



***Best Practices and  
Benchmarks in Reverse Logistics***

**Presented by:  
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- Business & Strategic Advisory Services
  - Strategic & Business Planning
  - Market Research & Customer Satisfaction
  - Benchmarks & Best Practices
  - Systems Design, Evaluation, & Recommendation
  - Mergers & Acquisitions
- Founded in 1969
- Headquartered In Suburb of Philadelphia
- Global Focus
- Broad Industry Expertise in Aftermarket



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- Over 20 years Industry Experience
- Expert in Aftermarket Service & Support
  - Field Service
  - Service Logistics
  - Reverse Logistics
- Broad Industry Focus
  - IT/Telecom
  - Medical/Scientific Instrumentation
  - Process Control & Plant Automation
  - Avionics
  - Electrical Power
  - Building Controls & Automation

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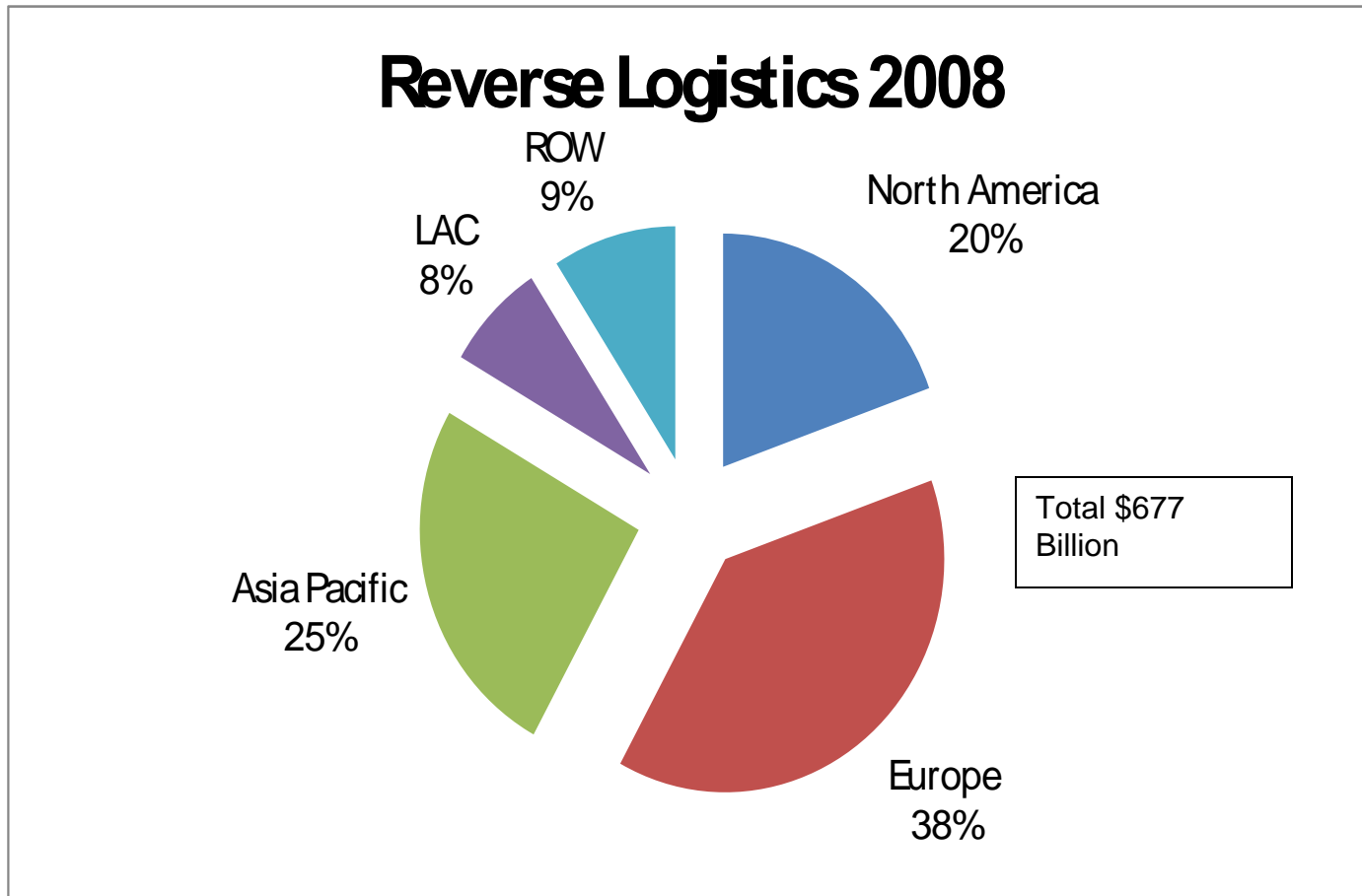
- IBM Global Services
- ABB
- Siemens
- General Motors
- Nokia
- Johnson Controls
- NAACO
- Lucent
- 3Com
- Network Appliance
- Eastman Kodak
- AGFA
- Xerox
- Boston Scientific
- Carrier
- Panasonic
- National Archives
- Bank of America

# What We'll Cover...

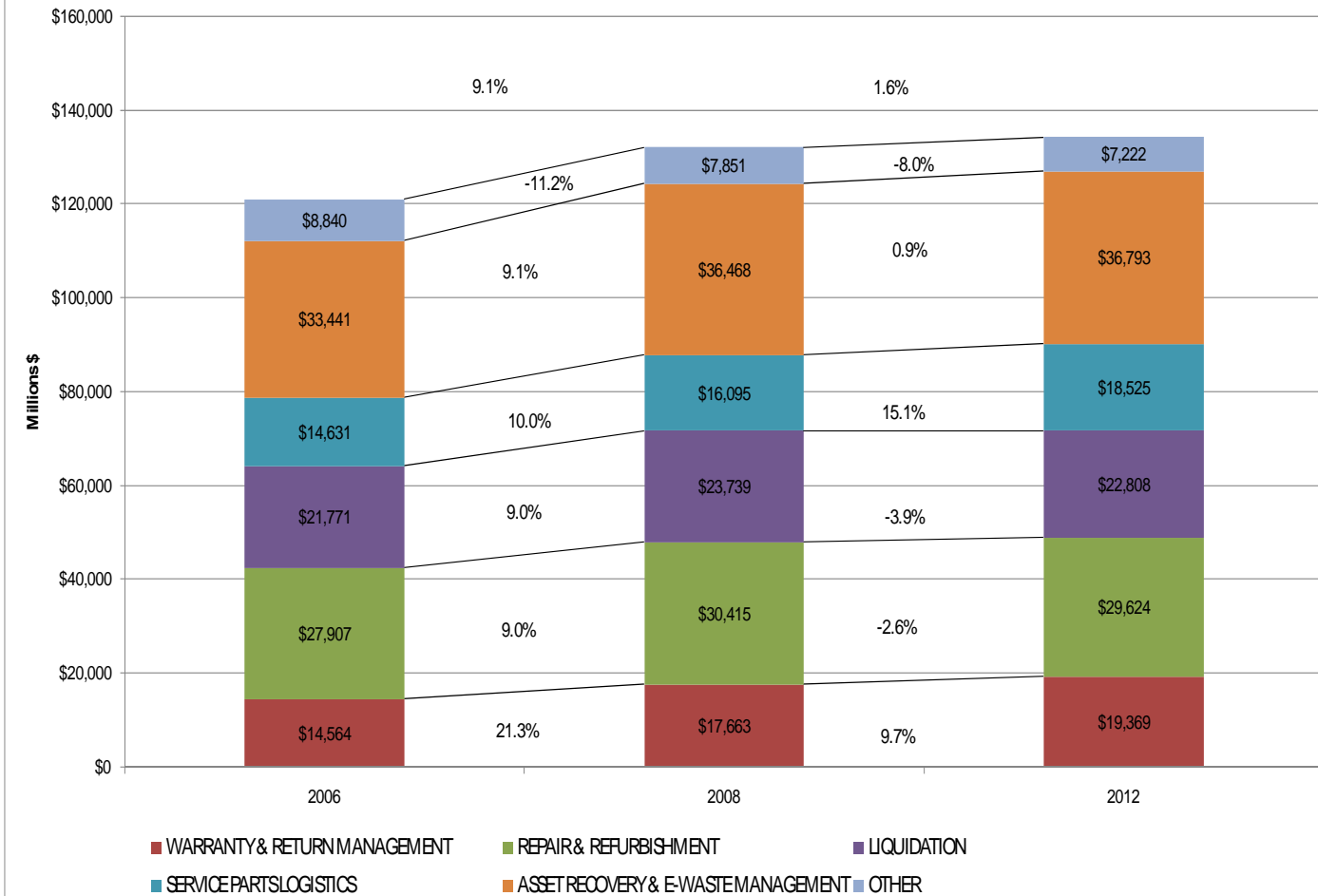
- **Key Concepts**
- **Best Practices and Industry Benchmarks**
- **Technological Developments**
- **Make Versus Buy Versus Outsource**
- **Recommendations and Next Steps**

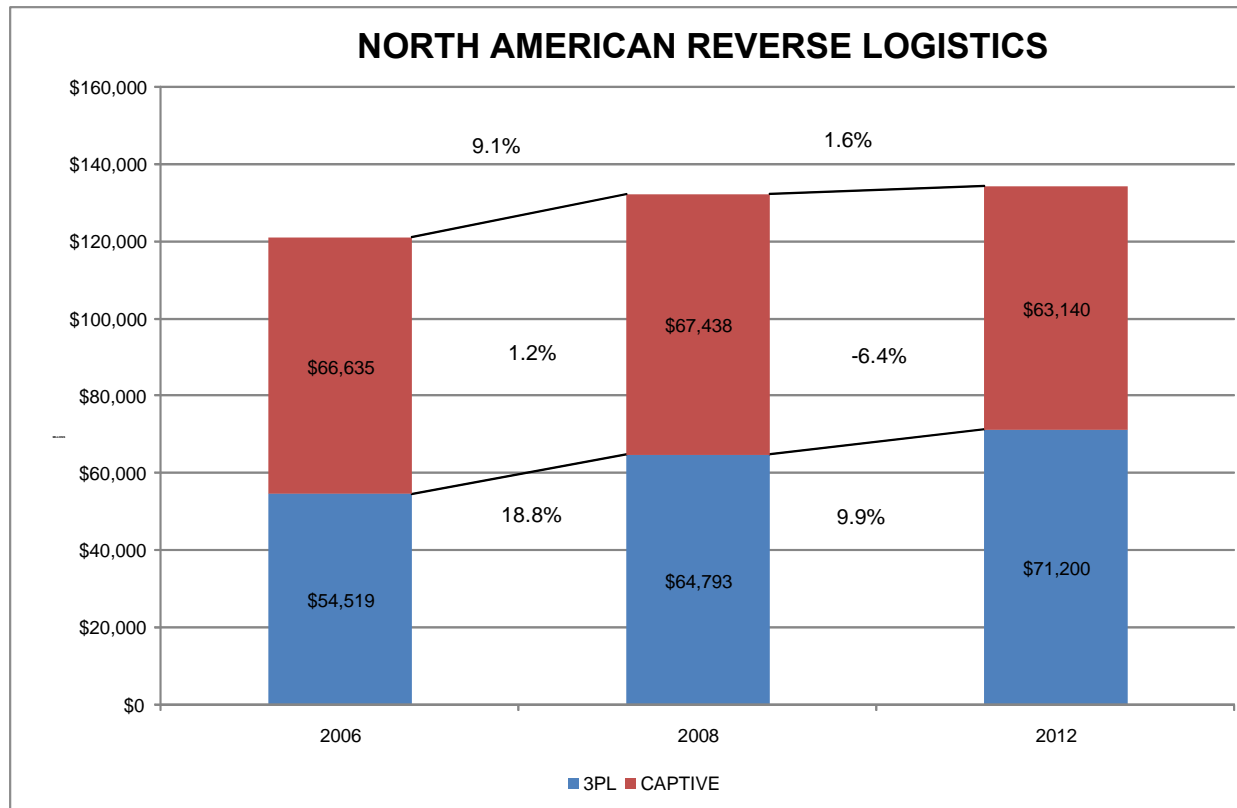
# CURRENT SITUATION

# Total World Market



### North American Reverse Logistics Service Items

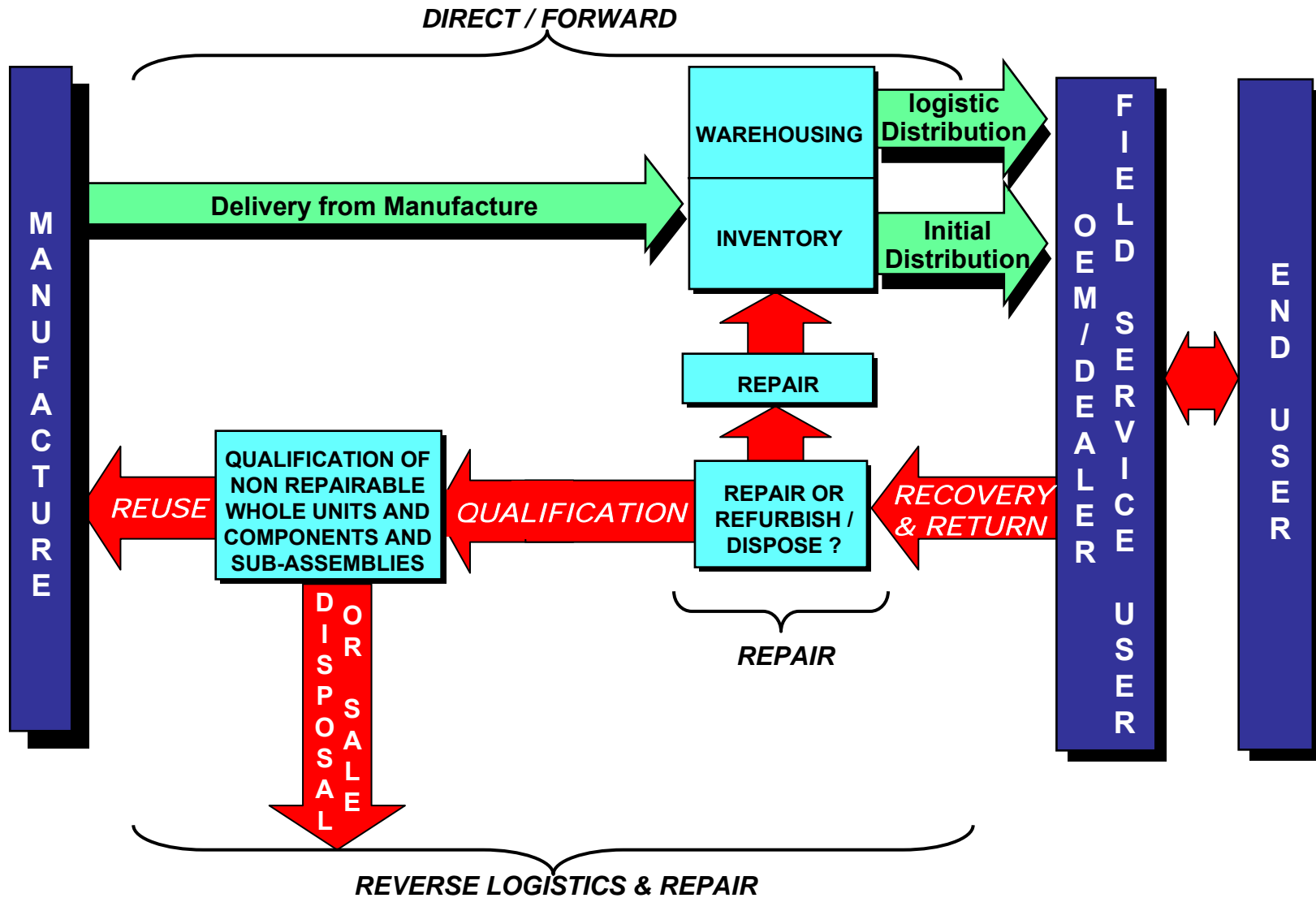




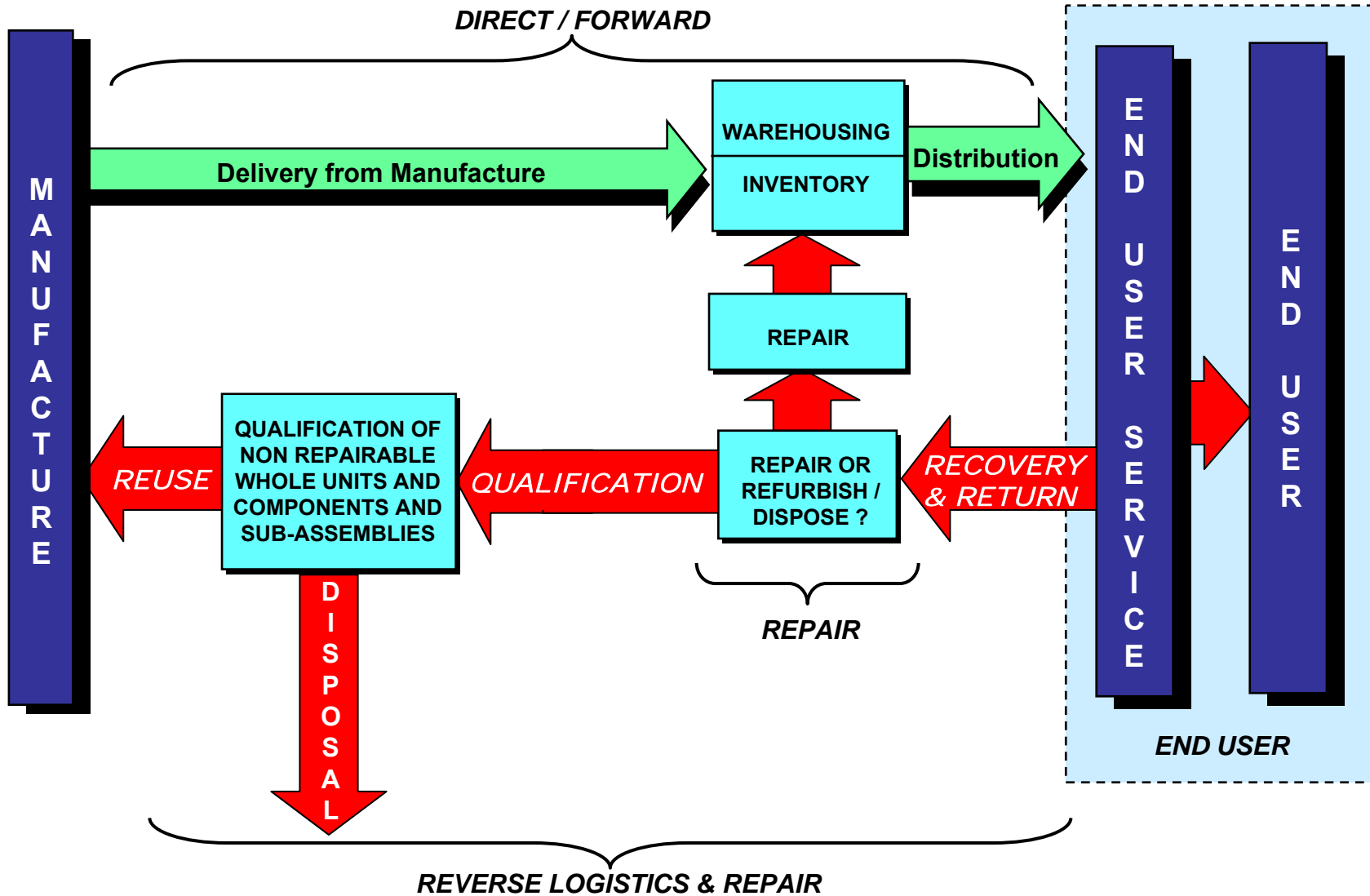
# Closed Loop Supply Chain

- **Forward Logistics and Supply Chain Management**-This includes the overall management and coordination and control of the full direct service logistics pipeline, including the flow of the original material, parts, and products further manufactured to the central warehouse and distribution system, as well as the initial physical flow down to regional and local supply points to the end-user/purchaser
- **Reverse Logistics**-This includes full coordination and control, physical pick-up and delivery of the material, parts, and products from the field to processing, rework, refurbishment, repair or disposition, and returns back to the field where appropriate
- **Depot Repair & Processes**- this includes the services to receive the returns from the reverse logistics process from the field, diagnose, evaluate, repair and/or dispose of the returned units, products, parts, subassemblies and materials

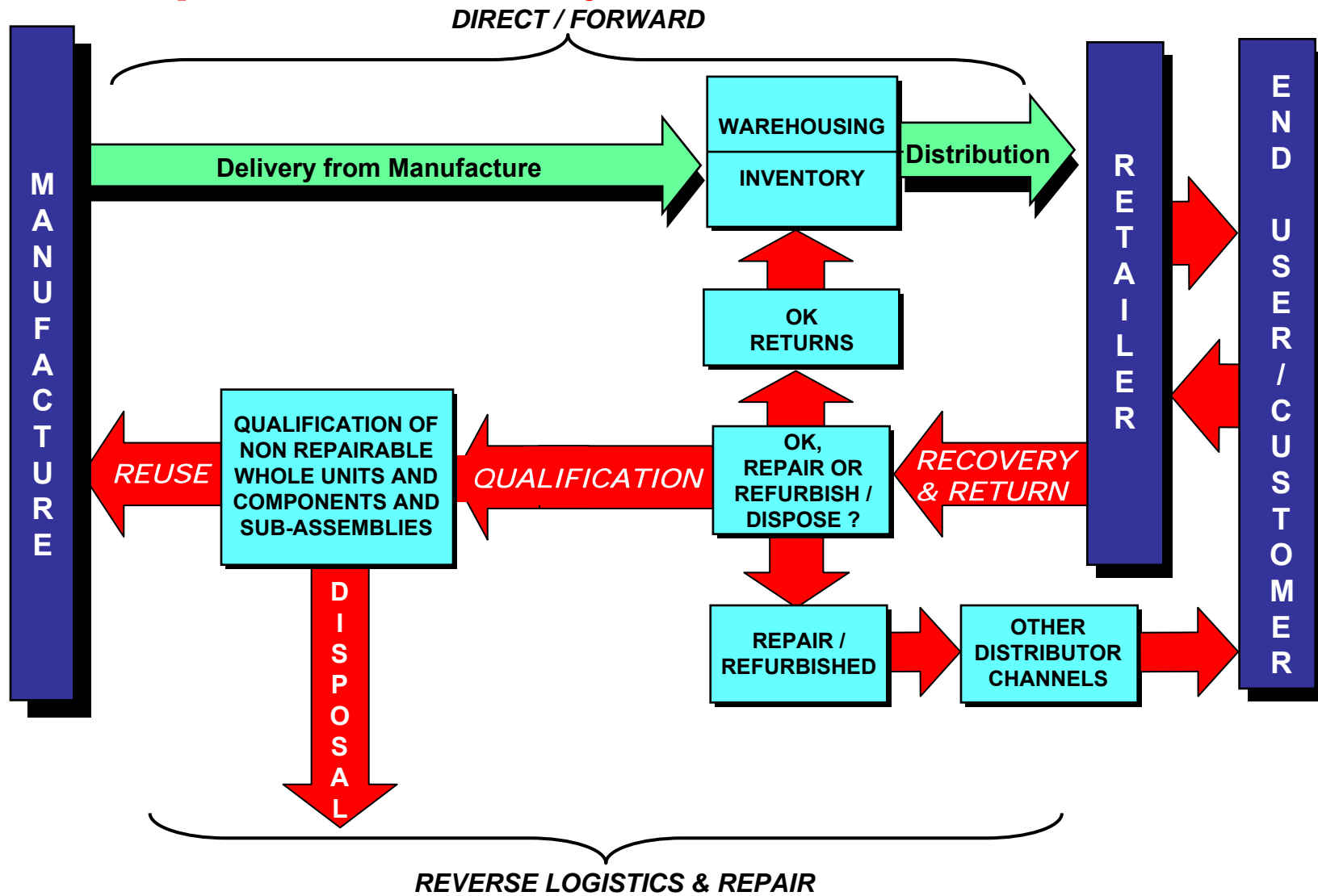
# Typical High Tech Closed Loop Supply Chain



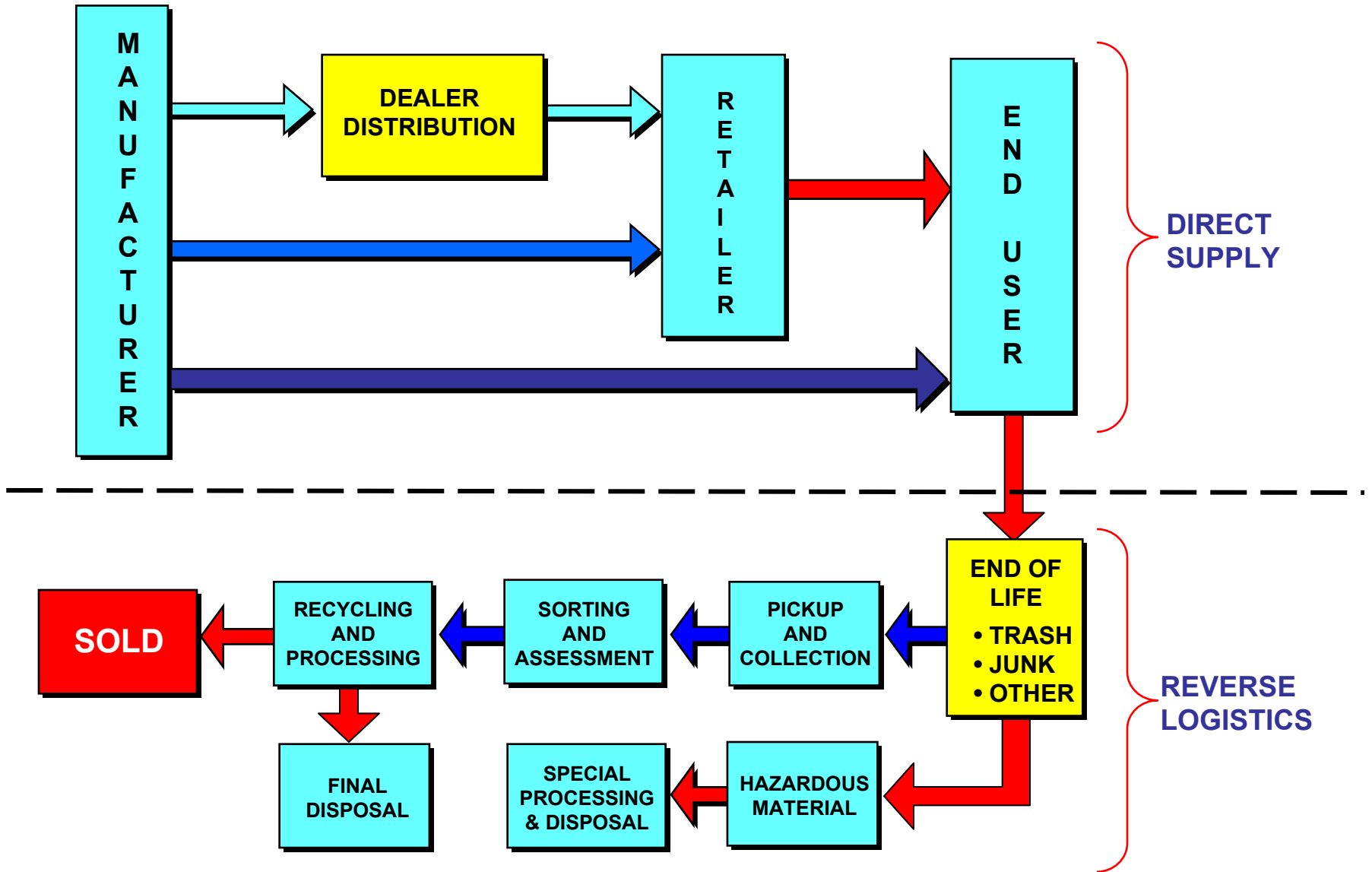
# Alternative High Tech Direct & Reverse Logistics and Repair Services Cycle



# Direct and Reverse Logistics and Repair Services Cycle in Consumer Goods



# Independent Reverse Logistics



SOURCE: Blumberg Associates, Inc. Surveys and Interviews

# Reverse Logistics Processes



**“Reverse logistics” includes all the activities required to move a product from a point of use to a point of disposition**

- Return
- Recycling
- Source reduction
- Reuse
- Product substitution
- Disposal
- Product returns for warranties
- Recalls
- Refurbishing
- Customer dissatisfaction due to defects

# Reverse Logistics Processes

(Continued)



The following functions are part of the reverse logistics channel:

- Collection and sorting
- Storage
- Transportation and distribution
- Compaction, shredding and identification
- Processing or filtration
- Retromanufacturing
- Full disposal



Reverse logistics has unique characteristics, differentiated from the standard forward material flow

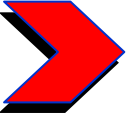

# Reverse Logistics Market Characteristics



The characteristics of reverse logistics flow include:

- Uncertainty of supply; usually people do not know when an item will be coming back, nor do they know its condition
- Customer specific; the return flow is quite diverse depending on the end-user or customer which requires to really know the customer
- Timing; the need to process asset as quickly as possible to make available for reuse
- Value improving; the need to maximize value (scrap, resale, etc.) of unacceptable assets being returned

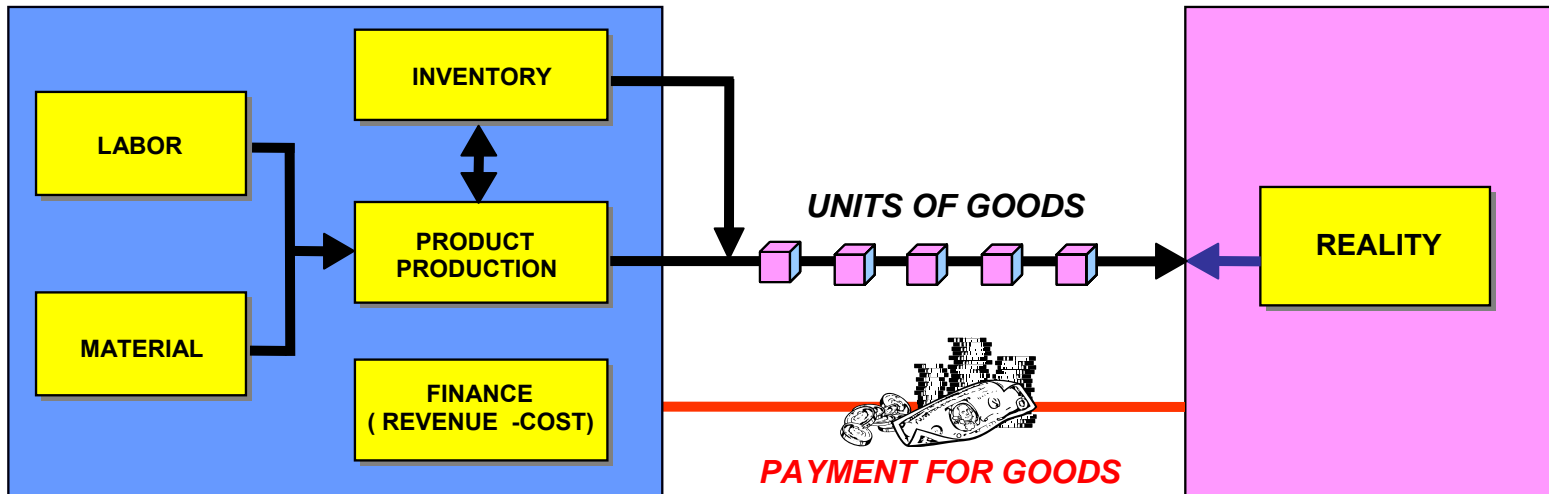
# Reverse Logistics Market Characteristics (Continued)

-  **Flexibility**; the need to maintain flexible capacity (i.e., facility, processing and transportation) to achieve goals for returned materials
-  **Multi-parties coordination**; in any aspect of reverse logistics, whether it be source reduction, recycling, substitution, disposal, several parties are typically involved

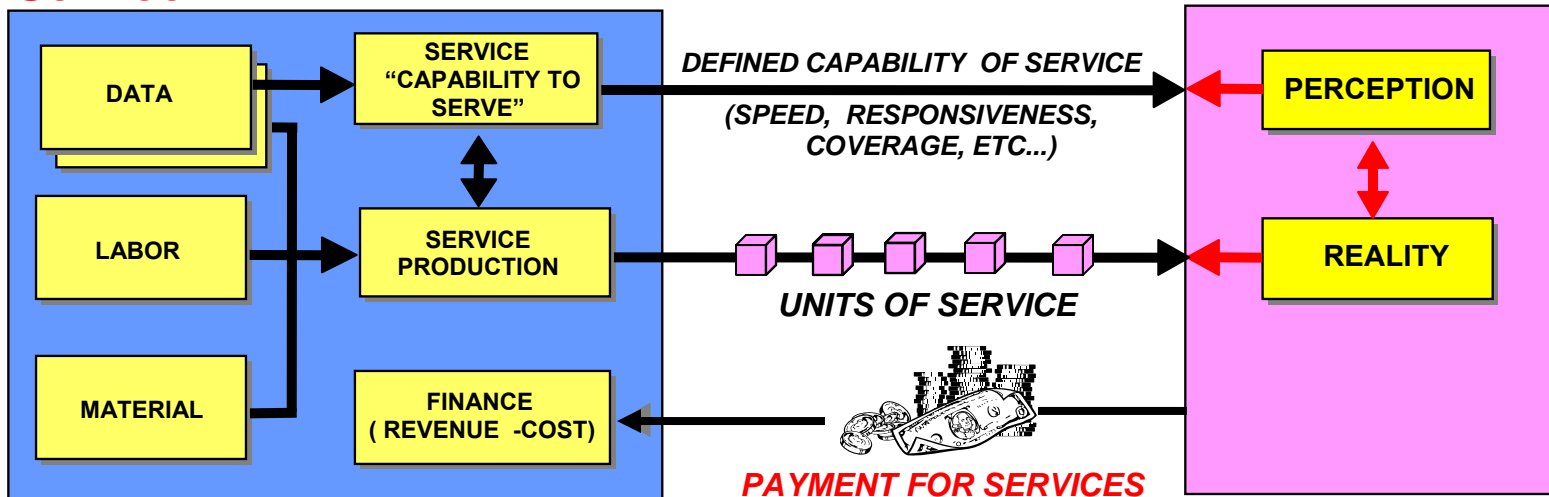
# KEY CONCEPTS

# COMPARISON OF PRODUCT AND SERVICE BUSINESS MODELS

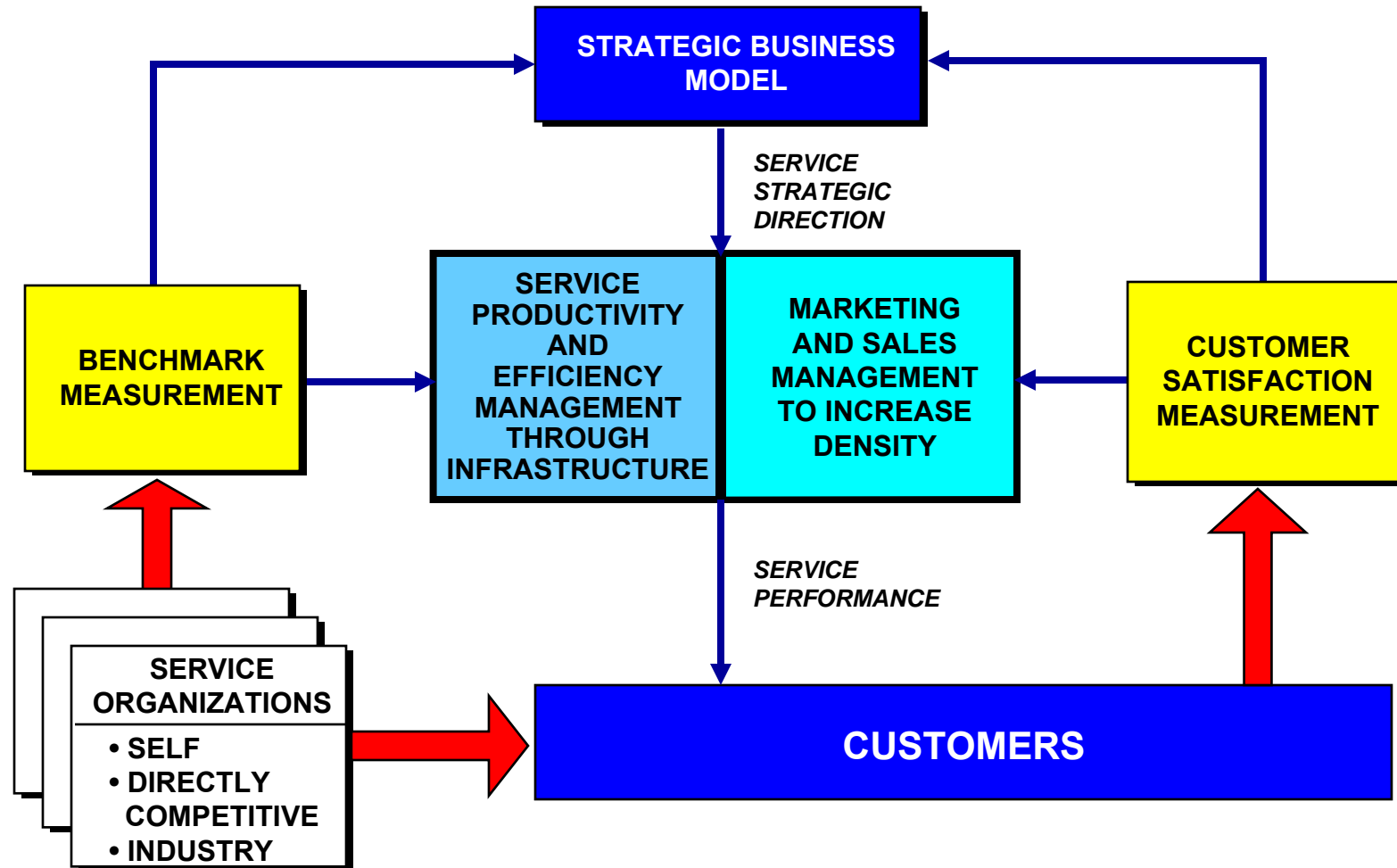
## *Product Firm*



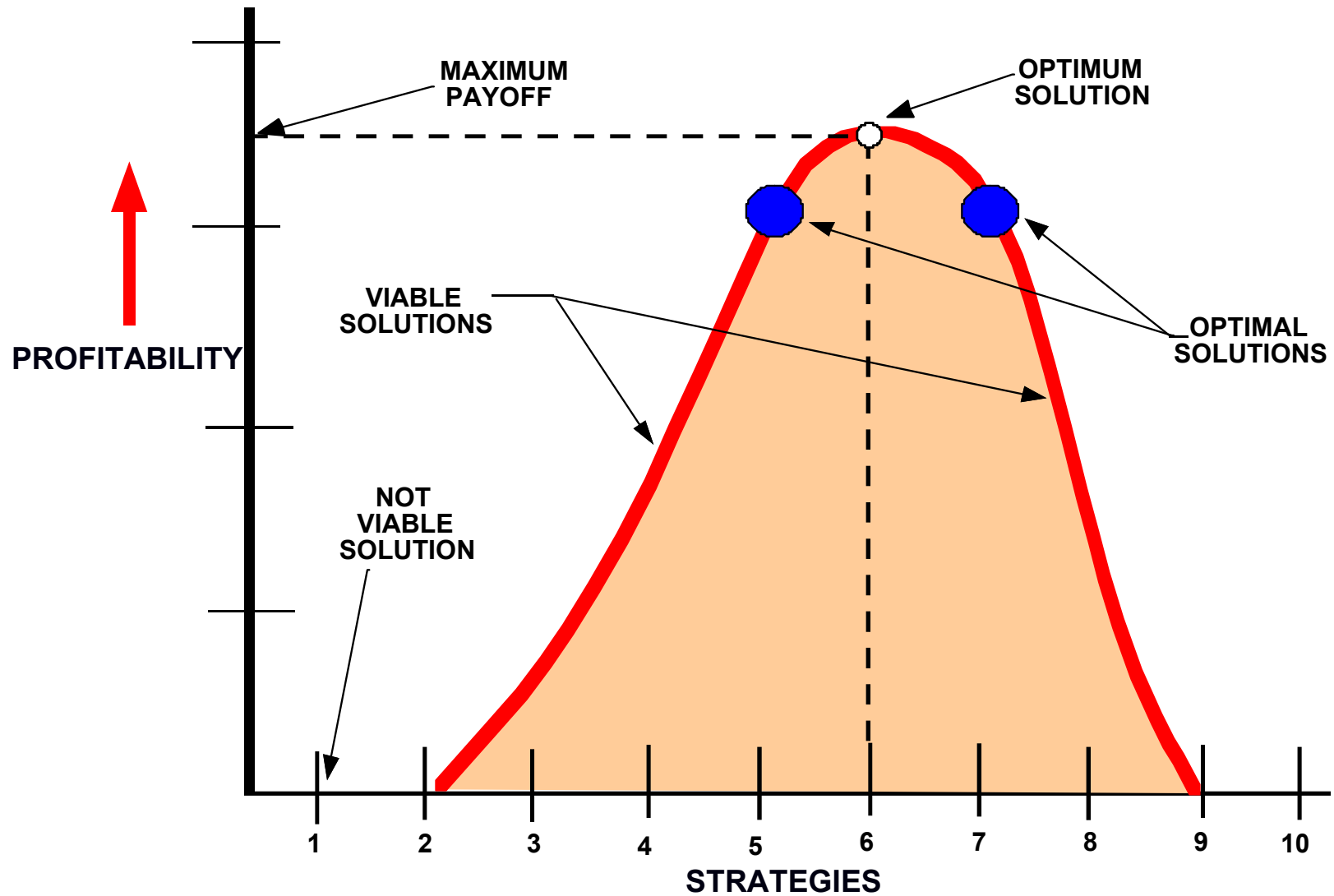
## *Service Firm*



# *The Strategic Direction Process*



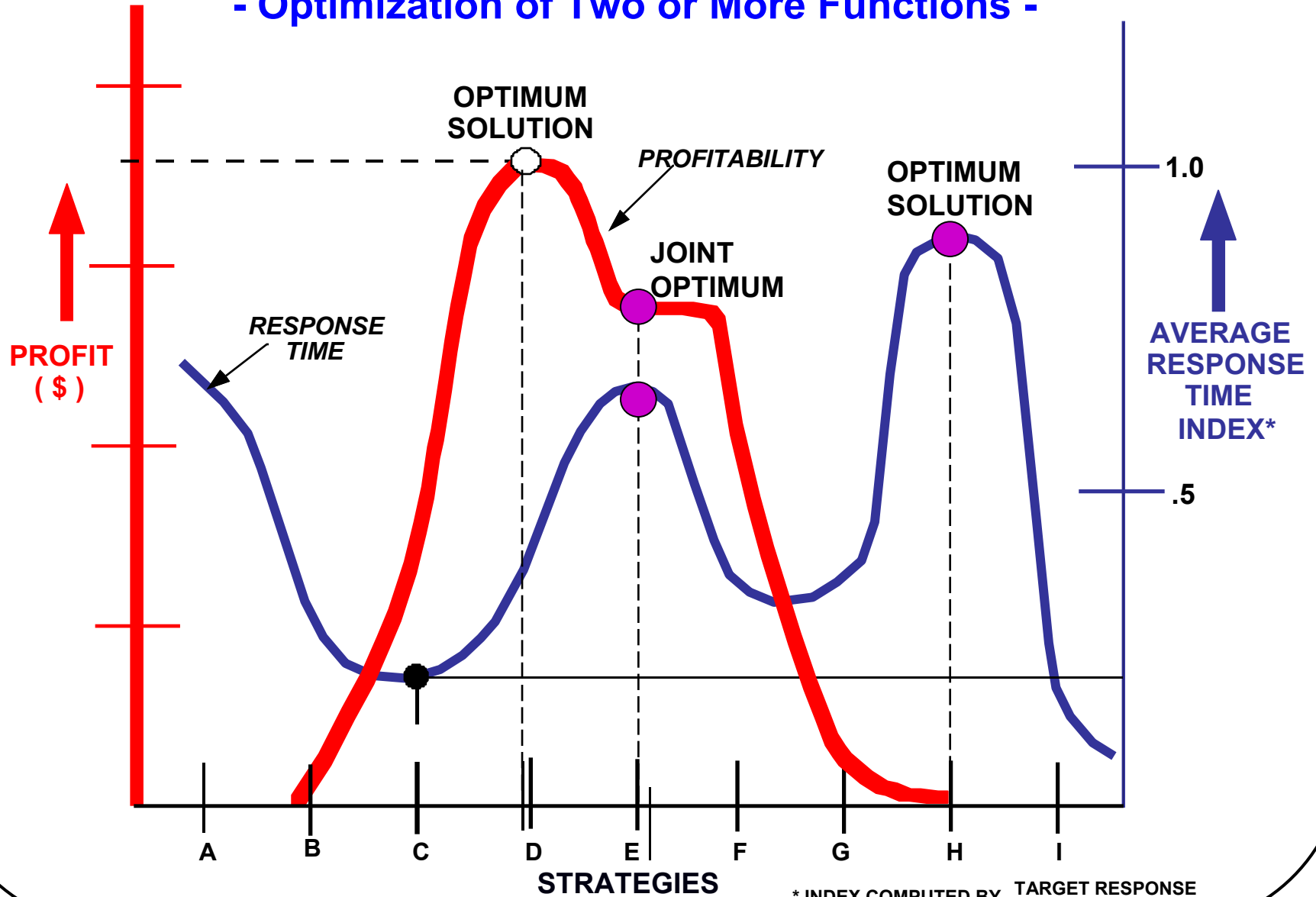
# General Examination of Alternative Strategic Solutions



Source: D. F. Blumberg Associates, Inc.

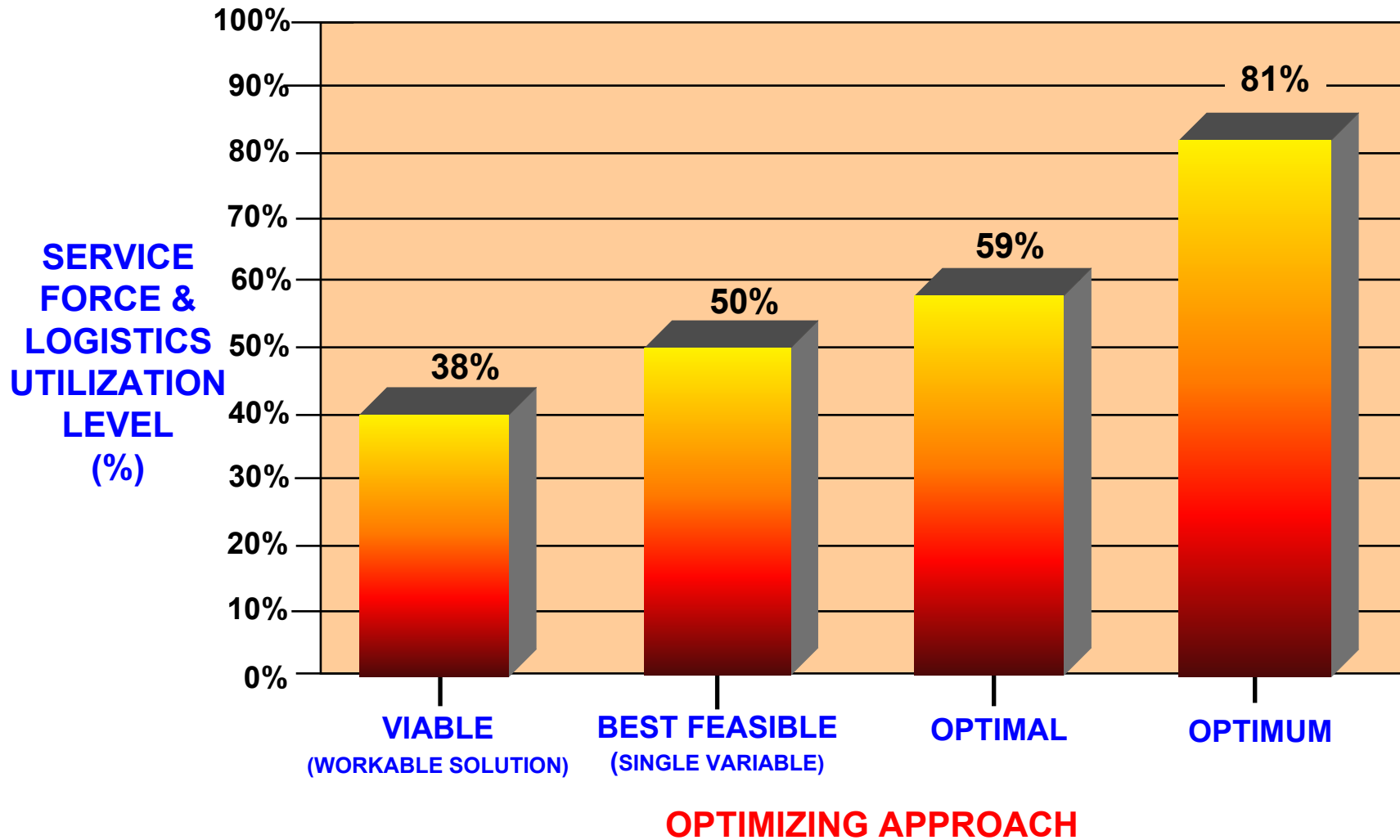
# The Service Management Problem:

- Optimization of Two or More Functions -



\* INDEX COMPUTED BY  $\frac{\text{TARGET RESPONSE}}{\text{AVERAGE RESPONSE}}$

# Impact of Optimization Techniques on Utilization / Productivity



Source: D.F. Blumberg Associates, Inc.

# BEST PRACTICES AND BENCHMARKS

# CONSUMER GOODS RETURNS EXPERIENCE (BY CAUSE)

CAUSES OF RETURNS		ANNUAL PERCENT RETURNS	
		CONSUMER ELECTRONICS	CONSUMER APPLIANCES
DEFECTIVE	FAILURE	9.4%	1.5%
	SHIPMENT DAMAGE & OTHER CAUSE	2.3%	1.2%
NON DEFECTIVE	STOCK BALANCING & STORE RETURNS	3.6%	0.5%
	SHIPPING ERRORS	3.2%	0.3%
	CUSTOMER RETURNS & NON-SATISFACTION	7.5%	1.0%
TOTAL		26.0%	4.5%

SOURCE: BLUMBERG ADVISORY GROUP SURVEYS, CONSUMER ELECTRONICS RETAIL SURVEY, INTERVIEWS WITH MAJOR RETAILERS

# FACTORS AFFECTING CONSUMER BROWN & WHITE GOODS PRODUCT RETURNS

FACTORS	ESTIMATED* IMPACT
PRODUCT RETURN POLICY	7
RETAILER/DEALER COMMITMENT TO SERVICE/ SERVICE RESPONSE	8
PHYSICAL FACTORS (SIZE, WEIGHT, COMPLEXITY)	5
PRODUCT RELIABILITY	4
BUYING FACTORS (EASE OF USE, CONNECTIVITY, USER FRIENDLINESS OF INSTRUCTIONS, ETC.)	7
PRICE	4

SCALE OF 1 -9 (9 = HIGHEST IMPACT)

SOURCE: BLUMBERG ADVISORY GROUP, INC. ;  
SURVEY OF RETAILER RETURN EXPERIENCE

# **Returns Management**

- **Conventional wisdom among aftermarket service professionals:**
  - **Design RL processes to facilitate the implementation and execution of effective and efficient programs associated with**
    - **inventory management**
    - **parts and product returns**
    - **warranty programs**
    - **disposal programs**
    - **remanufacture and resale of products, subassemblies and parts**
    - **environmental initiatives**

# **Returns Management**

- **Common challenges in RL:**
  - **Lack of visibility into product**
  - **Customer engagement**
- **Lack of visibility affects the CLSC:**
  - **Status of return (where is it, when is it coming back)**
  - **Reduces velocity**
  - **Requires more inventory to offset return delays**
  - **Results in more frequent stock-outs**
  - **SLA penalties**

## **ANALYSIS OF COSTS OF NON-ACCOUNTED INVENTORY\***

<b>INDUSTRY</b>	<b>INDUSTRY AVERAGE RECOVERY RATE</b>	<b>MONTHLY MISSED INVENTORY VALUE</b>	<b>ANNUAL MISSED INVENTORY VALUE</b>
WIRELESS CARRIER	88%	\$60,000	\$720,000
WIRELESS RETAIL	75%	\$125,000	\$1,500,000
CABLE	80%	\$100,000	\$1,200,000
COMPUTER AND PERIPHERALS	85%	\$75,000	\$900,000
TELECOM	80%	\$100,000	\$1,200,000
ELECTRONICS & INSTRUMENTATION	80%	\$100,000	\$1,200,000
MEDICAL	75%	\$125,000	\$1,500,000

\*Based on 1,000 monthly shipments with an average value of \$500.

**EVALUATION OF CRITICAL BENCHMARKS\***  
**- BY INDUSTRY -**  
**(AVERAGE VERSUS BEST IN CLASS)**

PARAMETER	CABLE/ SATELLITE		TELECOM		MEDICAL		COMPUTER & PERIPHERALS		WIRELESS CARRIER		INDUSTRY AVERAGE	
	AVG.	BEST IN CLASS	AVG.	BEST IN CLASS	AVG.	BEST IN CLASS	AVG.	BEST IN CLASS	AVG.	BEST IN CLASS	AVG	BEST IN CLASS
RECOVERY RATE	80%	92%	80%	92%	75%	90%	85%	93%	88%	95%	81%	93%
VELOCITY (IN DAYS)	60	23	35	23	55	25	45	20	28	19	60	20

\*Reflects total asset recovery rates associated with after sale service (e.g. advanced exchange, product returns, sales demos), except in the case of cable which reflects delinquent accounts, moves, customer initiated disconnects.

# **Returns Management**

- **Based on industry benchmark research a significant percentage of customers will initiate a return within 7 to 10 days of request.**
- **As time goes by, returns will increase at a diminishing rate until they approach zero unless another attempt is made to recover the product.**
  - **The percentage varies by return scenario and industry.**

# **Returns Management**

- **Inefficient handling of returns can be resolved with a proactive approach.**
- **The ideal approach:**
  - **Optimizes the rate and velocity of returns**
  - **Minimizes processing costs**
  - **Enhances opportunities to resolve customer conflicts**
  - **Improves customer retention**
  - **Resolves as close to 100% of outstanding RL issues quickly and efficiently**
  - **Utilizes a customer focused methodology with well designed tracking and management tools**

# **Returns Management**

- **The optimal return management approach should be designed to:**
  - **Work toward resolution with every customer**
  - **Track parts back to a final destination**
  - **Facilitate returns by uncovering any outstanding customer issues**
- **Effective returns management is critical to efficient and profitable RL organization and to achieving a CLSC.**
- **Lacking returns management competency results in difficulty in controlling inventory costs, operational costs (vendor and field service management), and customer satisfaction levels.**

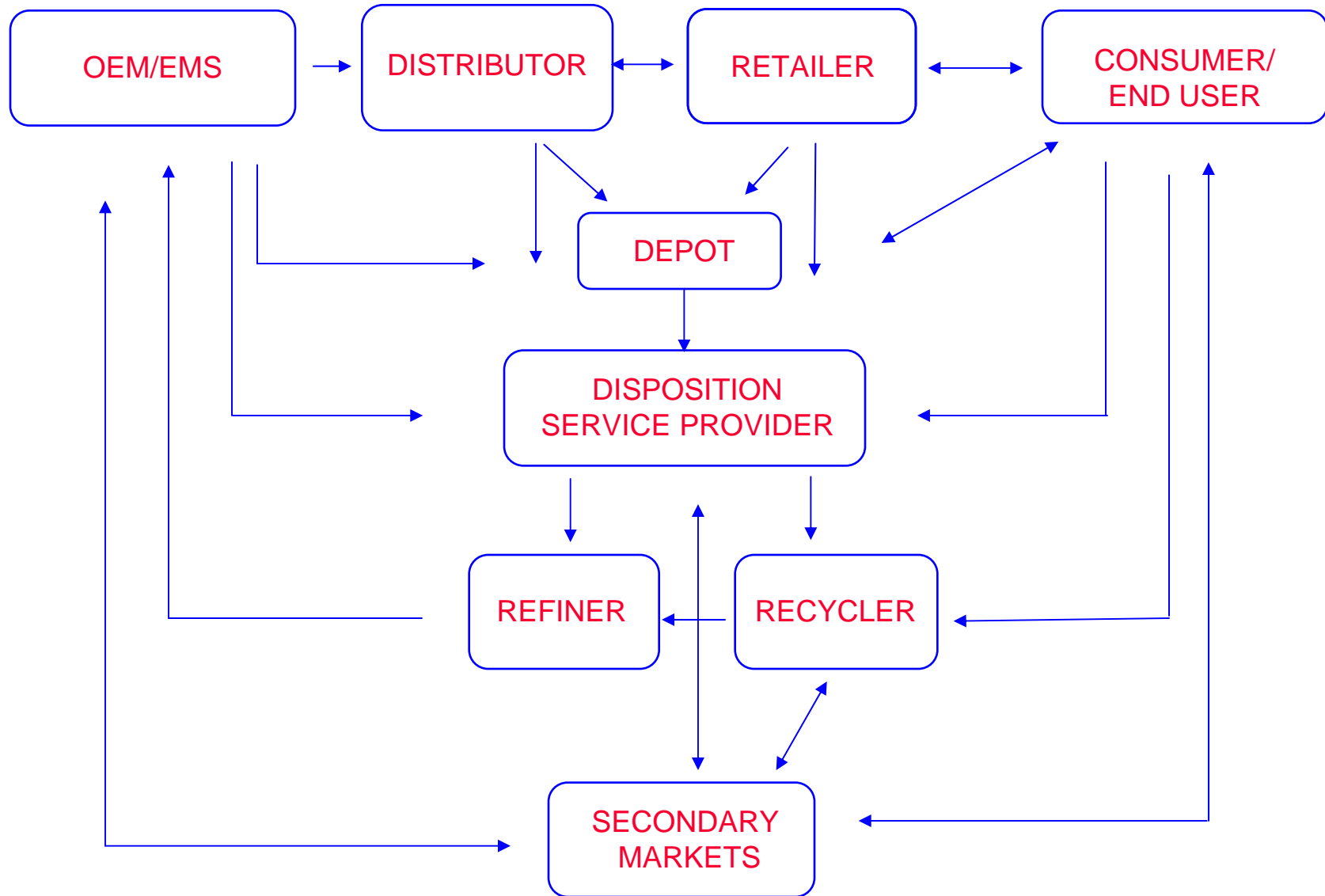
## **Returns Management**

- **Ability to maintain an efficient and productive return process hinges on people**
  - **Effective one-to-one relationships between customer and staff of service organization**
- **We have observed average improvements industry wide of approximately 10 percent on recovery rate, and nearly 65 percent on velocity by using a proactive approach.**

# **Asset Recovery & Disposition Services**

- **We believe that another method that can be employed to achieve an optimized CLSC is to engage a third party disposition services provider to efficiently:**
  - **Collect**
  - **Sort**
  - **Test**
  - **Refurbish or Repair**
  - **Remarket or Recycle returned goods**

# Disposition Process Flow



# **Asset Recovery & Disposition Services**

- It is our contention that shifting the focus of electronic product disposal from an environmental concern to an inventory management concern will result in improved results for both corporate bottom lines and environmental outcomes.
- This belief is borne out by our end-user research that the most important factor in the decision to end-users to choose a disposition services provider is payment processing – meaning they want to get paid for the material they are releasing for disposition.
- There are still a large number of end-users who appear unaware that they can get paid for the material they would ordinarily scrap.

# ***RMA Optimization***

- High NFF is found within many technology segments due to pull and replace strategies
- The goal is to reduce NFF while minimizing support costs
- Placing test & screen functions at Regional Distribution centers provides many benefits:
  - Reduction in new parts purchases to offset NFF
  - Higher level of return velocity
  - Reduction in transportation leg for NFF
  - Reduction of repair vendor costs

# RETURN RATES USED TO ESTIMATE THE VALUE OF HIGH TECH PRODUCTS IN THE REVERSE LOGISTICS PIPELINE

- BY TECHNOLOGY AND REASON FOR RETURN -




TECHNOLOGY	DEFECT- IVE	DAMAGED	ERRORS/ STOCKING
COMPUTER/OFFICE EQUIPMENT	3.76%	2.30%	4.40%
ENTERPRISE NETWORKING	2.50%	3.50%	4.40%
MEDICAL EQUIPMENT	4.75%	1.80%	2.20%
RETAIL/BANKING EQUIPMENT	3.25%	4.25%	3.25%
PRINTING & PUBLISHING	2.25%	1.50%	1.25%
IMAGING & DOCUMENT MANAGEMENT	3.50%	3.25%	3.25%

SOURCE: BLUMBERG ASSOCIATES, INC.

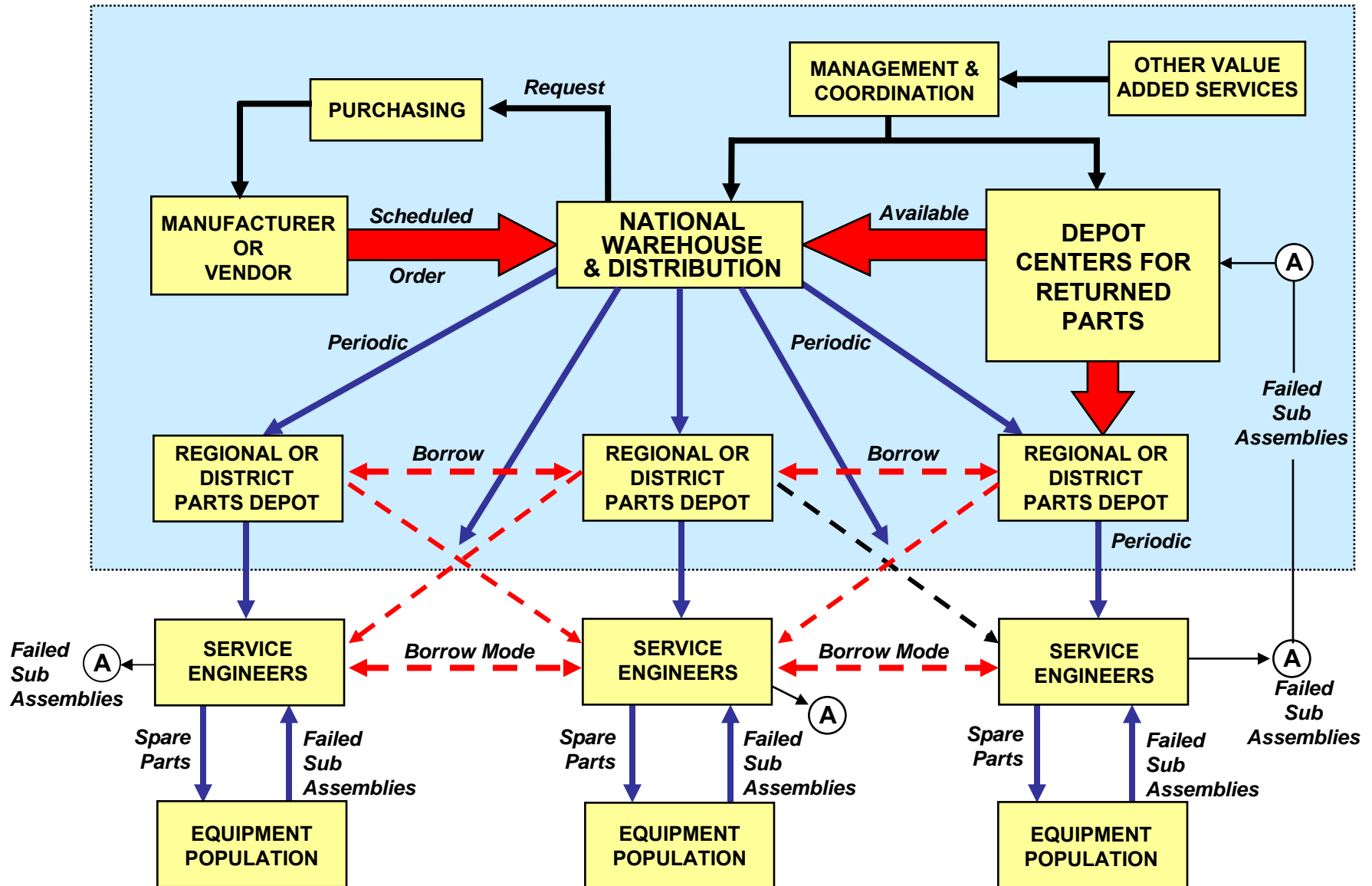
# Parts Forecasting and Planning

- Research by D.F. Blumberg Associates suggests that between 60% - 75% of all service calls require a part or item of supply, in addition to the service engineer's skills, in order to effect the repair.
- Aftermarket logistics represents the largest investment and second largest operating expense within a service organization.

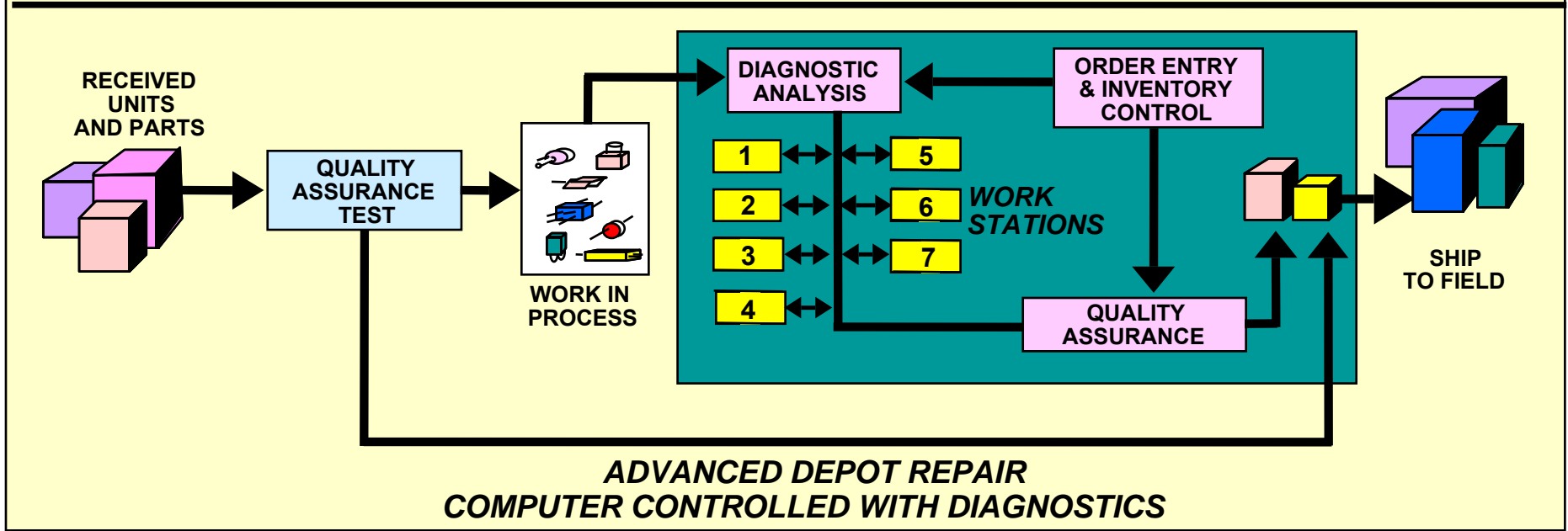
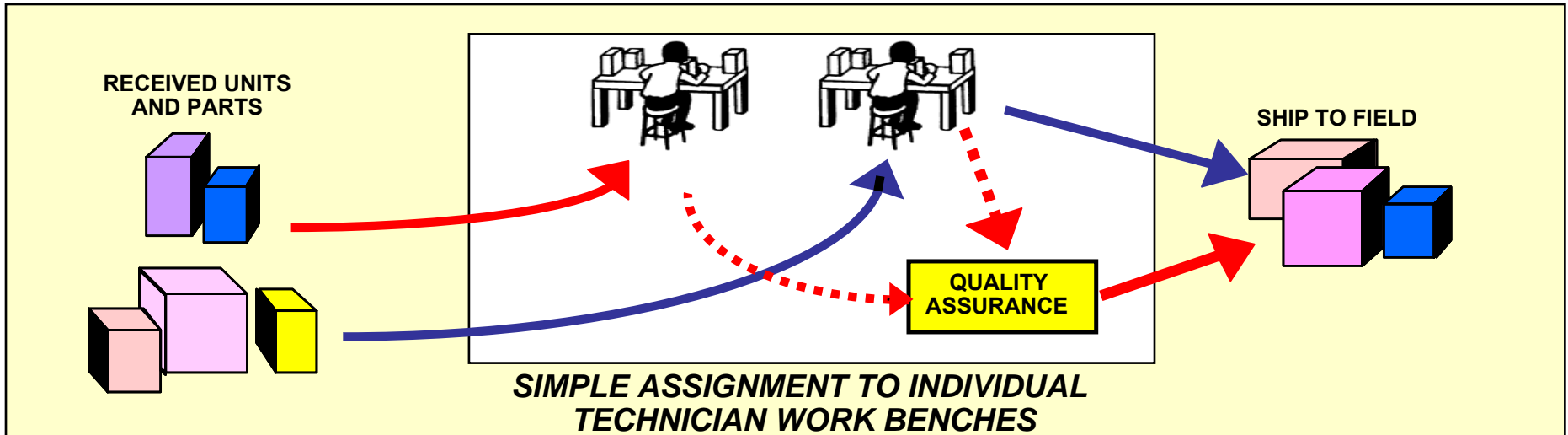
# Critical Parameters of Service Logistics Pipeline

-  **NEARLY 50% OF THE VALUE OF PARTS INVENTORY IS FOUND BELOW MANNED DEPOTS / INVENTORIES**
-  **APPROXIMATELY 80% OF THE VALUE OF THE LOGISTICS PIPELINE IS RETURNED THROUGH REVERSE LOGISTICS AND DEPOT REPAIR OPERATIONS ANNUALLY**
-  **A SIGNIFICANT PORTION (30%-35%) OF THE RETURNS TO DEPOT ARE ACTUALLY GOOD PARTS AND UNITS**

# Service Logistics “Pipeline” Flow



# Depot Repair Alternatives



# Key Factors in CLSC Efficiency



**The critical elements in optimizing CLSC operations are to focus on**

- **Real-time tracking & control down into the field beyond the manned stocking locations**
- **Increase accuracy & dimensions of demand forecasts**
- **Increase efficiency of depot in full CLSC pipeline**



**Depot repair can be improved by**

- **Introducing real-time RMA reporting and control**
- **Accelerating return shipments (to depots)**
- **Quality assurance at receiving dock to “triage” out no trouble found (NTF) parts, subassemblies, and units**
- **Move to just-in-time (JIT) production process**
- **Separate final quality check from repair line**
- **Speed up process through JIT systems**

## KEY FACTORS IMPACTING DEPOT REPAIR PERFORMANCE AND BENCHMARK PARAMETERS

FACTOR	IMPACT	EFFECT
SIZE OF REPAIR OPERATION	<ul style="list-style-type: none"> <li>•ECONOMIES OF SCALE</li> </ul>	<ul style="list-style-type: none"> <li>•COSTS OF REPAIR</li> <li>•THROUGHPUT AND TURNAROUND TIME</li> <li>•QUALITY</li> </ul>
REPAIR PROCESS <ul style="list-style-type: none"> <li>•JOB SHOP</li> <li>•JUST-IN-TIME</li> </ul>	<ul style="list-style-type: none"> <li>•PRODUCTION EFFICIENCY</li> </ul>	<ul style="list-style-type: none"> <li>•COSTS OF REPAIR</li> <li>•THROUGHPUT AND TURNAROUND TIME</li> <li>•QUALITY</li> </ul>
PHYSICAL TRANSPORTATION AND PACKAGING	<ul style="list-style-type: none"> <li>•DISTRIBUTION EFFICIENCY AND DELIVERY QUALITY</li> </ul>	<ul style="list-style-type: none"> <li>•RESUPPLY TIME</li> <li>•PERCENTAGE DOA</li> <li>•FILL RATE</li> </ul>
TYPE OF ORGANIZATION AND FOCUS <ul style="list-style-type: none"> <li>•INTERNAL – FIELD SERVICE</li> <li>•EXTERNAL</li> </ul>	<ul style="list-style-type: none"> <li>•PERFORMANCE</li> <li>•QUALITY</li> </ul>	<ul style="list-style-type: none"> <li>•FILL RATE IN FIELD</li> <li>•DOA</li> <li>•NTF</li> </ul>

**BENCHMARK PARAMETERS FOR OPERATIONS OF INTERNAL REPAIR DEPOT AND  
EXTERNAL (FOURTH PARTY) DEPOT REPAIR OPERATIONS**  
**- DEPOT REPAIR – OPERATIONAL EXPERIENCE -**

PARAMETERS	INTERNAL DEPOT		EXTERNAL DEPOT	
	AVERAGE EXPERIENCE	“BEST PRACTICES” EFFICIENCY RUN	AVERAGE EXPERIENCE	“BEST PRACTICES” EFFICIENCY RUN
AVERAGE NUMBER OF UNITS PROCESSED BY BENCH TECHNICIAN PER WEEK	10.0	13.8	15.9	19.4
AVERAGE NUMBER OF WEEKLY REPAIRS PER BENCH TECHNICIAN	9.5	13.2	15.7	19.4
AVERAGE TIME TO REPAIR ALL UNITS PER WEEK (IN HOURS) BY BENCH TECHNICIAN	33.3	30.0	34.5	34.9
PERCENT OF REQUESTS REQUIRING REPLACEMENT PARTS	55.7	53.4	48.1	43.3
PERCENT OF UNITS THAT GO THROUGH ALL INITIAL QUALITY TEST	48.9	57.2	95.4	100.0
PERCENT OF TIMES THAT TROUBLE TICKET DESCRIPTION DOES NOT REFLECT ACTUAL PROBLEM	51.2	44.1	30.6	24.1

SOURCE: D.F. BLUMBERG ASSISTS BENCHMARK DATA –

\*MEASURE OF REPAIR QUALITY

\*\*MEASURE OF RECEIVING PROCESSING QUALITY

\*\*\* RUN AS A LINE OF BUSINESS

## BENCHMARK PARAMETERS FOR OPERATIONS ON INTERNAL REPAIR AND EXTERNAL (FOURTH PARTY) DEPOT REPAIR OPERATIONS

PARAMETERS	INTERNAL DEPOT		EXTERNAL DEPOT***	
	AVERAGE EXPERIENCE	BEST PRACTICES EFFICIENTLY RUN	AVERAGE EXPERIENCE	BEST PRACTICES EFFICIENTLY RUN
PROFIT MARGIN OR CONTRIBUTION OF DEPOT REPAIR	0 (BREAKEVEN)	6%	16%	29%
REPAIR TIME TURNAROUND (IN DAYS)	10	5	4	3
FIELD DEAD ON ARRIVAL (DOA)*	3%	2%	2%	1%
RECEIPT NO TROUBLE FOUND (NTF) AT RECOVERY **	7%	20%	11%	23%
BENCH TECH LABOR & SUPPLIER COSTS AS A % OF TOTAL COSTS	46%	42%	35%	24%
TRANSPORTATION COSTS AS A % OF TOTAL COST	12%	7%	11%	7%

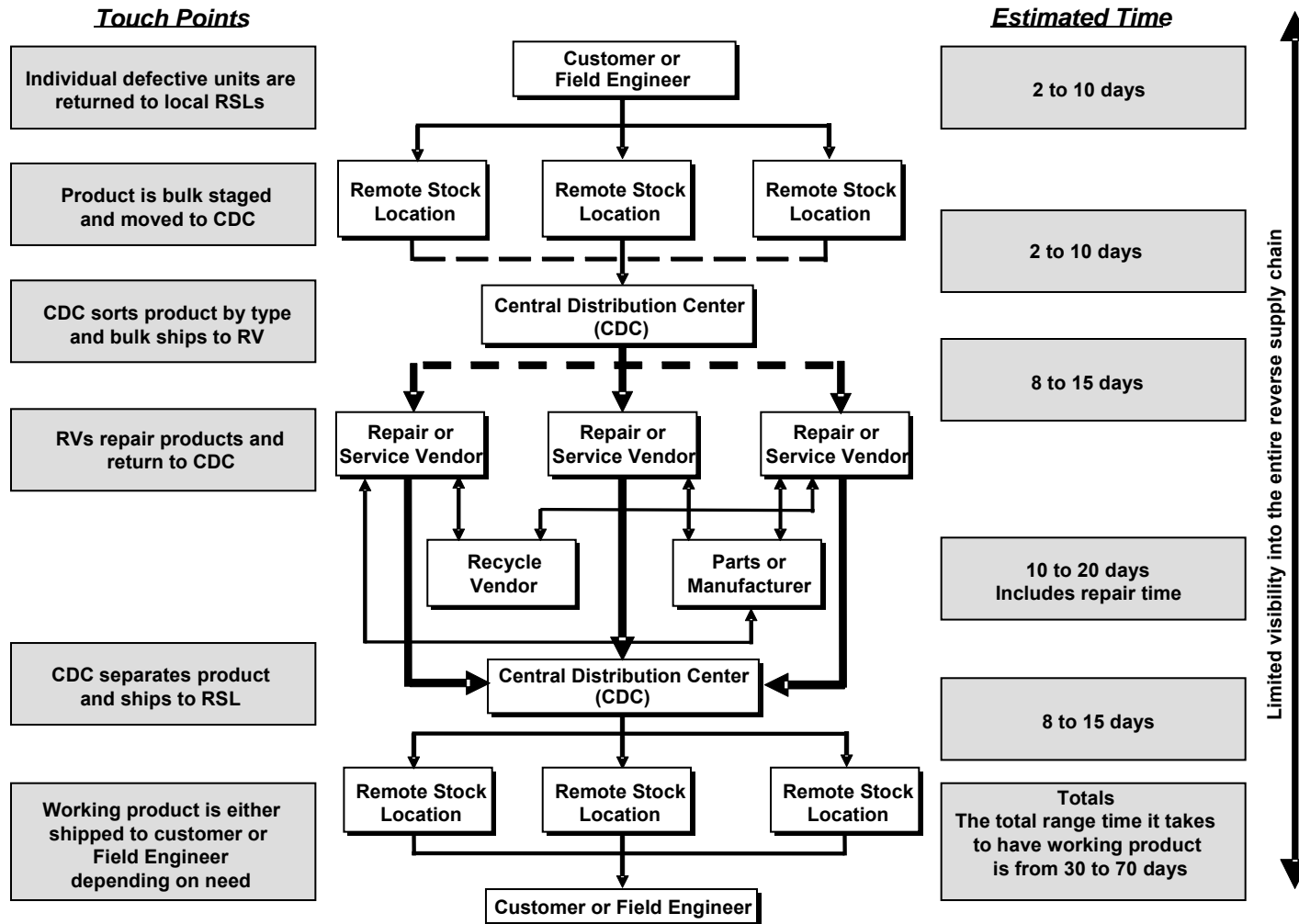
\* MEASURE OF REPAIR QUALITY

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\*\*\* RUN AS A LINE OF BUSINESS

SOURCE: D. F. BLUMBERG & ASSOCIATES, INC.

# TYPICAL HIGH-TECH RETURN PROCESS FOR PARTS



## COMPARISON OF RETURN VELOCITY CYCLE TIMES & DATA ACCURACY (AVERAGE VERSUS OPTIMIZED CLOSED LOOP SYSTEMS)

PARTS/MATERIAL TOUCH POINTS	RETURNING ORGANIZATION EXAMPLES	TYPICAL HOLDING & TRANSIT TIME		ACCURACY OF DATA	
		AVERAGE (DAYS)	CLOSED LOOP SYSTEM (DAYS)	AVERAGE	CLOSED LOOP SYSTEM
INDIVIDUAL DEFECTIVE UNIT OR PART	USER OR FIELD ENGINEER	4-6	1-2	LOW	HIGH
REMOTE STOCKING	FIELD STOCK LOCATIONS	5-8	3-5	LOW	HIGH
CENTRAL DISTRIBUTION & REPAIR	CENTRALIZED COLLECTION CENTER REPAIR &	7-14	4-5	MEDIUM	HIGH
SHIPMENTS TO FIELD	CENTRALIZED WAREHOUSE SUPPORTING COLLECTION CENTER	10-20	3-6	HIGH	HIGH
SHIPPED TO THE USER	FIELD STOCKING OR SALES LOCATIONS	15-30	2-4	LOW	HIGH
TOTALS		41-78	13-22	LOW TO MEDIUM	HIGH

\* SOURCE:: BLUMBERG ASSOCIATES, INC.

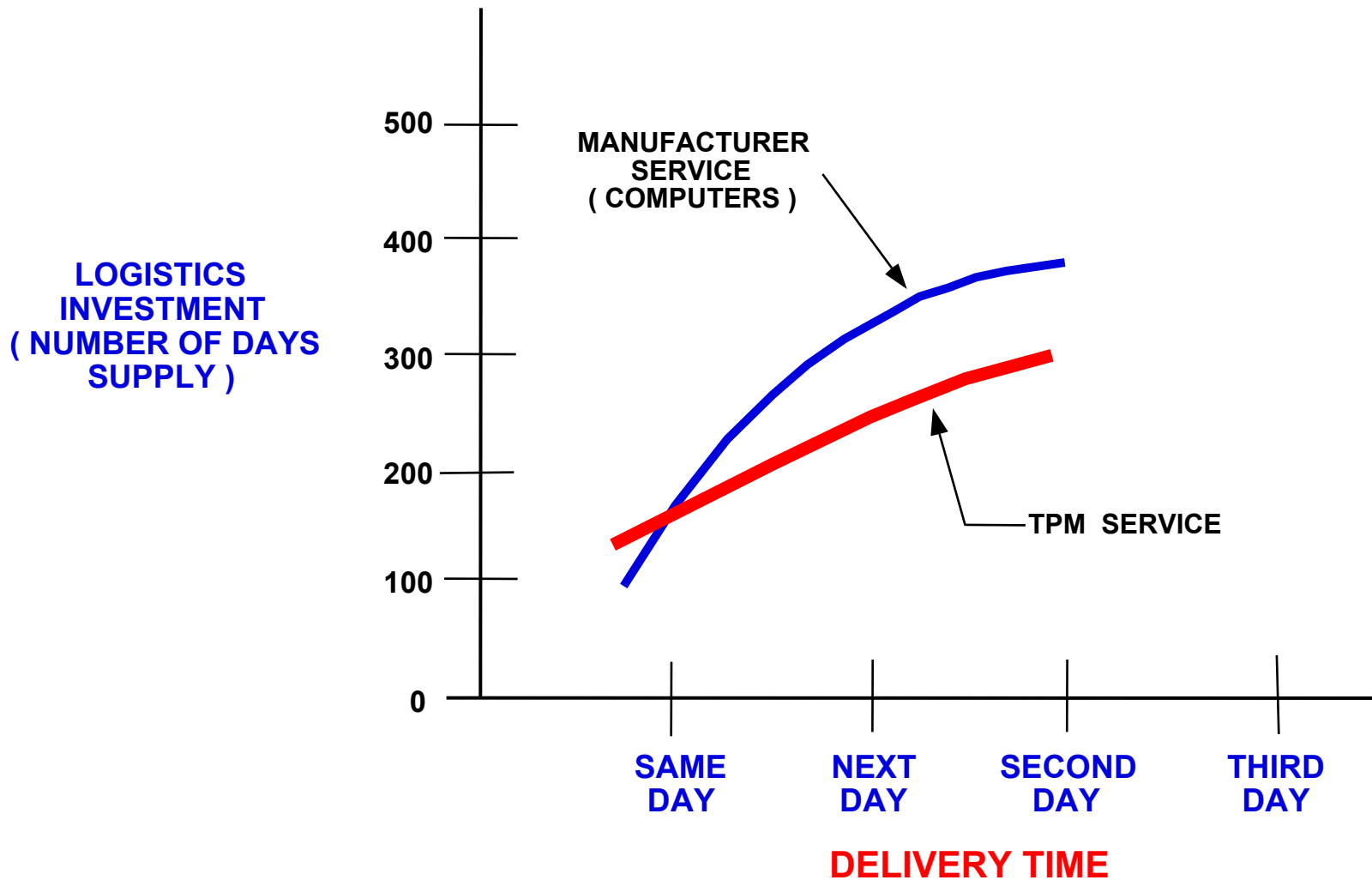
## **Key Benchmarks Associated with Productivity & Efficiency of Reverse Logistics Practices**

<b>PARAMETER</b>	<b>INDUSTRY AVERAGE</b>	<b>BEST IN CLASS STANDARD</b>	<b>PERCENT IMPROVEMENT</b>
<b>RETURN VELOCITY RATE (IN DAYS)</b>	<b>60</b>	<b>20</b>	<b>67%</b>
<b>RETURN RATE DUE TO DEFECTIVE PARTS</b>	<b>28%</b>	<b>20%</b>	<b>29%</b>
<b>RETURN RATE DUE TO NON-DEFECTS (I.E., STOCK DELIVERY, SHIPMENT EFFORT, CUSTOMER RETURNS, ETC.)</b>	<b>24%</b>	<b>18%</b>	<b>25%</b>
<b>WARRANTY CLAIM REJECTION RATE</b>	<b>12%</b>	<b>3%</b>	<b>77%</b>
<b>LENGTH OF TIME TO PROCESS A WARRANTY CLAIM (IN DAYS)</b>	<b>9%</b>	<b>2%</b>	<b>78%</b>
<b>ASSET RECOVERY RATE</b>	<b>81%</b>	<b>93%</b>	<b>15%</b>

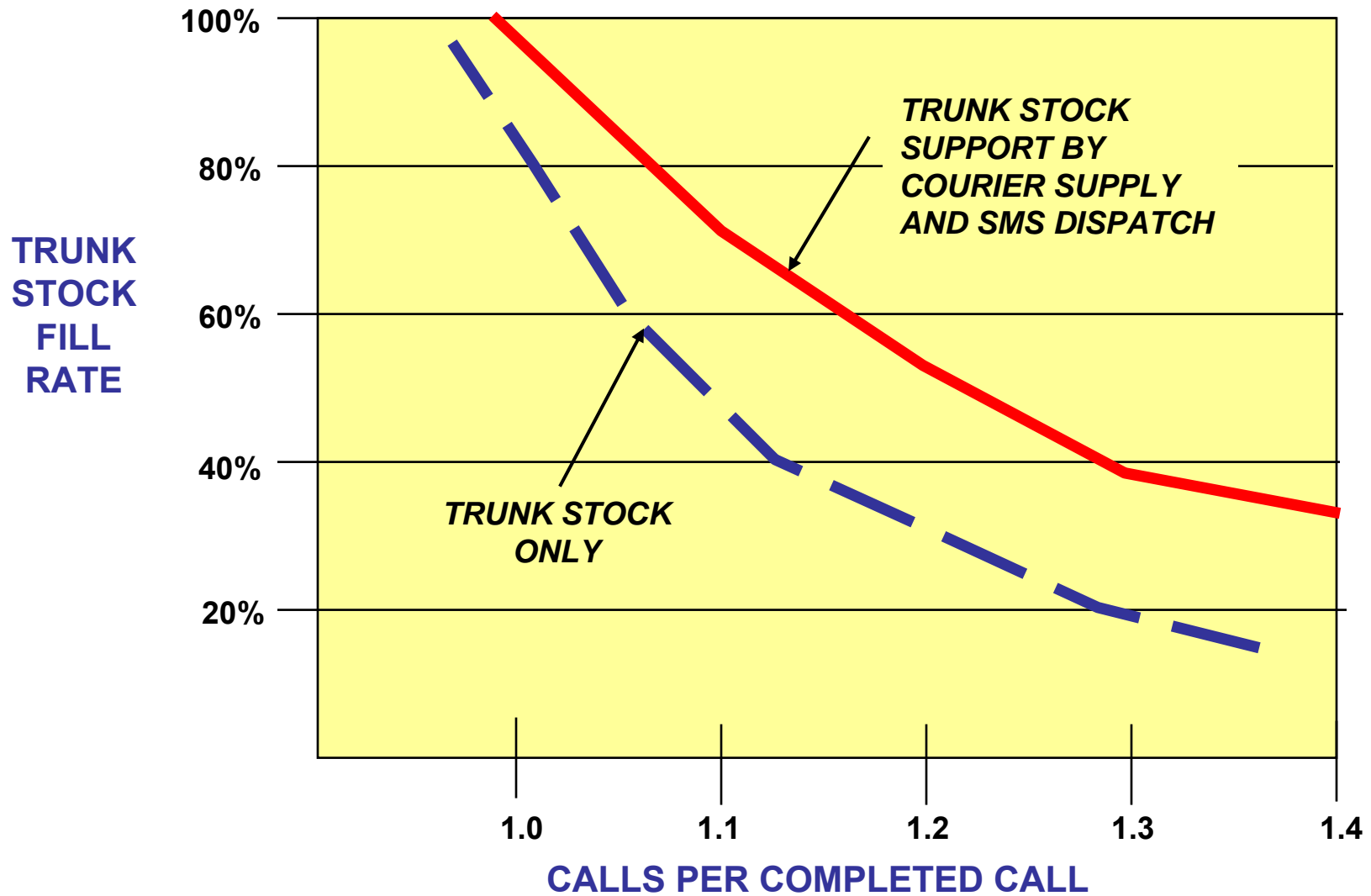
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## Effect of Rapid Delivery on Inventory Investment



## Impact of Logistics Support on Call Efficiency



# STATE OF THE ART

# Strategic Analysis of the State of the Art for Reverse Logistics Management Software

December 2008  
Blumberg Advisory Group

Sponsored by:

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# Key Features of a Reverse Logistics Management System

- Provide Real-Time Visibility, Tracking, and Control throughout the Reverse Logistics Supply Chain
  - Parts/Material
  - Labor
  - Data
- Ensure availability of RL resources
- Plan and Manage RL Events
- Facilitate Optimization of Closed Loop Supply Chain Process
- Interface and Integration with enterprise systems and databases:
  - Corporate
  - Customers
  - Suppliers

# Basic and Advanced Functionality within the RLMS State of the Art

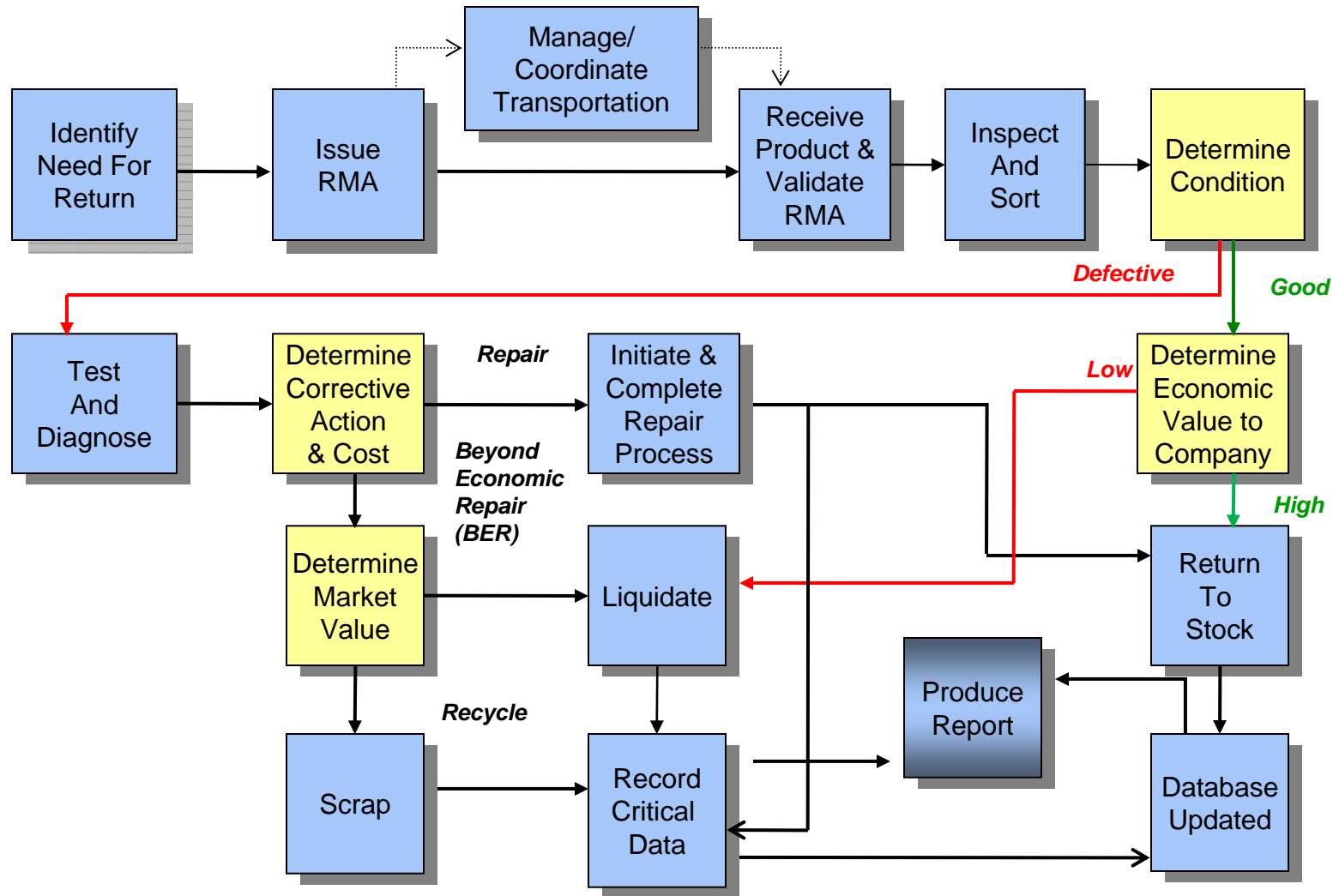
## Basic

- Warranty and Claims
- Returns Management
- Disposition and Asset Recovery
- Repair Center
- Inventory and Warehouse
- Business Analytics & Reporting
- Customer Web Portal

## Advanced

- Recall Management
- Field Service Management
- Critical / Spare Parts
- eWaste and e-Recycling
- Regulatory and Compliance
- Transportation
- Liquidation

# Typical Reverse Logistics Process Flow Within Electronics Industry



# Key Benefits of RLMS

- Cost reduction
- Administration consolidation
- Protected Income
- Liability protection
- Resource reservation
- Time saving
- Customer Experience Improvement

# Key Challenges

- Disparate and fragmented systems managing various aspects of RL supply chain through-out the end-user's organization
- Components of RLMS feature functionality embedded in different systems
- Needs and requirements vary by industry and market segment
  - Returns management
  - Aftermarket support
- IT platform and databases differ between and among suppliers, customers, and providers
- Status quo lends itself to:
  - Unique and complex requirements from company to company
  - Requirements for integration and interfaces among and between multiple applications to single, create end to end solution

**Overview of RLMS Software**  
**Competitive Landscape**  
**- By Major Category of Vendor -**



Source: BLUMBERG ADVISORY GROUP, INC.

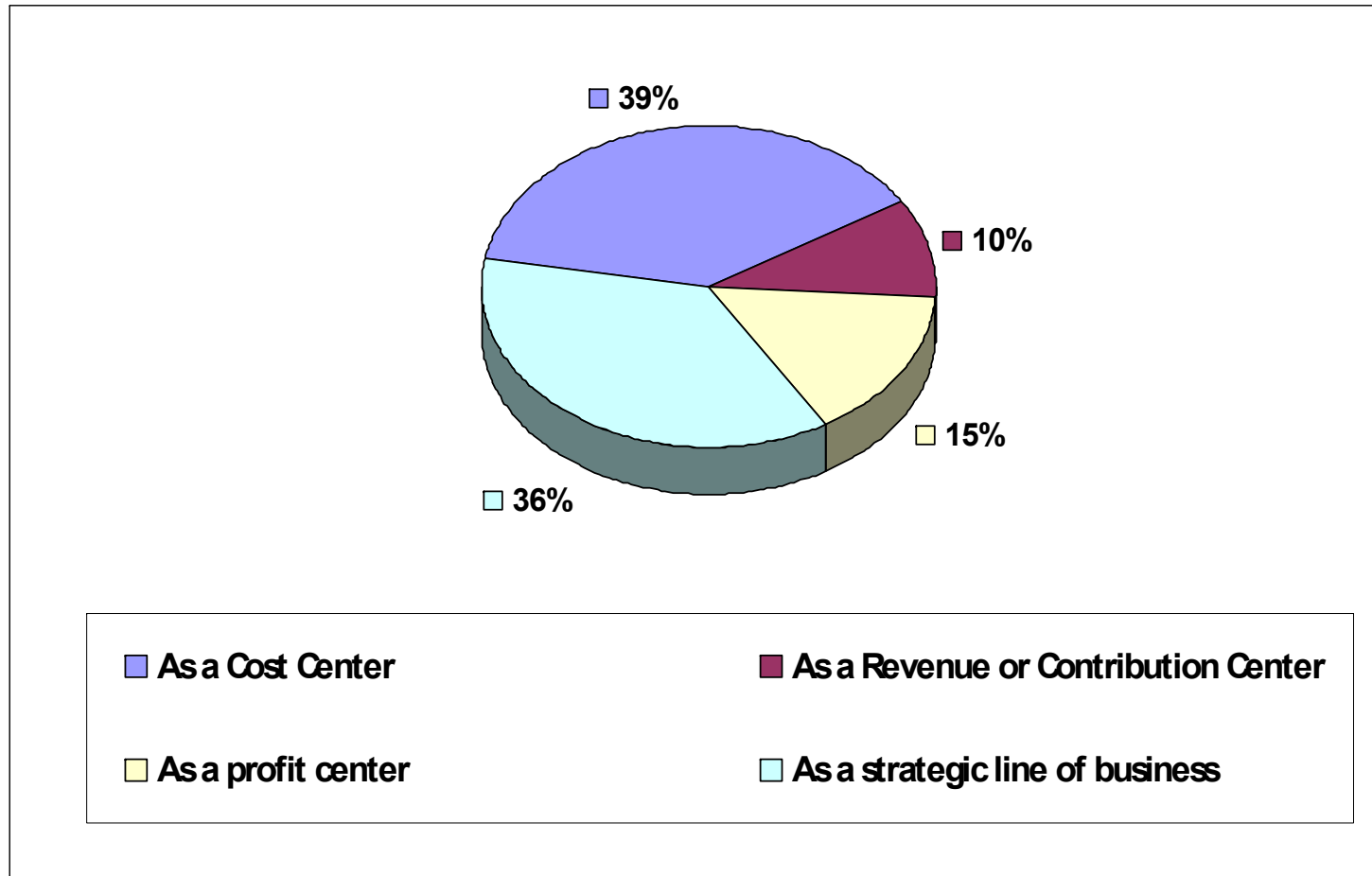
# The Basic RLMS Construct

- RLMS is like a “family” and the different features and functions are like the individual family members that compose this nucleus.
- Family share the same “genes” or “feature functionality”.
- The variance or combination of these functions that make each RLMS solution unique and effective.
- This “gene pool” commonality shapes an almost predefined internal structure of RLMS that facilitates the interlinking or synchronization of various applications.
- This framework allows the capsule and positive manipulation of the service chain.

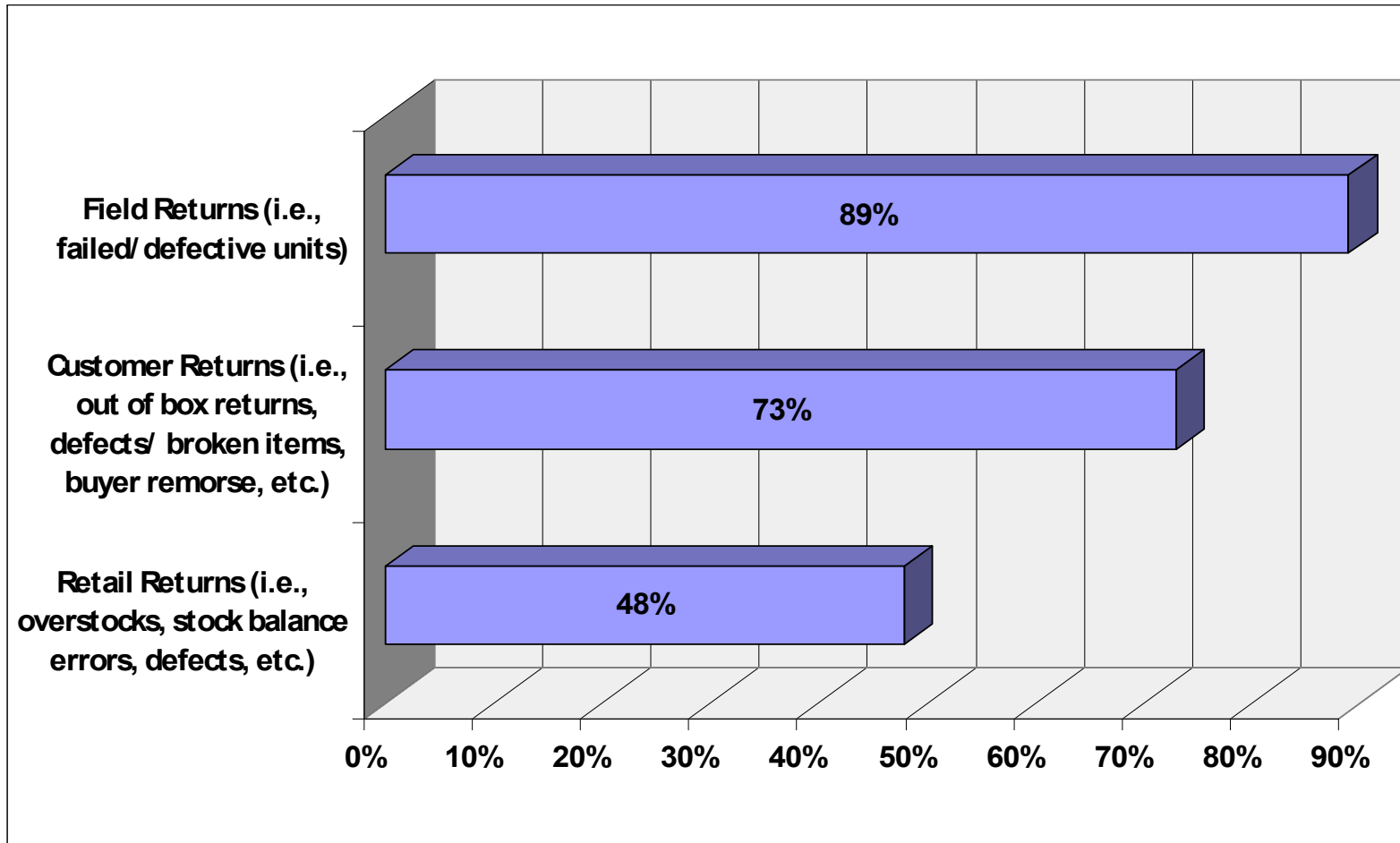
# Solutions

- Make versus Buy versus Outsource
  - Full or Semi-Customization
  - Add on modules
  - Full Scale Replacement
- Types of Providers
  - Enterprise System Vendors
  - Point Solutions
  - 3PRL Providers with RLMS applications
- Types of Applications
  - On Demand
  - On Premise

# Categories describing way in which Reverse Logistics Function is Organized



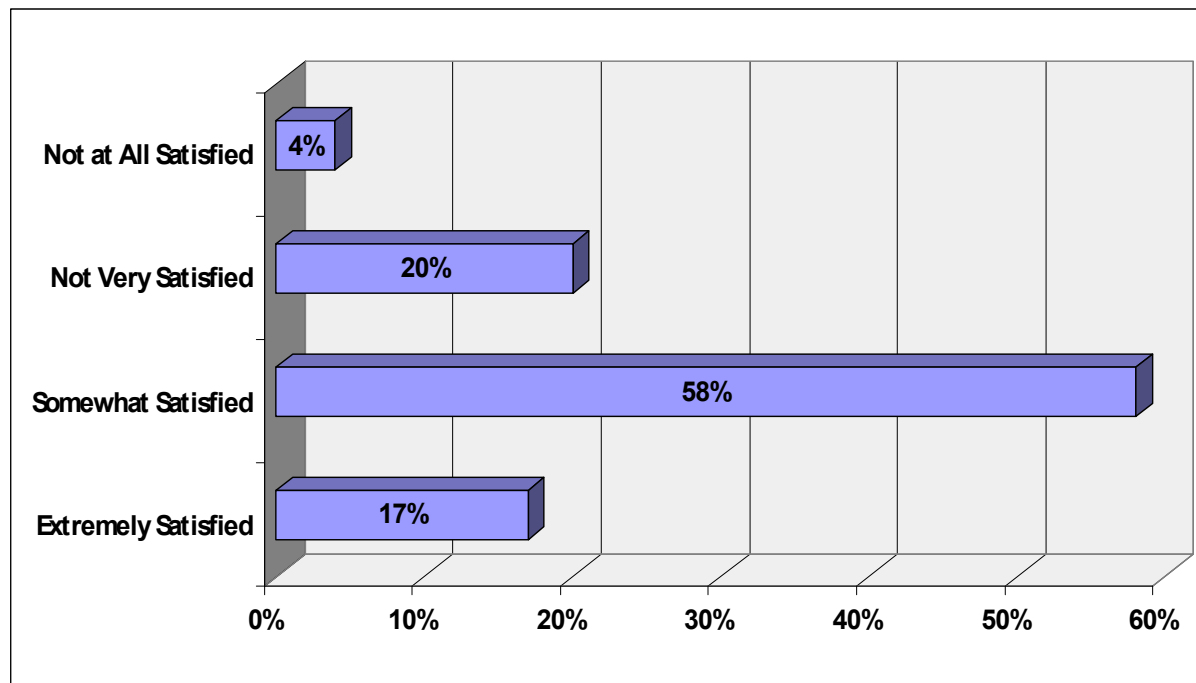
# Types of Reverse Logistics Operation Supported



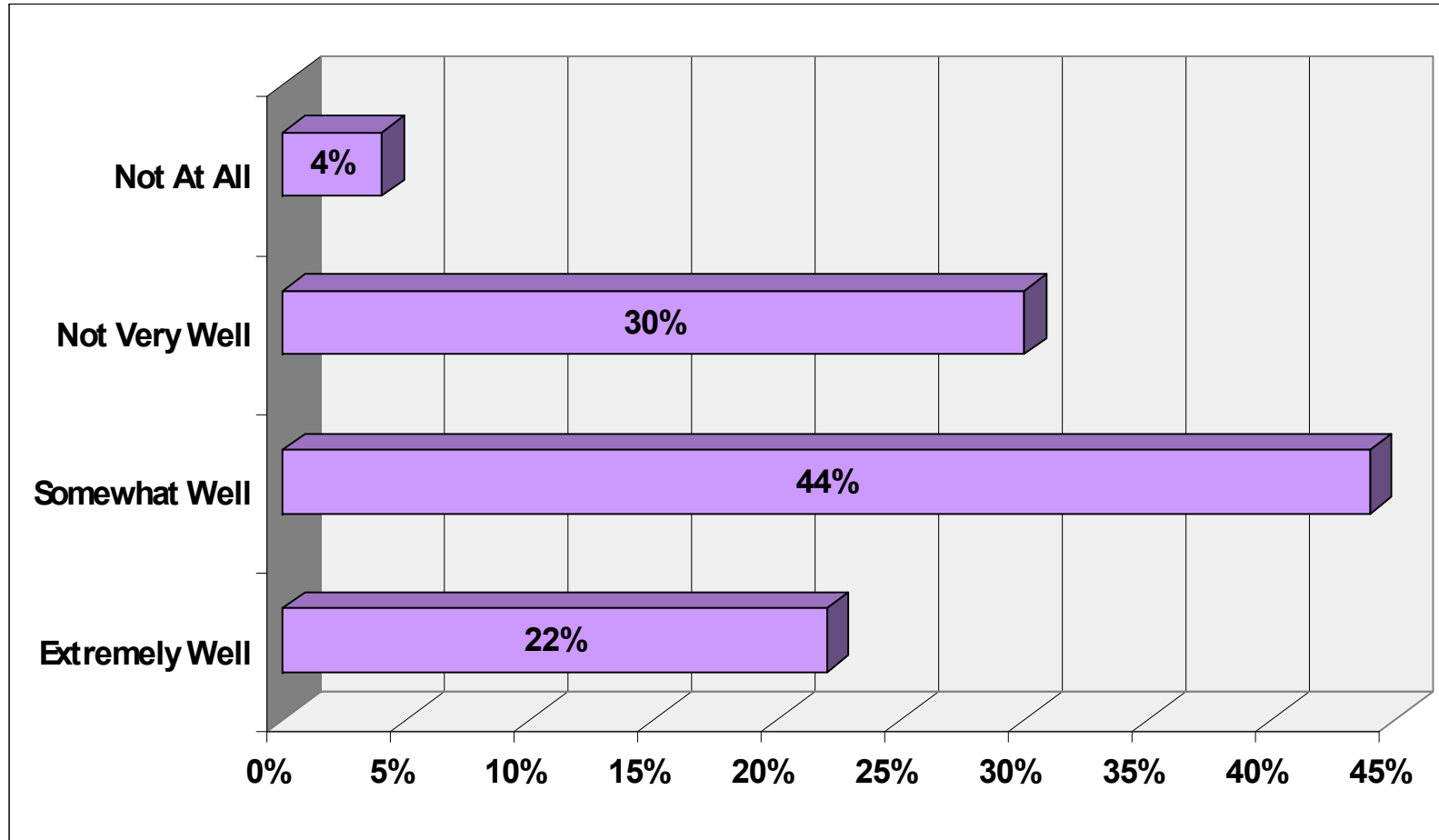
# Types of System Company use to Manage Reverse Logistics Operations

<b>Enterprise Resource Planning (ERP)</b>	<b>41%</b>
<b>Customer Relationship Management (CRM)</b>	<b>26%</b>
<b>Field Service Management System (FSMS)</b>	<b>17%</b>
<b>Supply Chain Management (SCM)</b>	<b>22%</b>
<b>Enterprise Returns Management (ERP)</b>	<b>11%</b>
<b>Enterprise Reverse Logistics Management</b>	<b>9%</b>
<b>Warranty Management System</b>	<b>26%</b>
<b>Warehouse Management System</b>	<b>36%</b>
<b>Customized specifically for Reverse Logistics</b>	<b>44%</b>
<b>Other</b>	<b>10%</b>

## Overall Satisfaction with existing RLMS Functionality



# Stakeholders Understanding Needs of Purchasing Or Upgrading Existing System Functionality



# Anticipated Benefits From Implementation of a State of the Art RLMS Solutions

( Percent Improvement)

Parameter	Median	Average
Improved Customer Satisfaction/Experience	20.0	26.6
Improved Productivity of R.L. Personnel	20.0	26.6
Improved Service Quality /Less Defects	20.0	28.2
Improved Operating Efficiency	20.0	29.0
Improved Tracking of Data &Performance Metrics	30.0	39.6
Faster Turnaround Time	20.0	28.8
Improved Cash Flow	20.0	27.7
Less Manpower Needed	10.0	20.0
Improved Regulatory Compliance	15.0	23.4
Improved Service Utilization Levels	17.5	28.0
Reduced Costs as a Result of Better Planning	20.0	27.1
Reduced Costs for Processing Returns	20.0	27.7

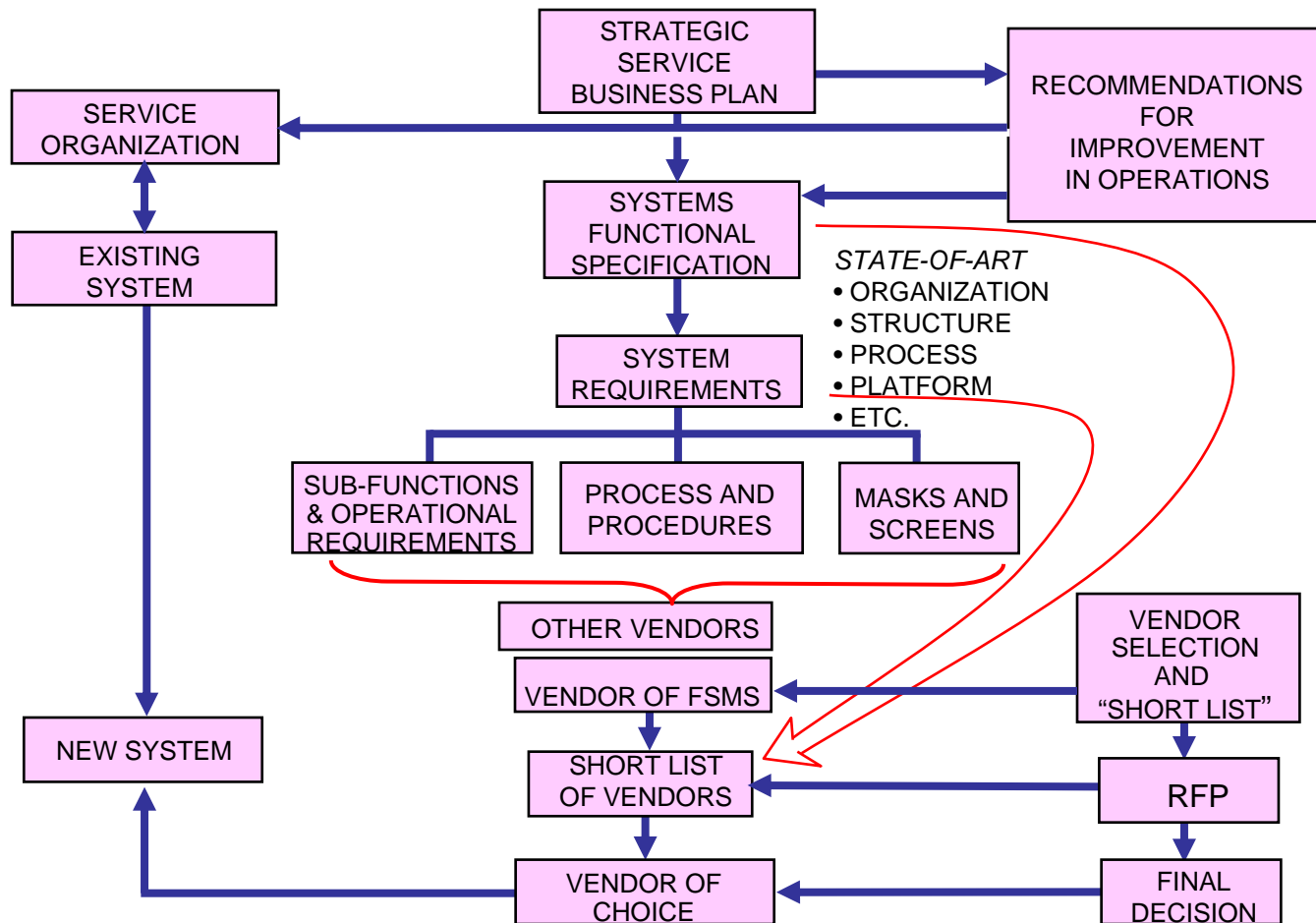
# Summary

- RLMS state of the art consists of basic and advanced functionality
- Market Segmentation and strategic orientation of end-user determines requirements for specific RLMS functionality
- Significant advancements in customer satisfaction and service productivity and efficiency can be achieved vis-à-vis implementation of state of the art RLMS solutions
- Benefits of RLMS are measurable and quantifiable
- Market Research validates need for end-to-end, fully integrated and/or best of breed solutions

# Recommendations

- End-user must understand the complexities of RLMS implementation in order to design optimal solution
- Business case must be built around measurable and quantifiable benefits and appeal to the requirements of individual stakeholders
- Companies who take a strategic orientation to RL are more likely to have broader functional requirements as well as achieve higher returns from deployment of RLMS
- A strategic framework is necessary to ensure successful RLMS implementations

# RLMS Deployment Strategy

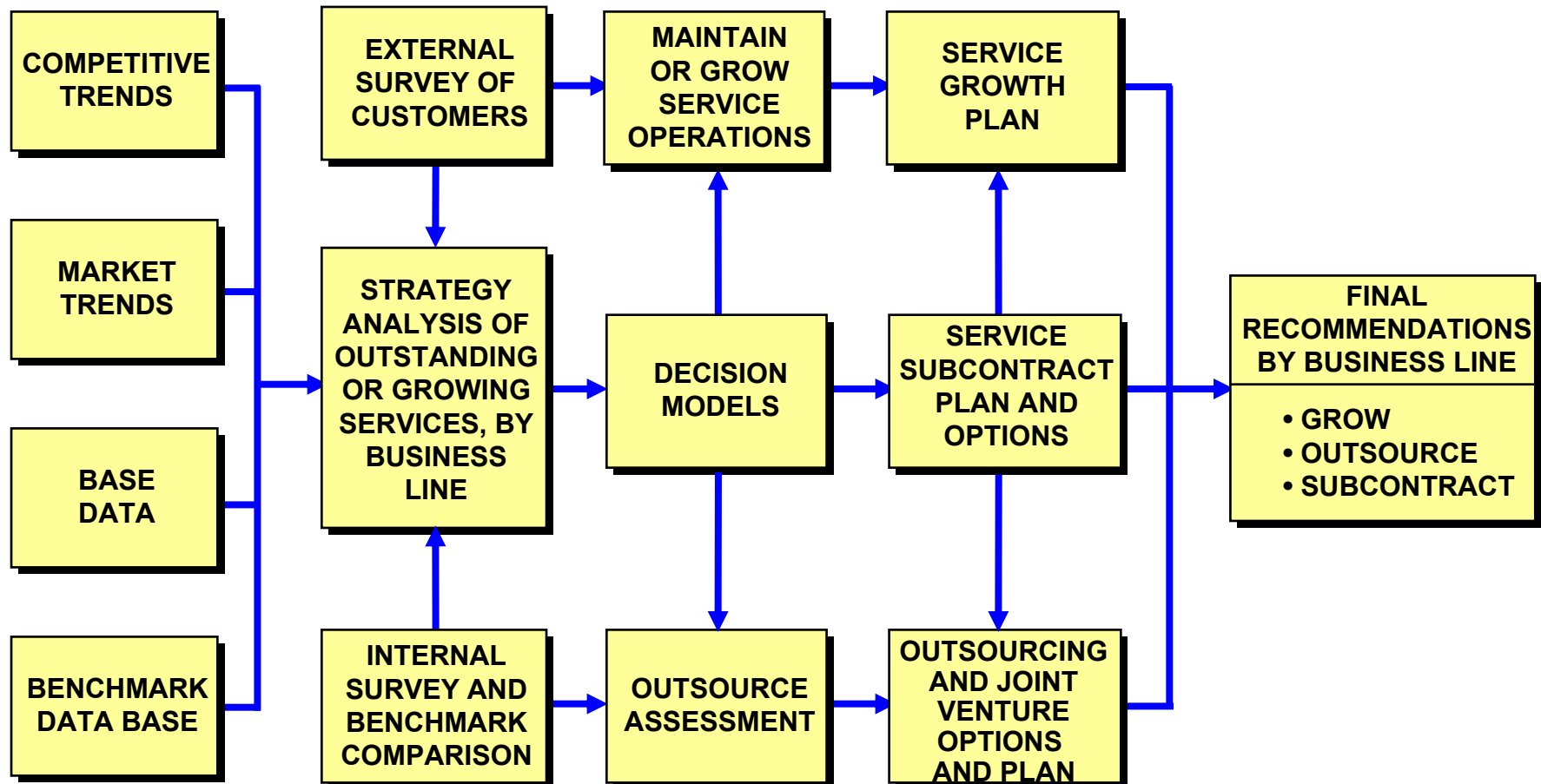


# MAKE VERSUS BUY VERSUS OUTSOURCE

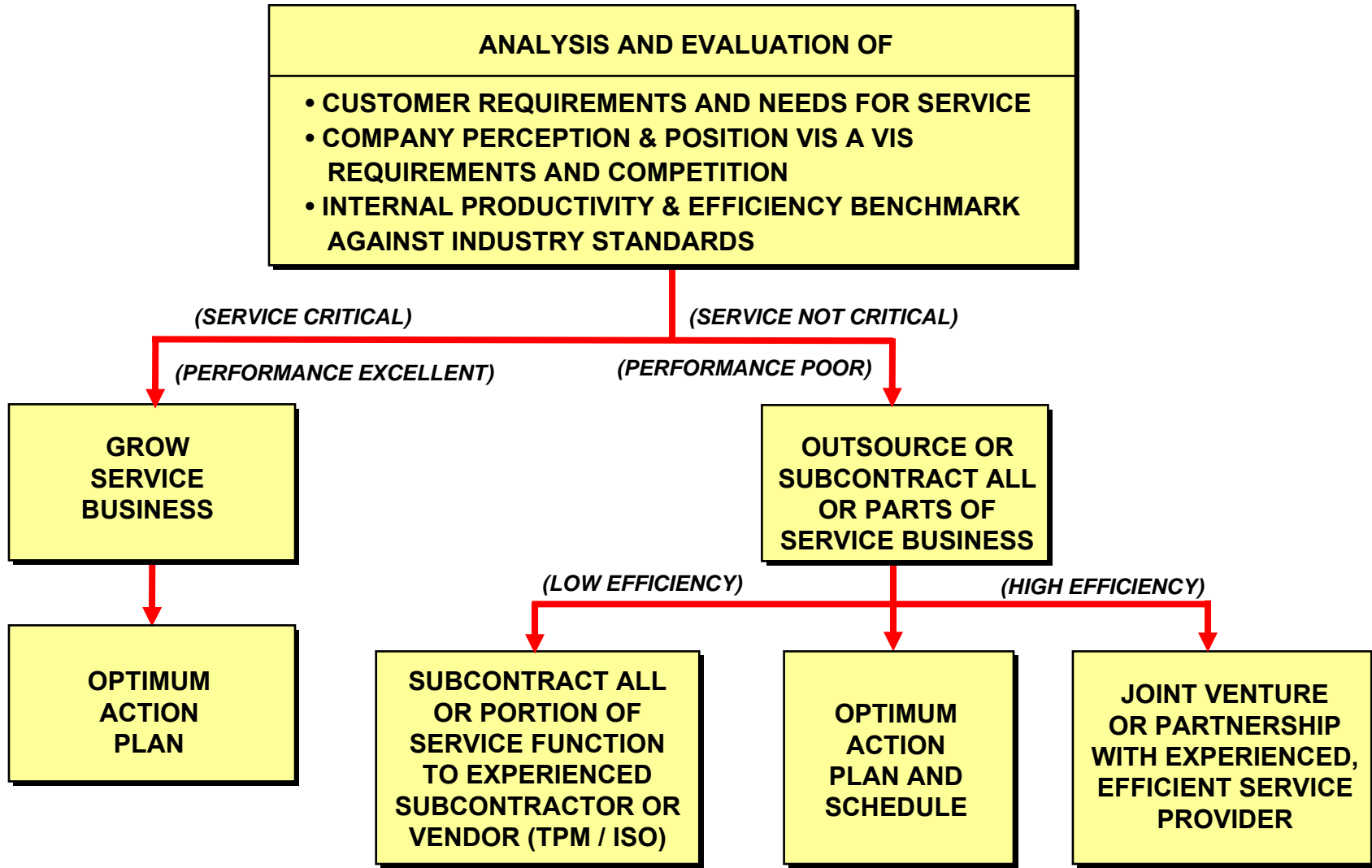
# ***Reasons Why Companies Outsource***

<b>RATIONALE</b>	<b>DESCRIPTION</b>	<b>ANTICIPATED BENEFITS</b>
<b>COST REDUCTION</b>	<b>OUTSOURCING TO A THIRD PARTY TO REDUCE COST OF OPERATIONS</b>	<ul style="list-style-type: none"> <li>• <b>ELIMINATE COSTS</b></li> <li>• <b>CONVERT LABOR</b></li> <li>• <b>COSTS FROM TIED TO VARIABLE</b></li> <li>• <b>IMPROVE EFFICIENCY</b></li> <li>• <b>INCREASE RETURN ON ASSETS</b></li> <li>• <b>IMPROVE PROFITABILITY</b></li> </ul>
<b>REVENUE GENERATION</b>	<b>CONTRACTING WITH A THIRD PARTY TO PROVIDE PRODUCTS OR SERVICES WHICH THE OUTSOURCING FIRM CANNOT OFFER ON ITS OWN</b>	<ul style="list-style-type: none"> <li>• <b>REDUCE RISK</b></li> <li>• <b>IMPROVE EFFICIENCY</b></li> <li>• <b>INCREASE REVENUE</b></li> </ul>
<b>HYBRID SITUATION</b>	<b>COLLABORATIONS, ALLIANCES, PARTNERSHIPS, ETC. WITH TWO OR MORE LIKE PARTIES IN THE SAME BUSINESS LINE TO OFFER COMPLIMENTARY PRODUCTS OR SERVICES</b>	<ul style="list-style-type: none"> <li>• <b>IMPROVE RETURN ON INVESTMENT</b></li> <li>• <b>INCREASE CAPABILITY UTILIZATION</b></li> <li>• <b>CREATE ECONOMIES OF SCALE</b></li> </ul>

# General Method of Approach to Outsourcing



# Decision Process in Outsourcing, Subcontracting, and Downsizing



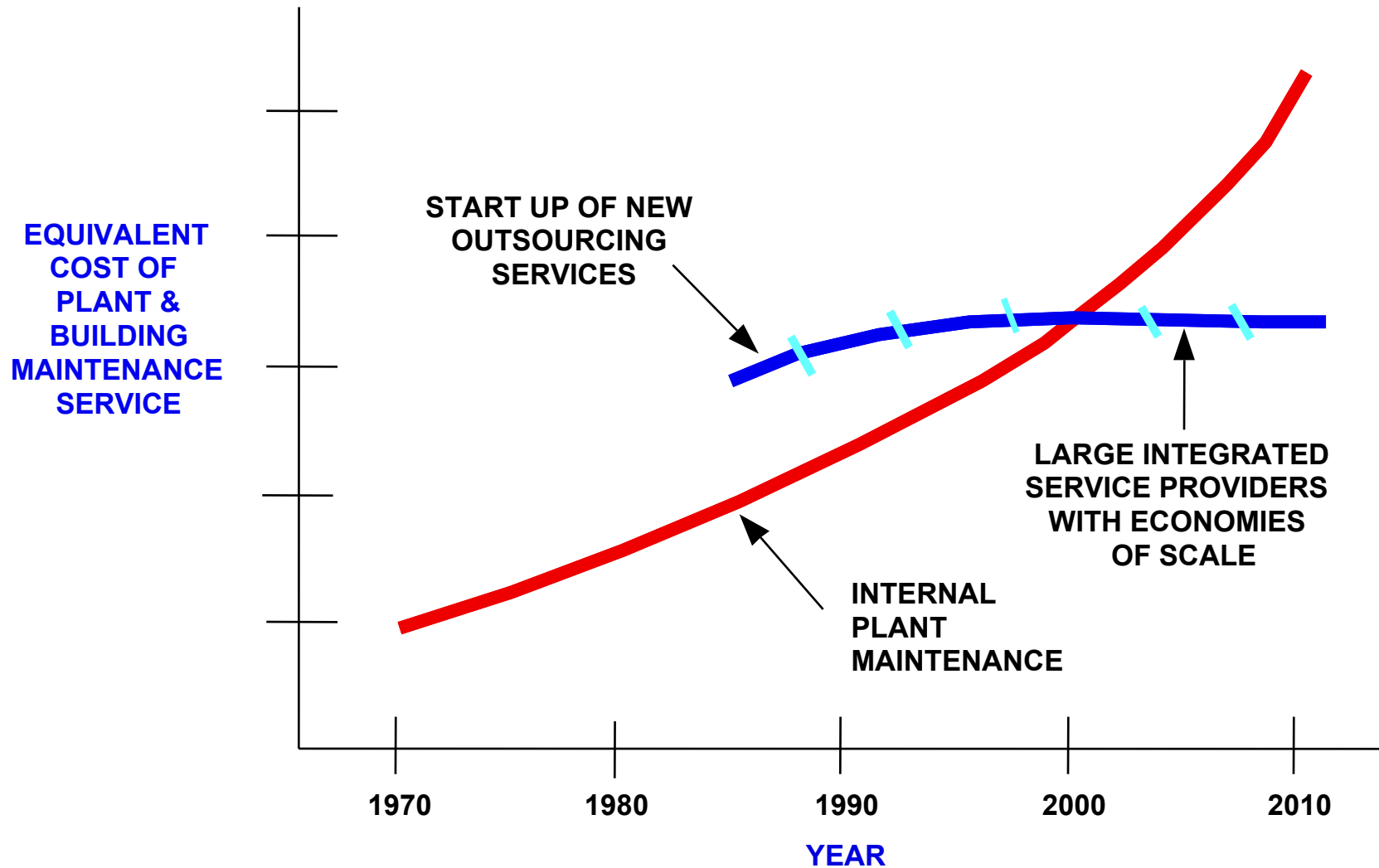
# **Decision Model for use in Outsourcing and Reducing Service Costs**

		RESULTS OF EXTERNAL MARKET SURVEY			
		SERVICE CRITICAL		SERVICE NOT CRITICAL	
		STRONG POSITIVE PERCEPTION	WEAK NEGATIVE PERCEPTION	STRONG POSITIVE PERCEPTION	WEAK NEGATIVE PERCEPTION
RESULTS OF INTERNAL PRODUCTIVITY AND BENCHMARK SURVEY	<u>MORE</u> PRODUCTIVE & EFFICIENT THAN INDUSTRY	EXPAND SERVICE <u>AGGRESSIVELY</u> TO CUSTOMER BASE	PARTNERING WITH MORE EFFICIENT VENDOR	TO BE DETERMINED BASED ON RESULTS	OUTSOURCE SERVICE THROUGH JOINT VENTURE OR PARTNERSHIP
	<u>SAME</u> AS INDUSTRY STANDARDS	EXPAND SERVICE	TO BE DETERMINED BASED ON RESULTS	TO BE DETERMINED BASED ON PARTS	OUTSIDE
	<u>BELOW</u> INDUSTRY STANDARDS	EXPAND SERVICE BUT SUBCONTRACT CERTAIN FUNCTIONS	OUTSOURCE TO EFFICIENT SERVICE VENDOR	SUBCONTRACT CERTAIN SERVICE FUNCTIONS	OUTSIDE AGGRESSIVELY

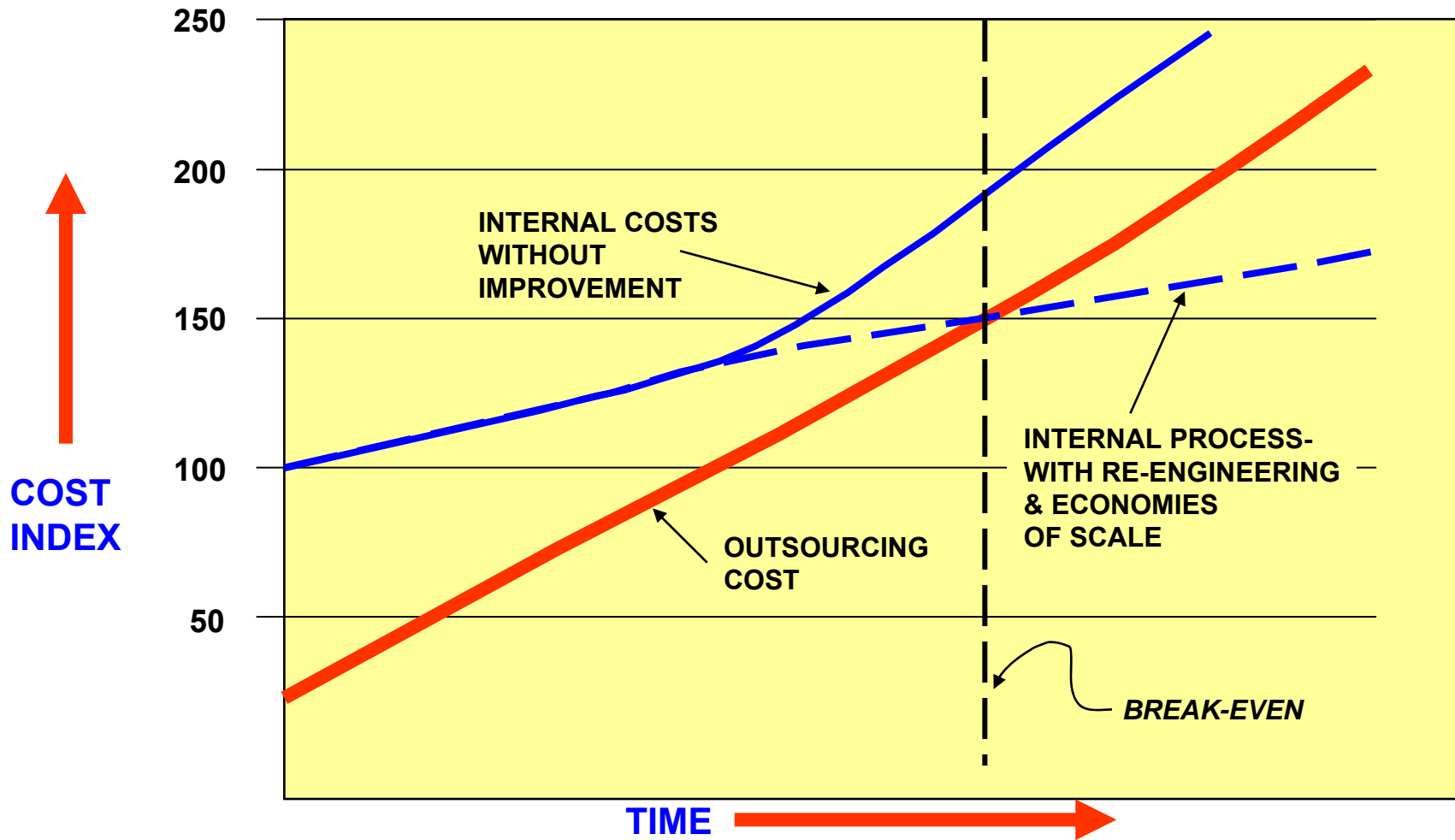
# Key Factors in Selecting Outsourcing Vendors

- **The breadth and depth of experience**
- **Financial solvency**
- **Trained and skilled personnel**
- **Good reputation**
- **Knowledge of a customer's overall business**

## Comparison of Internal Versus External (Outsourced) Cost of Service

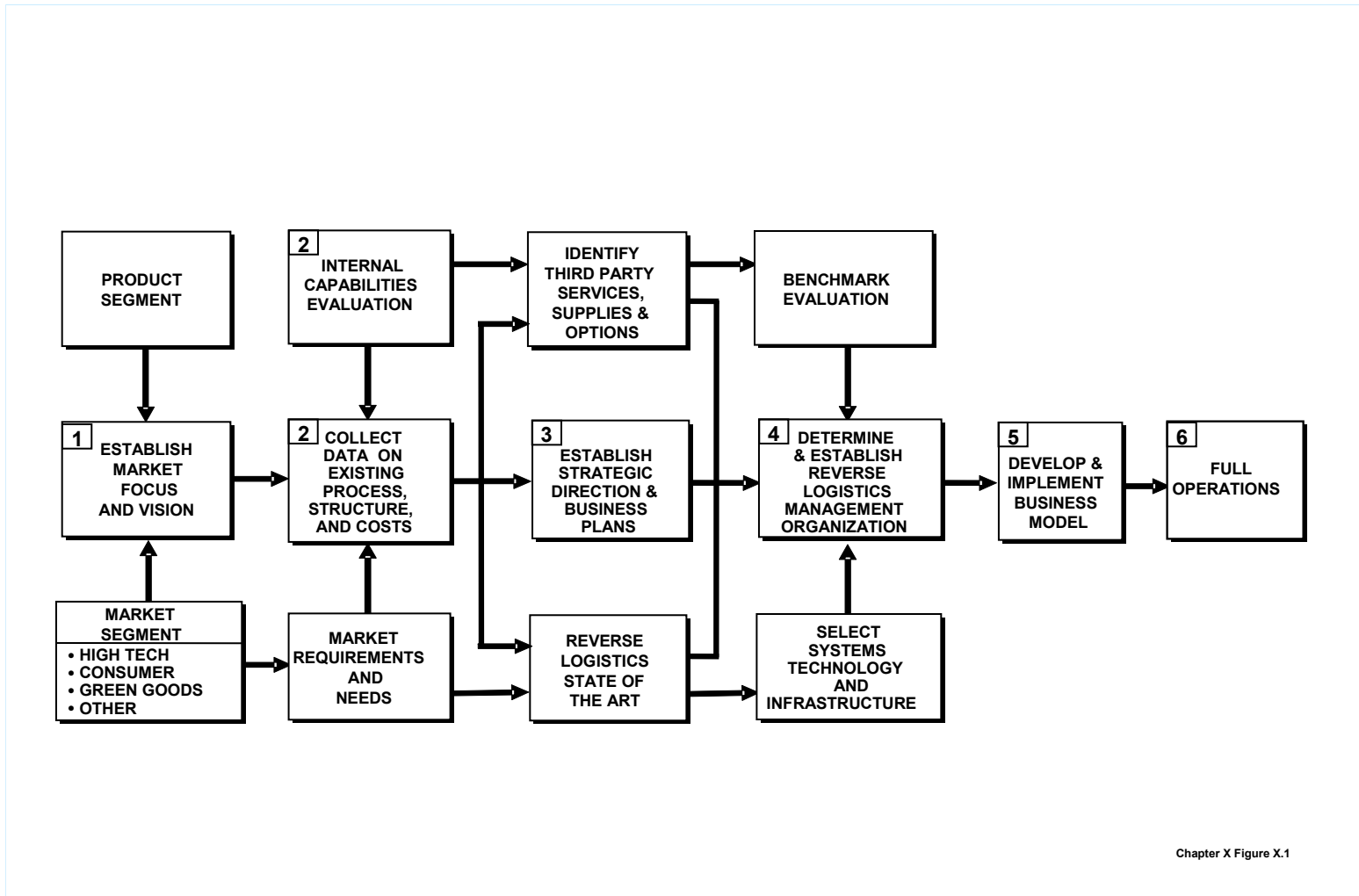


# Internal Versus Outsourced Break-Even Costs



# RECOMMENDATIONS & NEXT STEPS

# Steps in Developing Management & Business Strategy and Plan for Reverse Logistics & Closed Loop Supply Chain Operations



Q&A





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