90 Days and Counting
. . . Lessons Learned

"e-fulfillment transition in less then 90 days"

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Council of Logistics Management Annual Conference
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Objectives

- Identify the tasks which must be done
- Discuss the reality of time lines
- Point out the potential pitfalls
- Identify the necessary interfaces
- Point out the need for flexibility, scalability and contingency plans
- Discuss the pros and cons of “hired guns”
- Discuss what to look for in potential consultants
- Point out potential priorities

Agenda

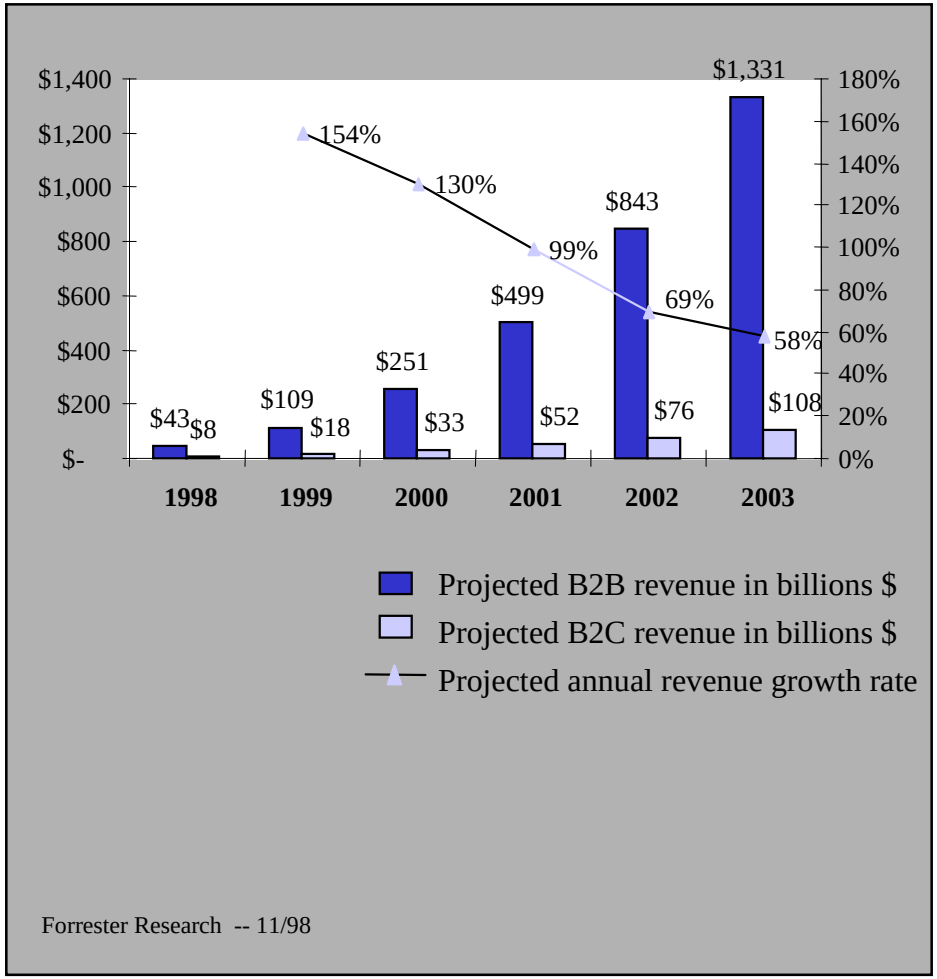
- e-commerce
- Fulfillment / e-fulfillment
- Case Study
- What's needed
- Component Parts
- What's next

Basic e-Commerce Success Factors

- Development of an attractive and functional web site
- Solving the each pick pack fulfillment issue
- Tracking forecast and replenish inventories
- Managing the reverse logistics function
- Cash management

The Internet Has Well Exceed Forecasts!

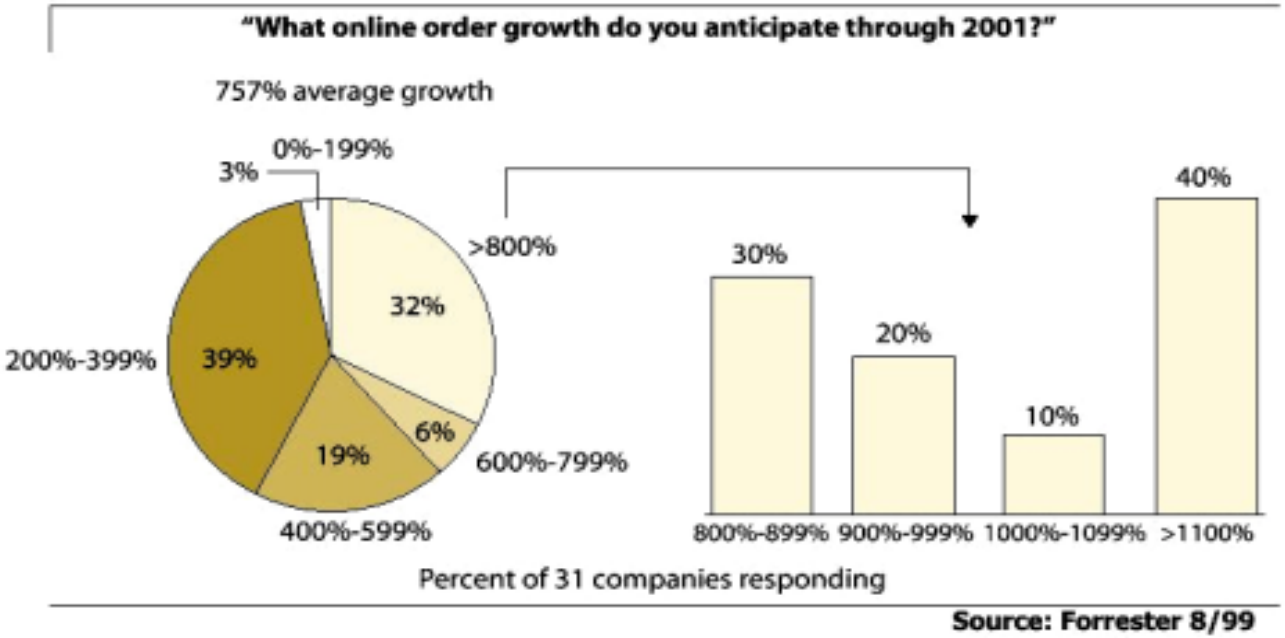
- 766 million worldwide Internet users, with e-Commerce revenues reaching $ 1.3 trillion by 2003
- B2C e-Commerce U.S. revenues of $75 billion in 2003
- B2B e-Commerce U.S. revenues will grow from of $634 billion in 2003
- In 2000, B2B transactions will account for 77% of worldwide e-Commerce



Forrester Research, 12/99 (IDC 2/2000)

On-line Order Growth Is Staggering

- Over 300,000 retailers selling on the Internet by 2002 [1]
- Over 70% of bricks and mortar retailers expect to be selling online by year end
- B2B and B2C appear to be merging into B2A
- Currently, half of all online retailers outsource some part of their fulfillment capabilities [2]



[1] estext, 12/98
[2] op.org, 9/99

Internet Growth

1 The Internet has become an integral part in the lives of millions of people and has generated billions of dollars in electronic commerce.

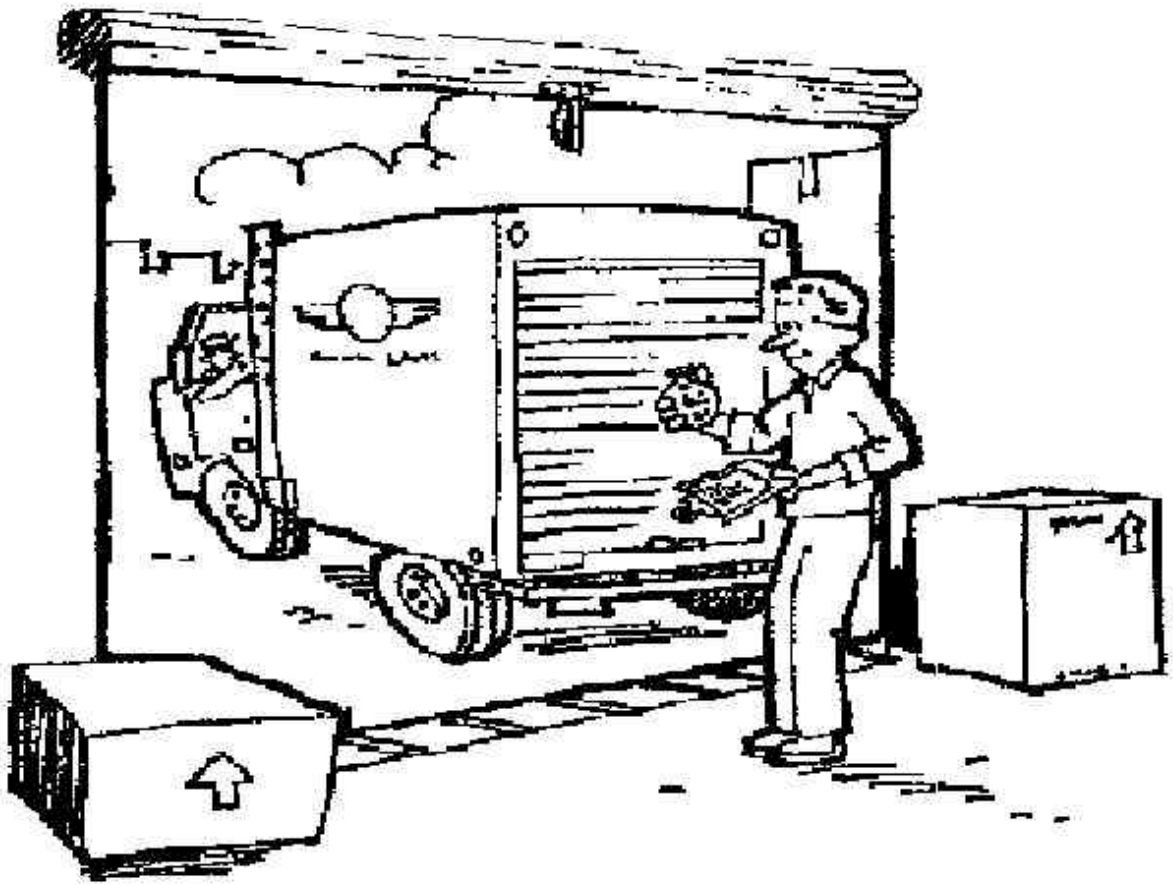
2. More than 90 million people worldwide and some 47 million people in the U.S. alone now log on to the Internet.

3. Intel predicts over 1 billion people will be on line in the next three years.

4. Internet forecasters predict that by 2003 the e-fulfillment market (assuming 25% of the consumer goods market) will be $1.2 trillion and require more then one million fulfillment workers picking packing and shipping orders.

5. The sheer size of this fulfillment challenge linked with the customer's expectations of order cycle speed and 100% accuracy only magnifies the reality that the real e-commerce challenge is not getting the order, but the logistics of satisfying the customer's fulfillment expectations.

Service Expectations

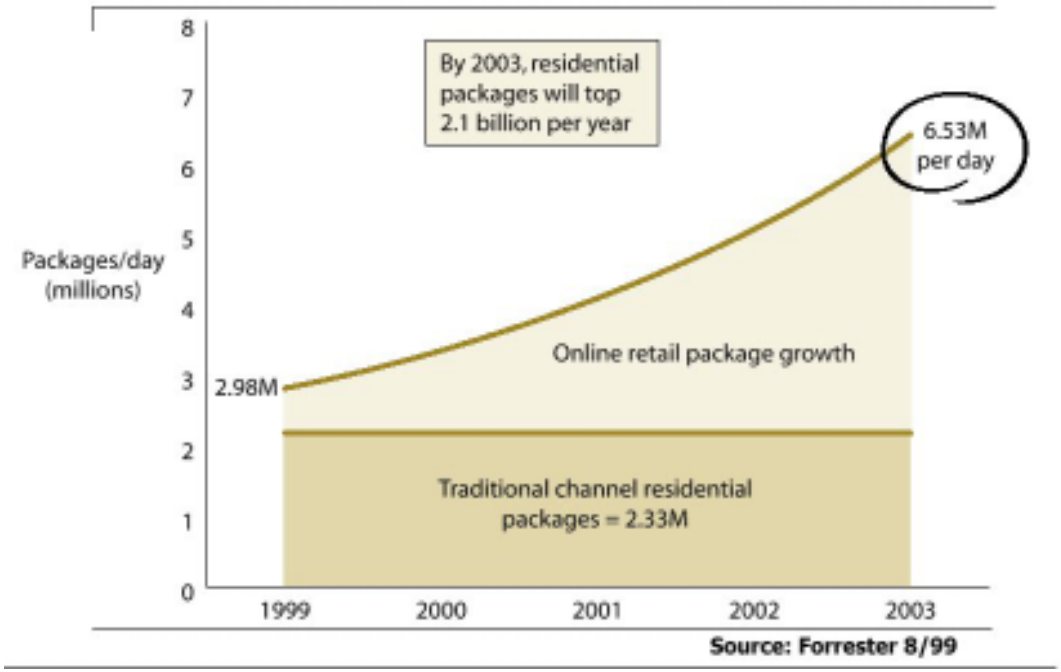


e-Logistics More Than Just Warehousing

- Packaging
- Transportation
- Package tracking
- Reverse logistics
- Purchasing
- Inventory control
- Order selection
- Gift-wrapping
- Credit card authorization
- Order processing
- Customer service
- Call center operation
- Credit card charge back follow-up
- Order status notification
- Receiving inspection
- Monogramming

Barrier To This Growth - Fulfillment!

- Recent wave of articles on e-Fulfillment failures
- Most etailers ship fewer than 400 orders per day
- 2.1 billion deliveries forecasted by 2003
- 5.8 billion by 2005
- Massive seasonal fluctuations
- Proliferation of SKU's



Three Alternative Approaches

Integrate With Existing Operations

Separate Dedicated Operation

Outsource To 3rd Party Provider

Integrate

Separate

Delegate

Outsourcing Alternatives

- AtomicBox.com
- Parcel@Home
- SubmitOrder.com
- Fed Express e-Logistics
- Keystone Internet Services
- Ingram Micro Logistics
- . . .

Fulfillment History

Catalog Fulfillment

When Sears pioneered catalog fulfillment in 1913:

- Customers were different
- Communications were different
- Transportation Alternatives were different
- Competition was different
- Overall expectations were quite different

70% isn't New

"We can solve some 70% of e-commerce logistics problems with catalog company techniques. These techniques have been used for over 30 years."

Professor Thomas W. Speh, James Evans Rees Distinguished Professor of Distribution, Miami University of Ohio

“Lick a Label, Kick a Box”, It’s Just Warehousing!

Fulfillment is Different

- Traditional warehousing is pallet-in pallet-out, sometimes cases out.
- Fulfillment is pallet-in, sometimes case in and eaches out
- Traditional warehousing ships T/L and LTL, fulfillment ships packages
- Fulfillment is labor intensive and often capital intense as well

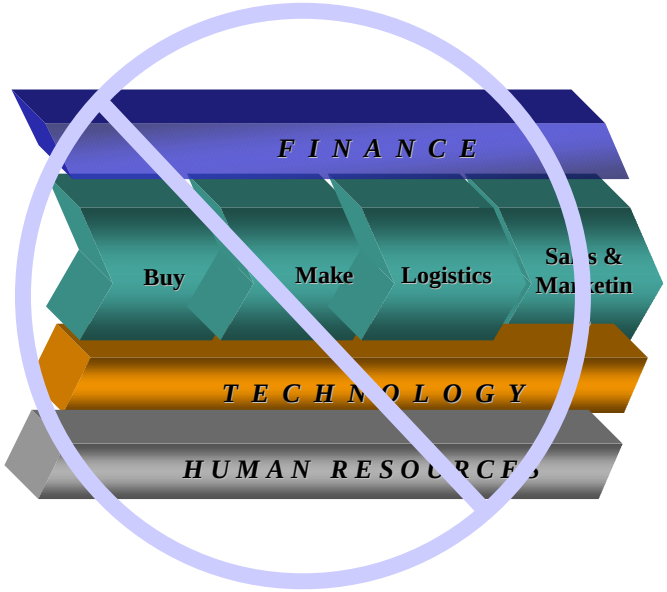
Catalog Versus e-Commerce Fulfillment

e-Fulfillment is Different

- e-fulfillment operates at internet speed
- e-fulfillment is 7/24/365 even when its not working
- e-fulfillment includes direct ship & drop ship
- e-fulfillment is fulfillment, returns, billing, the full customer experience.

Why Is e-Fulfillment Such A Challenge?

- The old supply chain is becoming obsolete.
- Systems capabilities are being challenged:
  - capture all electronic orders
  - manage trading partners and vendors
  - provide real time order status & tracking
  - capable of handling significant increase in orders
- Traditional logistics capabilities are being challenged:
  - pick & pack “eaches”
  - ship by small parcel and multi-carrier
  - handle large number of returns



Traditional Brick & Mortar View

Planning For Spikes

- e-fulfillment operations differ from catalog companies in that there is a much larger difference in variability of customer demand.
- e-fulfillment operations must have scalability to accommodate this uncertainty.

Perfection Demanded

Skyrocketing customer expectations and fierce global competition have created a business environment that's unforgiving.

Today's online customers demand nothing less than perfection.

Orders must be filled with lightening speed and absolute precision – or else.

Good News & Bad News

Good News

Having an interesting Web site that boasts user-friendly and helpful product locating and ordering can attract new customers and substantially increase product orders.

Bad News

The more successful the Web site is at taking orders, the more a disconnected back-end system will be overwhelmed.

The result is that promised orders are often shipped late, incomplete, or not at all.

Land Grab

All too often e-commerce is based upon a land grab mentality.

Bottom Line

Volume and complexity are increasing and you know the processes that got you this far won't scale forever.

For now, you can throw a few more bodies at the back-office tasks, but that solution is temporary.

You risk losing everything you've gained – including your brand leadership – if your business can't deliver on its promises.

Having Outgrown Its Current Facility

Multiple SKU's / Pick face

Open Backorders

Outdoor Warehousing

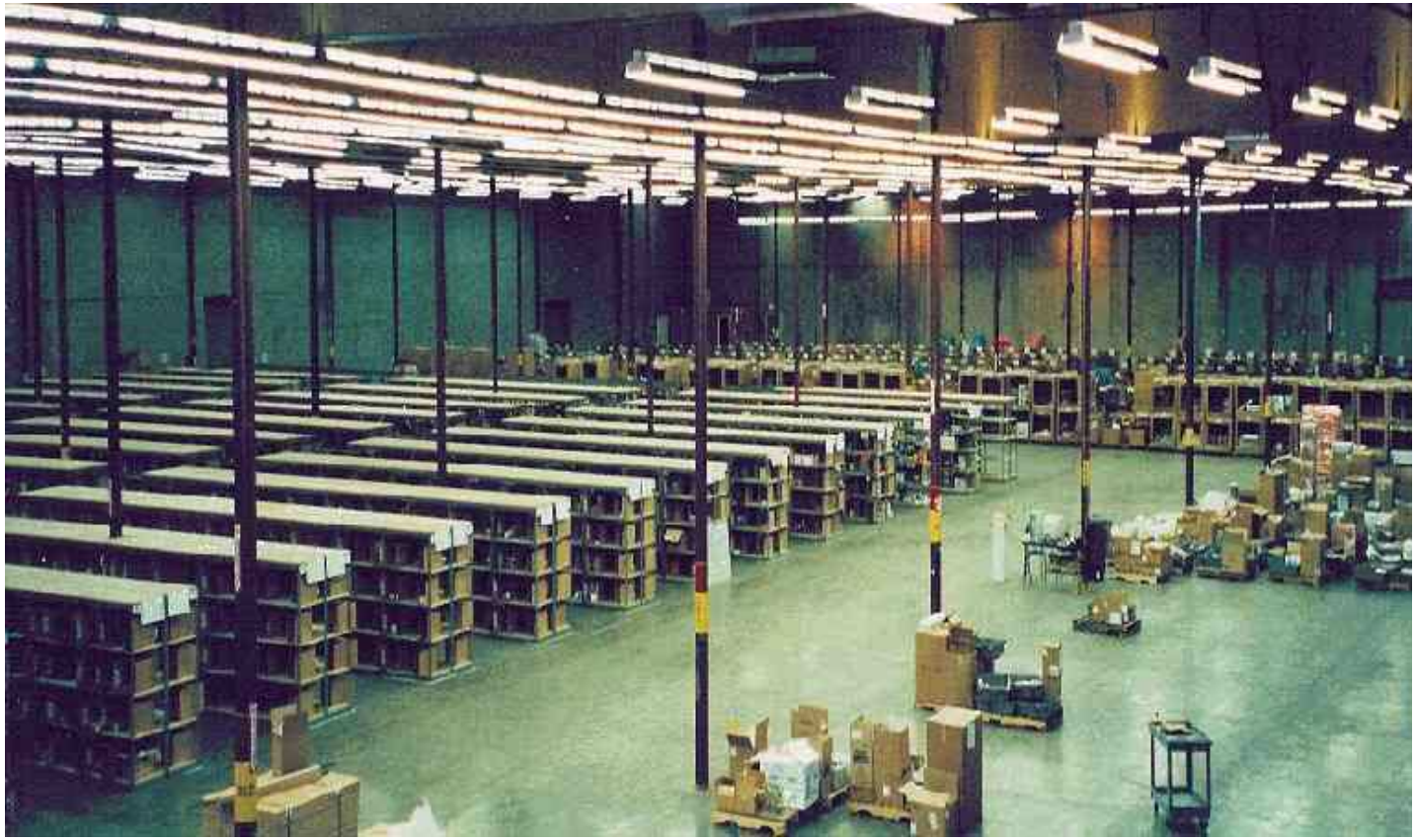
Initial Operation

- 10,000 Sq. Ft. Facility
- No Truck High Dock
- Inventory Spilling Over In Parking Lot
- 2,500 Active SKU’s
- 150 Order / Day Max. Capacity
- 10 day Order Backlog
- Significant Back Orders
- Minimal Confidence in Inventory Accuracy
- Warehouse Staff Temporary Employees
- Dynamic Environment (Strategy & Marketing)

New Operation

- 125,000 Sq. Ft. Facility
- Three loading Islands with 12+ docks
- 10,000 Order per Day Capacity
- 10,000+ SKU primary pick Locations
- 25,000 Sq. Ft. mezzanine Kitting Area
- 25,000 Sq. Ft. 12 station Packing Area
- 50 Station Call Center (7/24/365)
- Paperless Warehouse Environment

Up & Running In It's New Facility



Implementation Team

- Answer Think / system implementation
- Freese & Associates / distribution ops.
- Sprint Paranet/ communications
- Yantra / e-commerce package
- Local Material Handling Co./ equipment
- Local labor agency's / temp. staffing

Outline of Steps

- Data collection & design assumptions
- Develop concept & size operation
- Conduct real estate search / site selection
- Conduct lease negotiations
- Obtain, occupancy permits, licensees, etc.
- Facility improvements
- Layout, process, material flow & detail design
- Equipment procurement
- Installation and testing
- Training and startup

What You Don't Want to Hear

- "My label won't scan"
- "There isn't a location 16-A-4-B"
- "UPS already picked up"
- "The systems down for testing"
- "The WMS won't support that"
- "We don't have that SKU in the system"
- "But, Joe said I could skip that step…"

Lessons Learned

- Flexibility within a Plan
- Anticipate 50% Peaks Over Forecast
- Have Contingency Plans
- Over Staff and Over Train
- Over Hire Required Skills
- Don’t Pout, Make Adj. & Move On
- Remember There Are 24 Hours in a Day
- Flexibility

Where The Old & New Meet

- e-fulfillment is where the new economy meets the old economy.
- *Fortune* and other magazines are rating e-commerce companies based on their order fulfillment proficiency.
- In e-business, it's pallets in and individual items out.

Principles That Drive e-Commerce Success

- High velocity
- Flexible systems and procedures
- Extremely high service levels
- Full electronic connections to ever link in the supply chain

Easing The Returns Nightmare

Setting up an infrastructure for return items is one of the big headaches for dot com distribution companies.

Typical Fulfillment Start Up Plan

- **Phase I – Pre-engineering**
  - Familiarization
  - Pre-engineering
  - Concept Design
  - Preliminary Site Selection
- **Phase II – Equipment and System Design**
  - Final Site Selection
  - WMS Selection Recommendation
  - Detailed Design
- **Phase III – Detailed Engineering**
  - Detailed Layout
  - Operational Outline
  - Equipment Specifications
  - WMS Specifications
- **Phase IV – Implementation Support**
  - Implementation Plan
  - Set Up
  - Training
  - Implementation Co-ordination

Need to Know or Estimate

- Number of SKUs
- Design Specifications of SKUs
- Throughput Annually, Monthly, Seasonally
- Growth Projections
- Receiving Characteristics
- Order Characteristics
- Shipping Characteristics
- Storage Characteristics

Selling is only the Start

Companies are figuring out how to sell over the internet, but getting the goods to the consumer is another story.

As firms get their feet wet with online sales, they will find out that logistics is a huge barrier to gaining and keeping online customers

A Promise Made . . .

Smart companies will soon be meeting customers on terms that the customers find more convenient – Red Herring, 9/99.

If you make a promise, they want to know the promise will be kept.

“Please allow 4-6 weeks for delivery” is giving way to 48 hour, overnight, or even same day delivery.

e-Commerce Infrastructure

Front-end; eyeballs to orders	Back-end: Orders to Satisfaction
Marketing	Real-time order management
Web content, community	Supply chain & inventory management
Buy-sell transactions	Order information services
Creation of an electronic order	Delivery of product to the customer's door

Fools Rush In . . .

"Instead of Rushing Headlong into Web Commerce,

Enterprises that plan to sell products over the internet should first develop a strategy for efficient back-end fulfillment.

Enterprises that fail to do that will have lower profitability and may permanently damage customer relationships."

"The Fallacies of Web-Commerce Fulfillments," Gartner Group March 1999

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What's Needed

- Maximum flexibility for product personalization, packaging, and delivery
- Order updates when necessary and order status on demand
- Ability to modify orders on demand
- A satisfying delivery experience
- Easy returns

Required capabilities - Warehousing

Scalability

A Scalable processes that will enable growth.

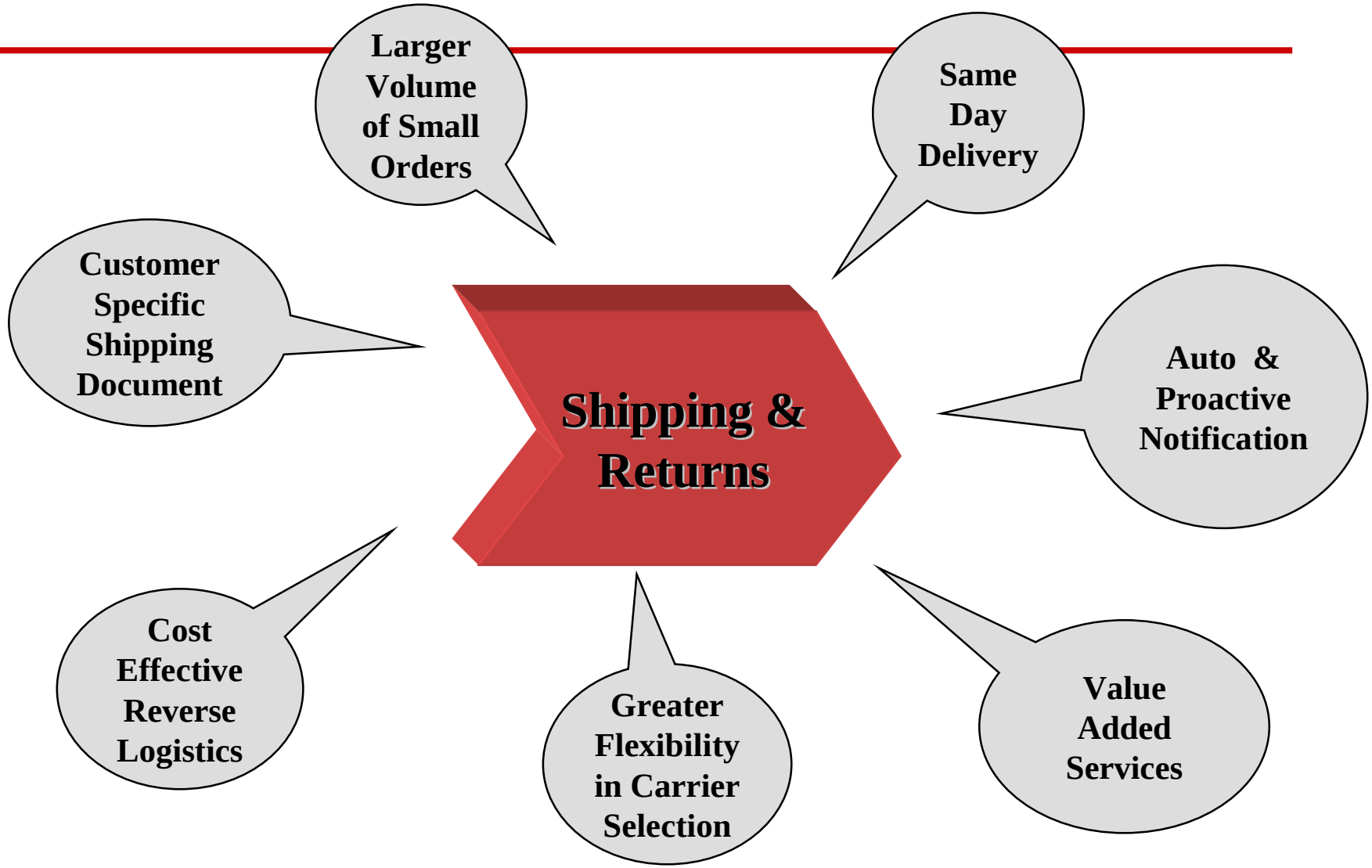
Material Flow

- Streamlined pick, pack, and ship for distribution centers
- Adequate staging areas
- Minimize bottlenecks
- Expandable packing stations
- Adequate return areas
- Packaging storage areas

Information

- Current, accurate inventory information for order fulfillment, purchasing & customer commitments
- Timely, accurate order status information for customers
- Real-time operations management

Required capabilities - Shipping & Returns



Typical e-Commerce Start Ups:

- Lack operations experience
- Lack product demand history
- Lack good item masters
- Lack realistic by SKU forecasts
- Lack procedures and practices
- Lack experienced managers

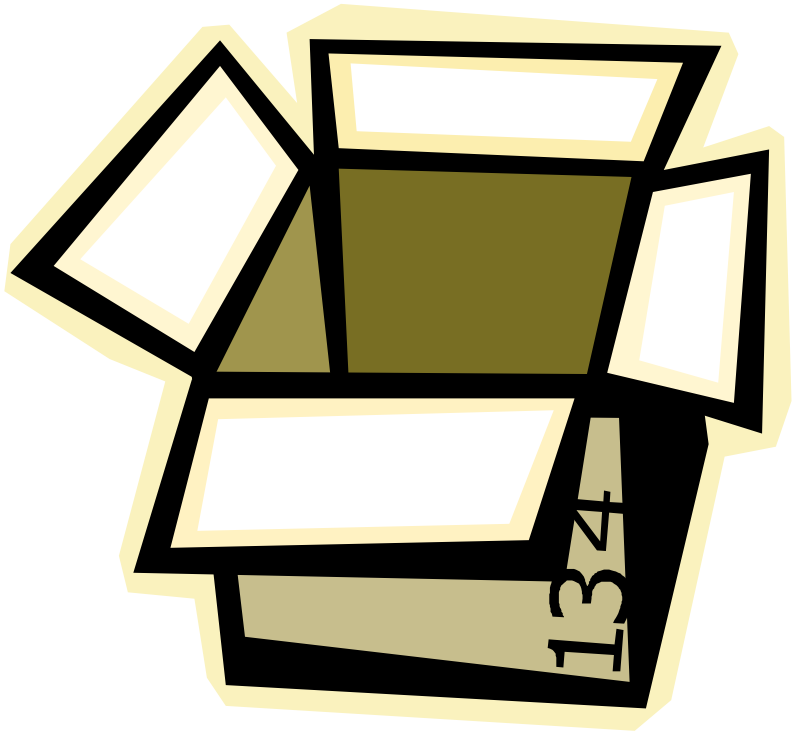
Most e-Commerce Start Ups:

Do not allow sufficient time, resources, or attention to the fulfillment end of their start up efforts

Trade-Off Principles

Principle	Rationale
Largest units	The larger the handling unit, the fewer the moves
Shortest path	Shortest travel distance lowest labor and equipment content
Smallest space	Smaller space, shorter travel
Shortest time	Less time, lower labor content
Least handling	Less handling, less labor
Batch/groupings	Larger unit picks
Balance activities	Reduces lost time maximizes capacity
Longest run times	Reduce change-over cost

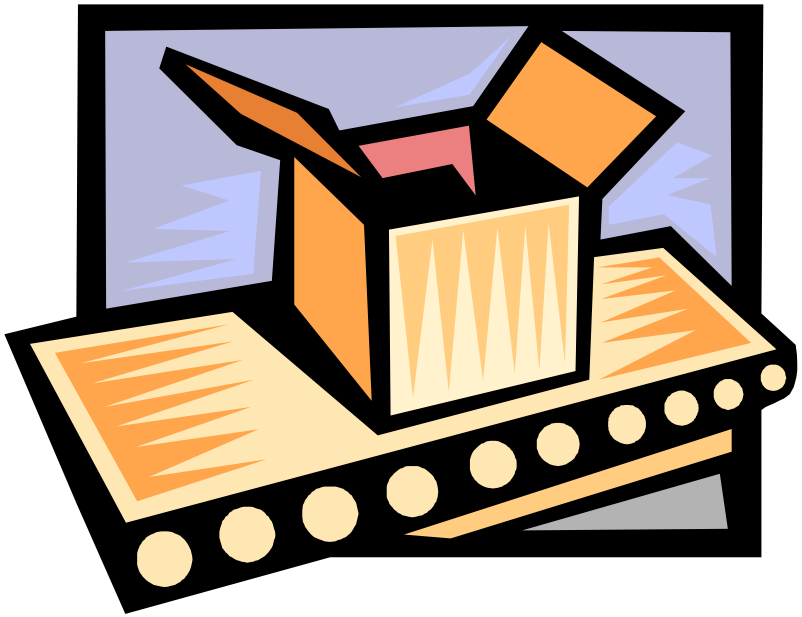
Storage



Storage of smaller items and cases in static shelving and carton flow racks.

Slotting goods properly needs to be done so fast movers can be picked quickly.

Picking



A good warehouse management system and paperless picking will lower the rate of mistakes

Proper slotting of SKUs is very important

Lift Trucks

One or more 3 or 4-wheel, counter-balanced lift trucks will be necessary. Electric or internal combustion – each type has its pluses and minuses.

High order volumes order pickers allow the operator to move up to a rack face for picking.

Totes

Totes can hold open stock in flow racks and shelving in pick faces.

Pick and pass operations also can use totes for picking.

Conveyors

Orders must be processed quickly to meet the same day turnarounds that consumers demand. Conveyors function in putaway and order fulfillment, and batch picking, single order picks into totes.

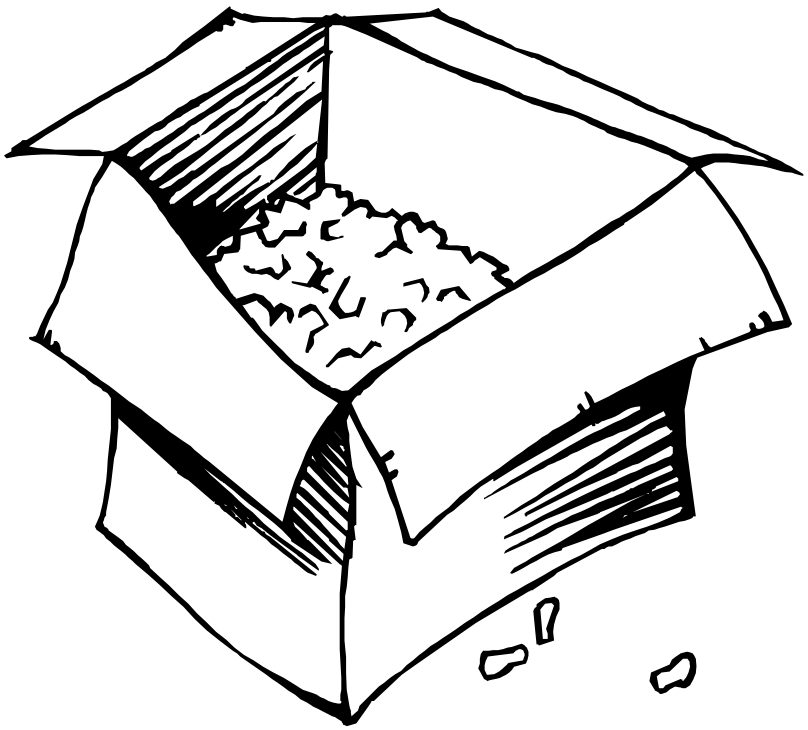
Conveyor flexibility is a must in e-commerce operations.

Sortation

Sorting of outbound parcels is a must.

Sliding shoe and push diverters are most commonly used in shipping areas, while tilt trays are sometimes used for high-volume shipping docks.

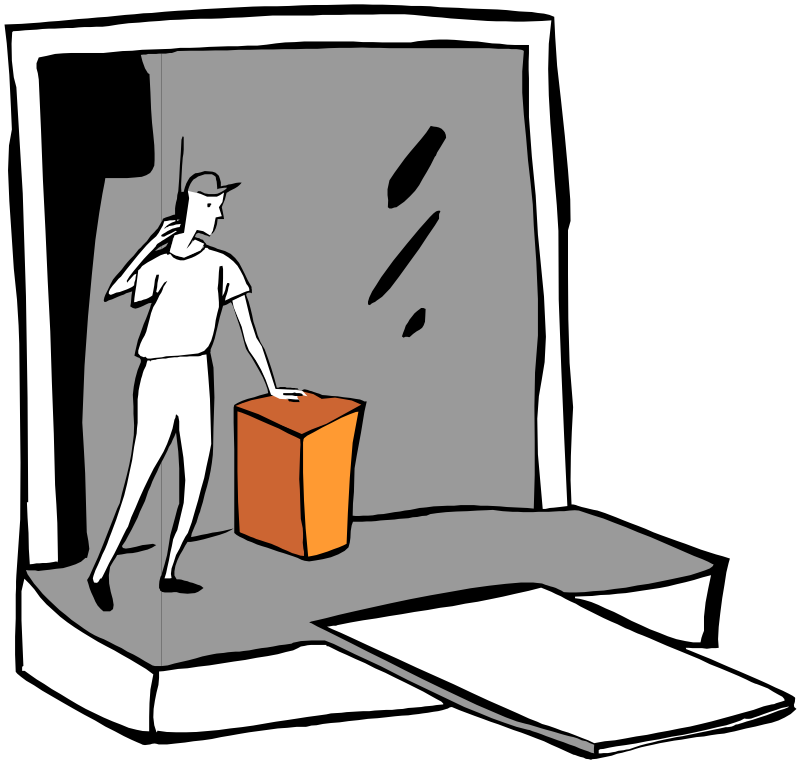
Packaging



Packing stations are ideally positioned at a spot that requires the least amount of handling once an order has been accumulated.

The WMS either determines which cartons to use, or experienced packers may chose the proper carton themselves.

Docks



e-firms should consider installing one of the mechanized or semi-automatic wheel chocking systems.

The truck-to-building gap at each dock will need to be bridge by some sort of lifting or leveling device.

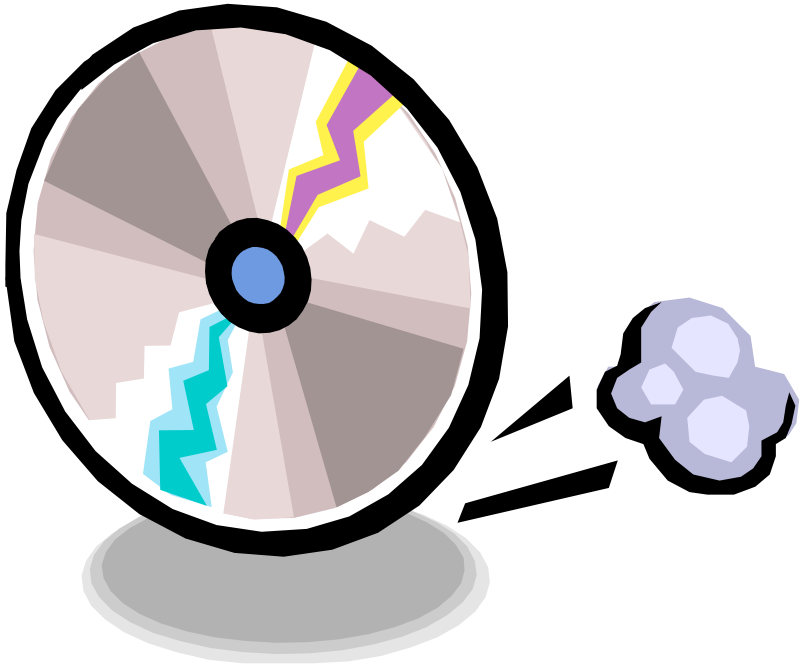
Mechanical levelers may be the cheapest solution.

Automatic Data Capture

Bar codes, radio frequency based technologies and other forms of ADC are used to collect data that is used both within the facility and by customers and suppliers.

The more data available to the customer the better the e-commerce experience.

Supply Chain Software



- Planning
  - Enterprise Resource Planning (ERP)
  - Supply Chain Planning (SCP)
  - Order Management Systems (OMS)
- Execution
  - Warehouse Management Systems (WMS)
  - Transportation Management Systems (TMS)

What Next

- Distributing Globally
- Managing Increased Volumes
- Lowering fulfillment Unit Costs

  (Recent AMR study e-com fulfillment 25% COS vs. Traditional Retail 17%)
- Accepting Online Returns
- Decreasing Order-to-Receipt Cycle Times
- Increasing Visibility of Orders

Source: Forrester Research

Questions