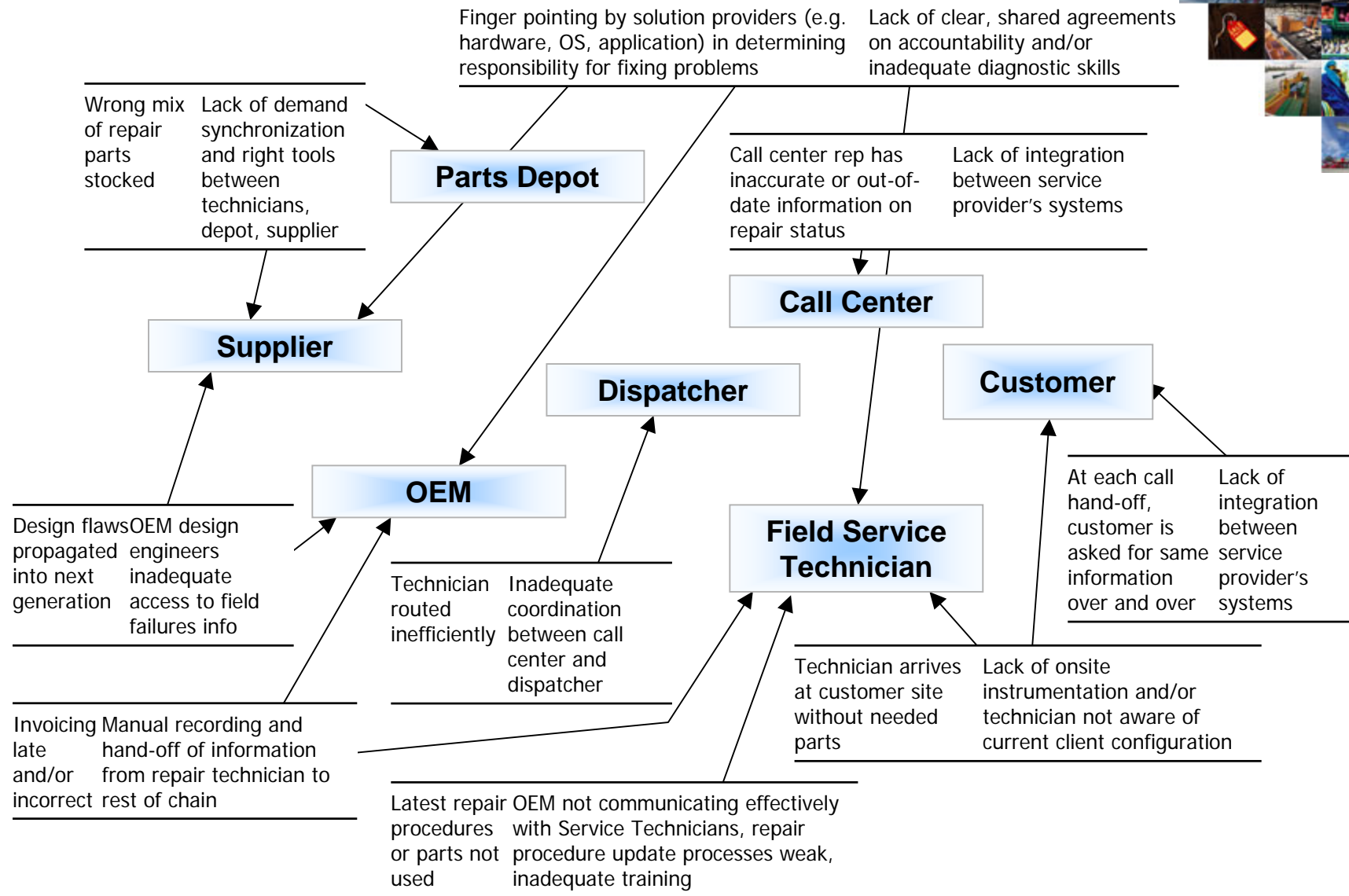


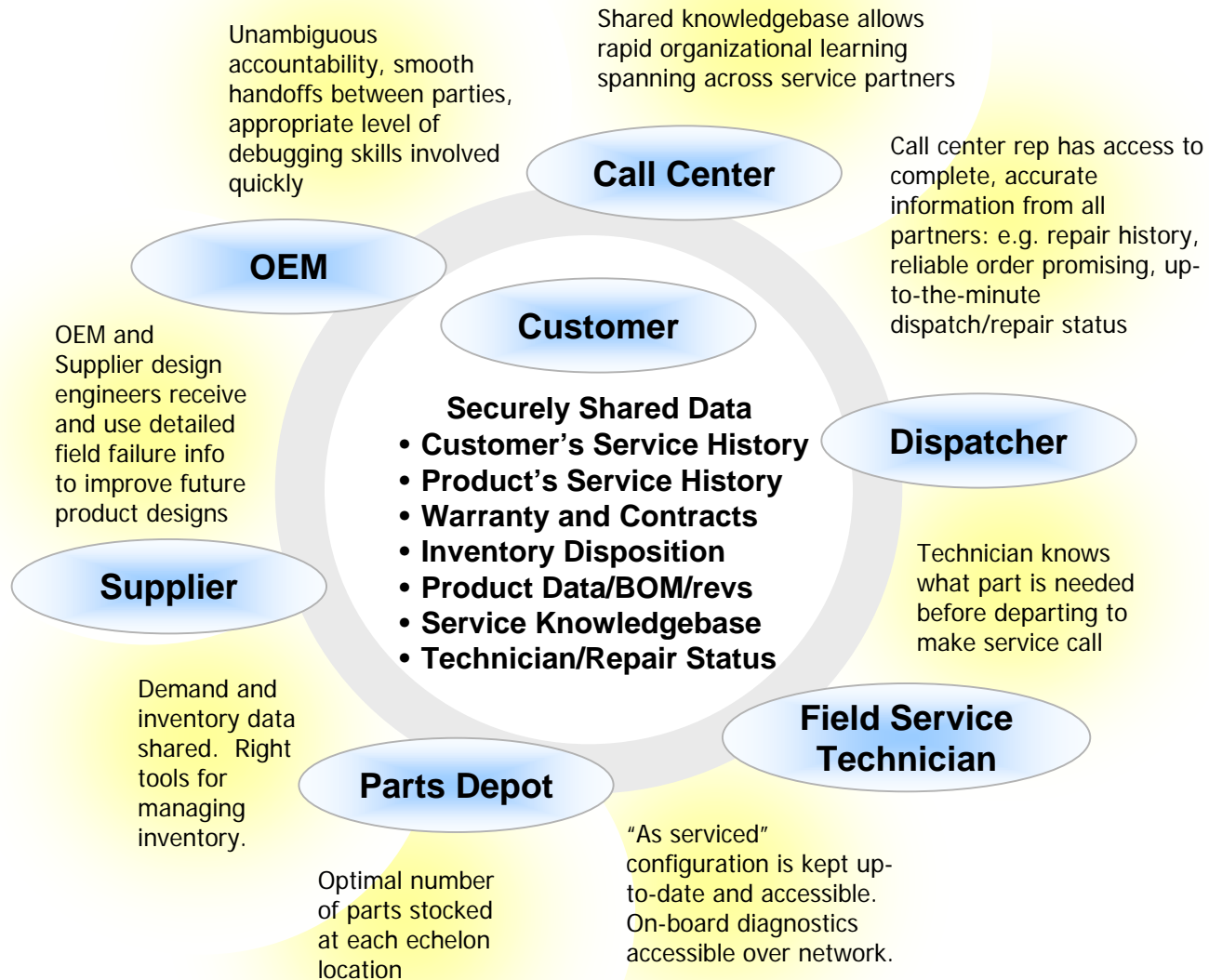
A Single Version of the Truth (SVoT)





Multiple Versions of the Truth Cause Pain in the Service Supply Chain







How interviewees related SVoT to their agendas



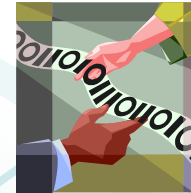
Product Collaboration

Alignment of product roadmaps.
Design Collaboration.



Data Synchronization

Synchronization of product and other data. GDS, EPCglobal Network, etc.



Multi-party Synchronization

Synchronization of business events involving multiple parties, for example precisely coordinating the flow of materials and labor in a project



Facets of SVoT

Service

Coordination of service partners, sharing of key service events and information



Demand

Aligned forecasts, CPFR, visibility of actual consumption across multiple tiers



Product Location and Custody

Shared, accurate, timely visibility of location of product (at rest and in motion), Chain of Custody tracking



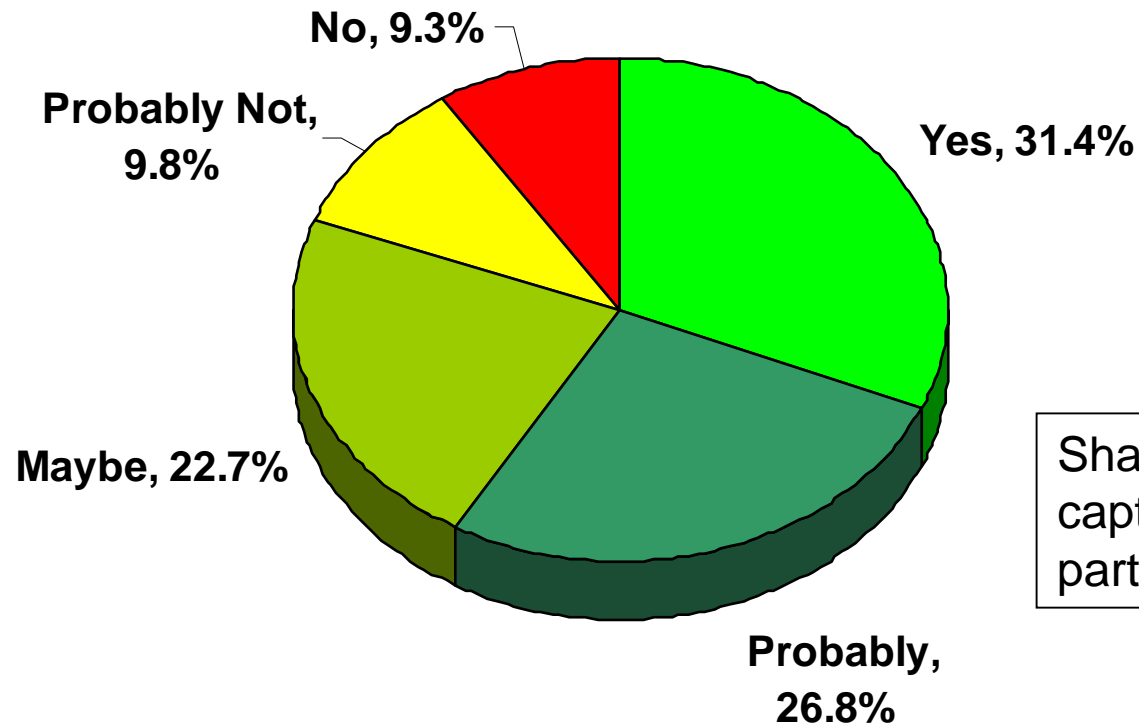
If you had a single-version-of-the-truth across the supply chain, what problems would it be especially good for?



Sharing Auto-captured Info

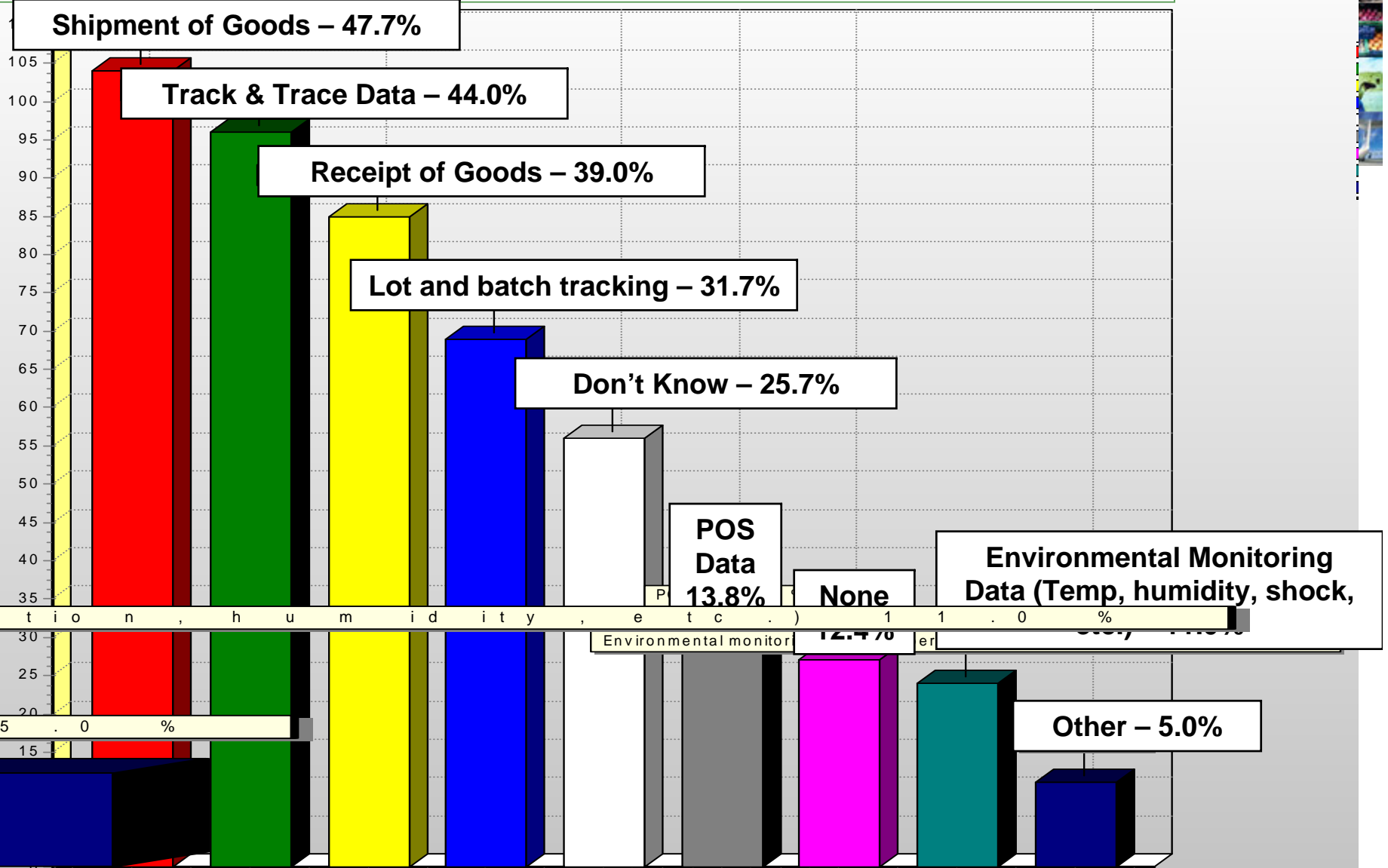
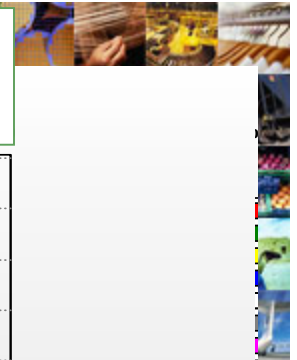


Do you plan to selectively share the information you've captured via RFID, barcode scanning, or other devices with your trading partners?



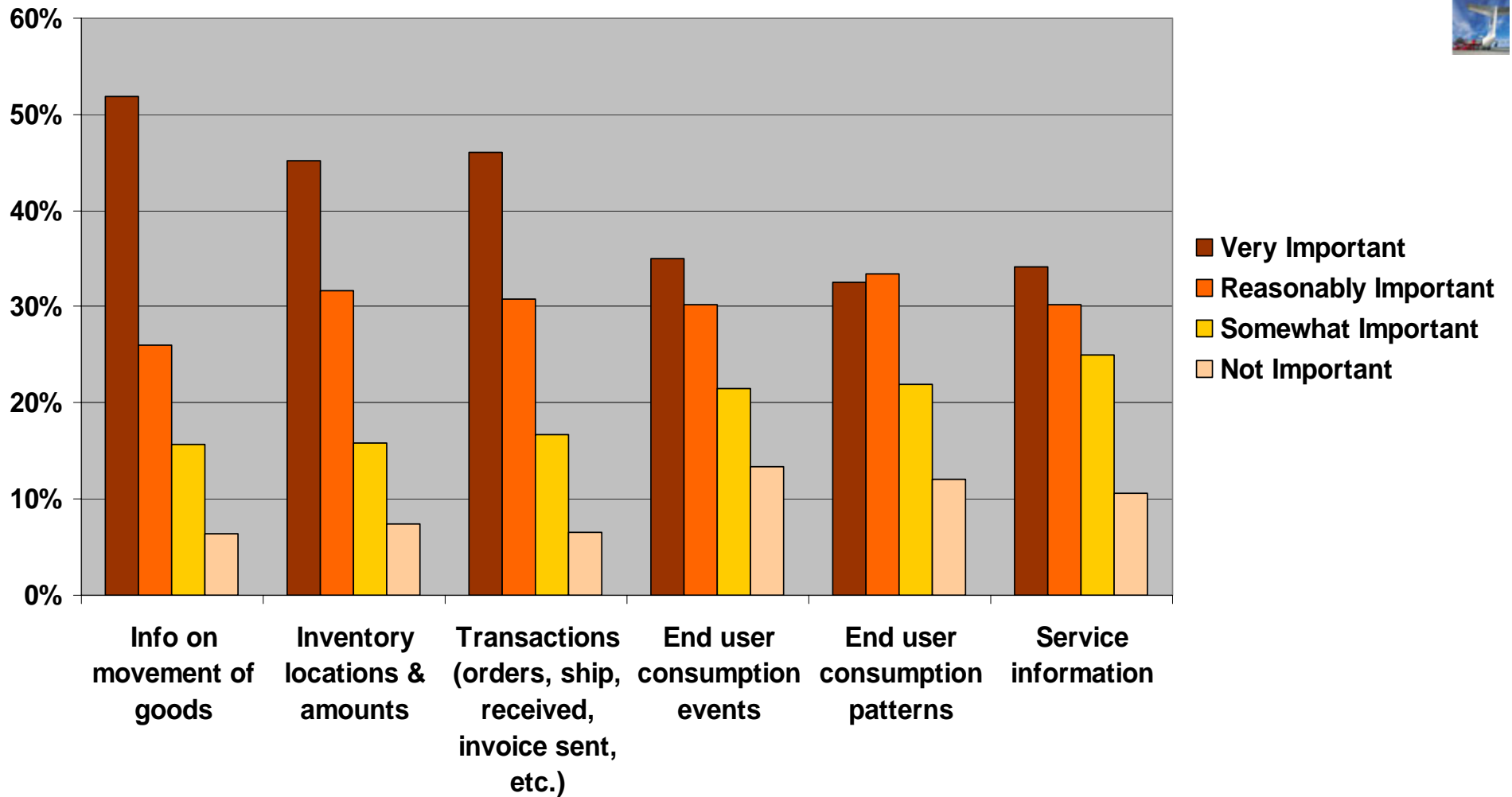
Sharing a portion of auto-captured information with trading partners will be widespread.

If yes, which types of RFID or barcode-captured information do you plan to share with trading partners?





How Important to Share Data Across Multiple Tiers (not just w/direct partners)





Overcoming Trust Barrier



	The Old Model	The New Model	Required Changes for Trust
Data Sharing	Limited sharing. Transactional data only (orders, ASN, etc.)	Rich data sharing (auto-captured data, sensory, designs, roadmaps, production info, pricing, actual consumption, failure data, etc.)	Develop strategic relationships. Segmentation of information access. Scrubbing data into actionable information. Better security processes & training.
Relationships	Direct relationships, only immediate supplier and customer.	Multi-tier digital relationships, via third party platforms.	3 rd -party platform with strong technical security/architecture. Training to prevent social-engineering attacks.
Process	Manual processes and manual decision making	Autonomic processes, where “the system” makes some decisions automatically.	Confidence in the total solution (right answer always) before people relinquish decision making. Via pilots.
Problem Resolution	Lack of data on cause, difficult to resolve problems or assign liability.	Remedial capabilities for problem resolution, with accountability.	Willingness of all players to be closely monitored and own up to liability. Usually takes a strong player to mandate participation.
Delivery Performance	Unreliable Delivery, excessive inventory to maintain service levels.	Reliable time-definite delivery enables a “virtual warehouse”—in-transit inventory counted as (future) on-hand inventory.	Faith in end to end process, based on proven performance. Process disciplines, visibility, earliest possible warning (and predictions) of deviations from execution plan.



Conclusions



Conclusions



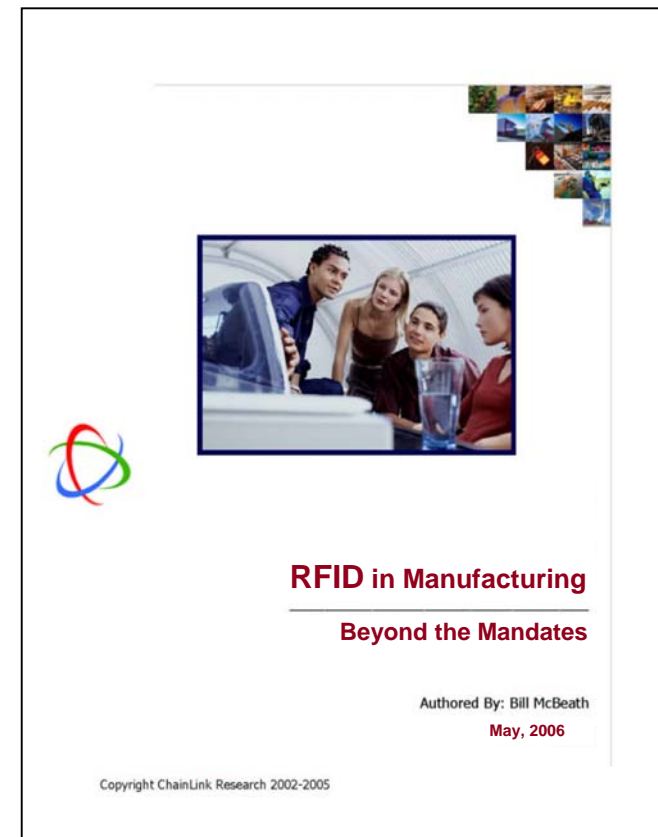
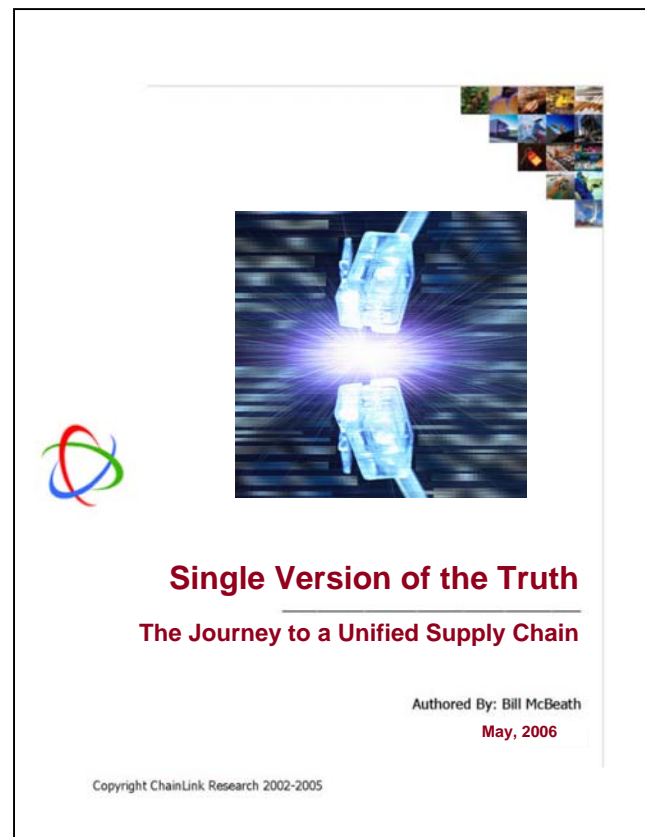
- Most manufacturers driven by process improvements.
- It is too early to tell ROI for most manufacturers.
- ... but those focused on process improvements are much more optimistic about their ROI than those who are strictly mandate driven.
- There is a broad and diverse set of process areas where RFID is being implemented.
 - Across whole “lifecycle” and supply chain stages
 - Vanilla solutions vs. process-specific solutions
 - Implementers don’t think of these as technology projects, but rather as process improvement projects
- Many people see value in creating a “Single Version of the Truth” via sharing RFID and other data with trading partners
 - ... but trust remains a major inhibitor

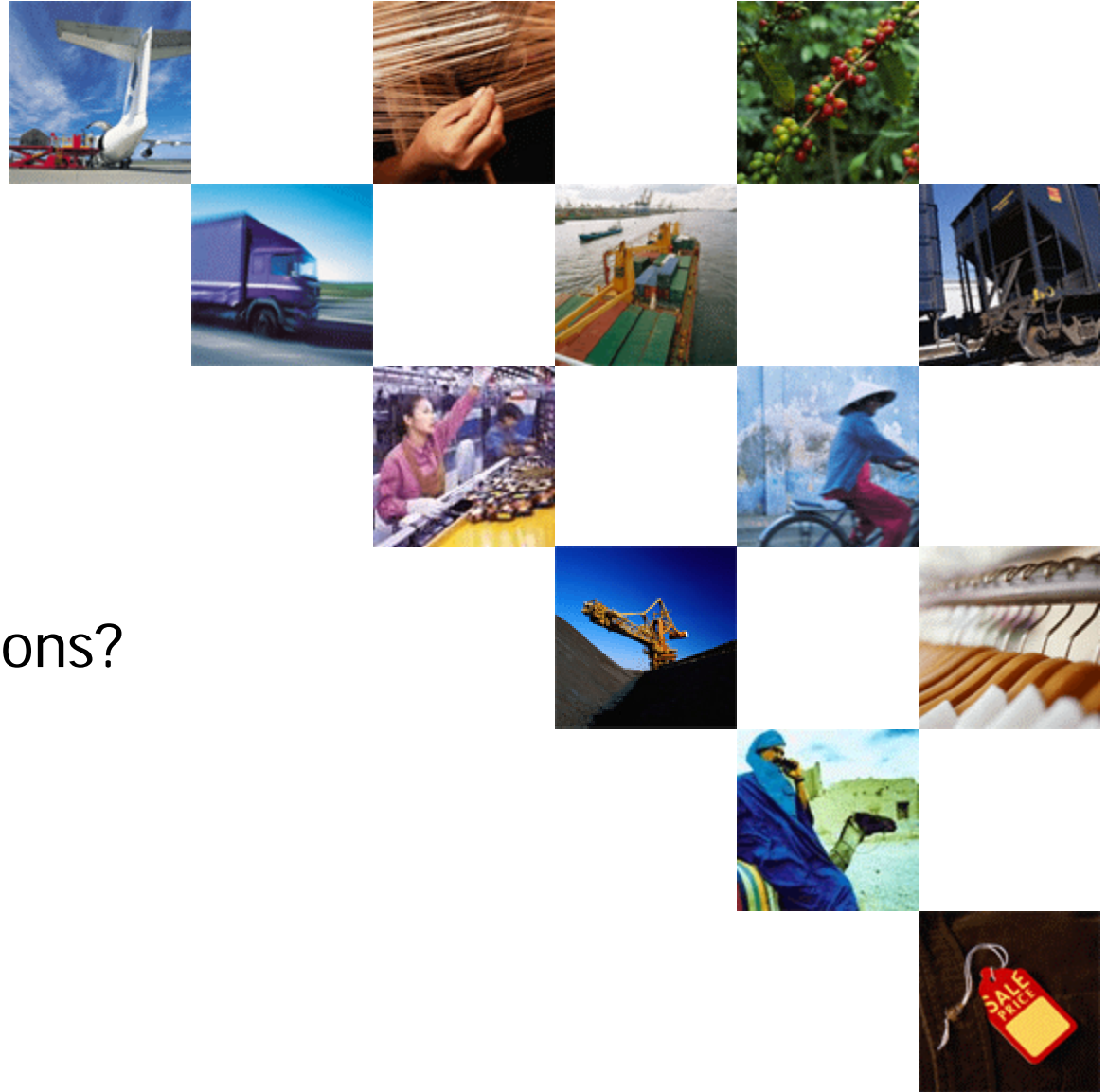


Reports



- In-depth reports available Q2 '06 from ChainLink
 - RFID in Manufacturing
 - Single Version of the Truth





Questions?

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Dramatically improving supply chain performance through real-world research