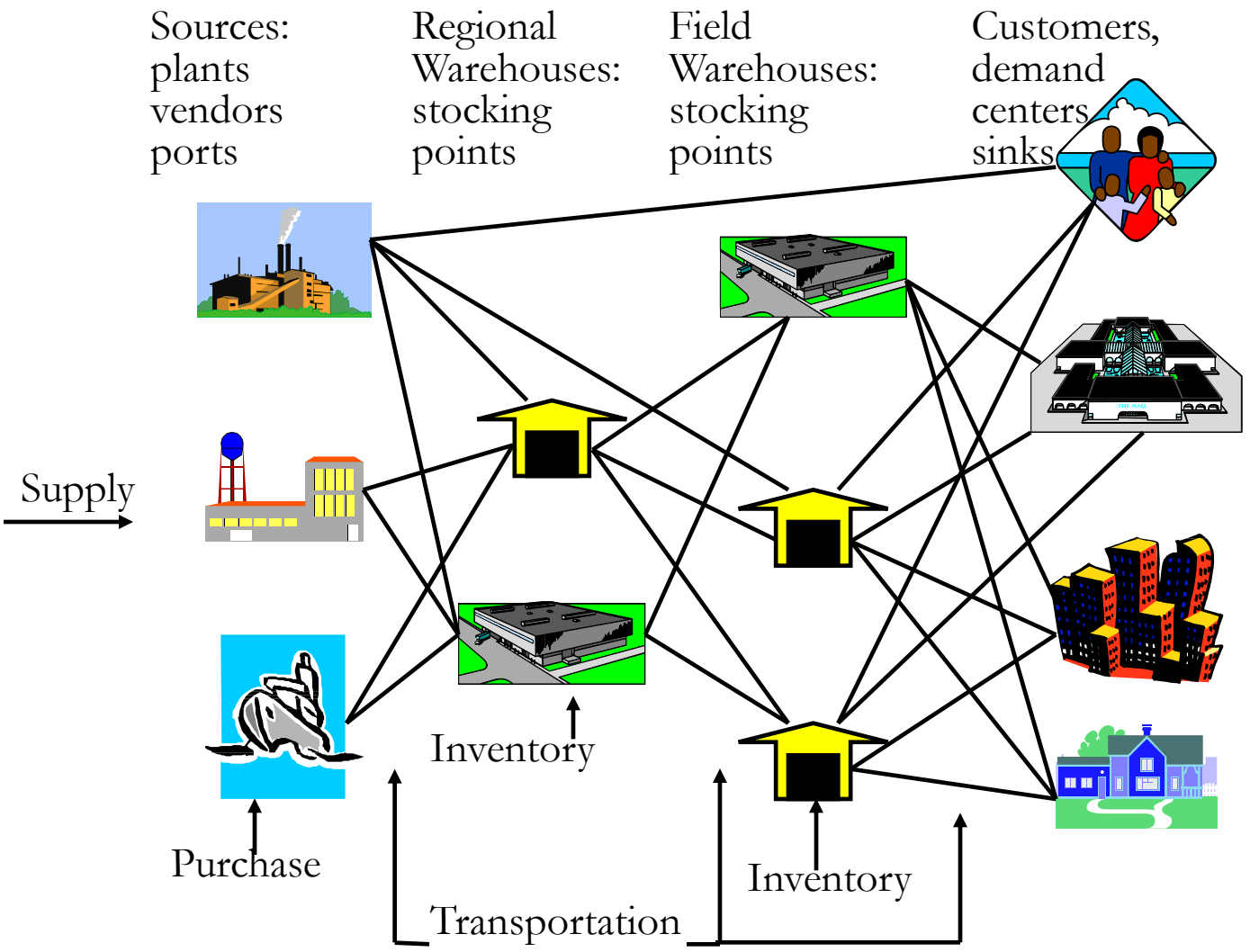
Supply Chain Management Introduction

Outline

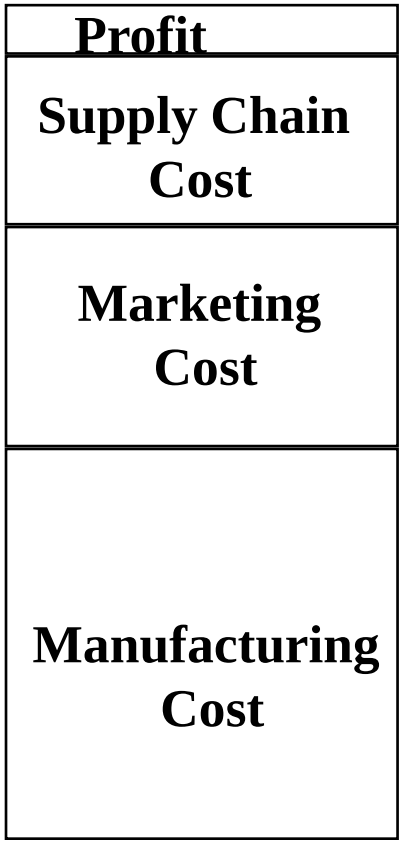
- **What is supply chain management?**
- **Significance of supply chain management.**
- **Push vs. Pull processes**

A Generic Supply Chain



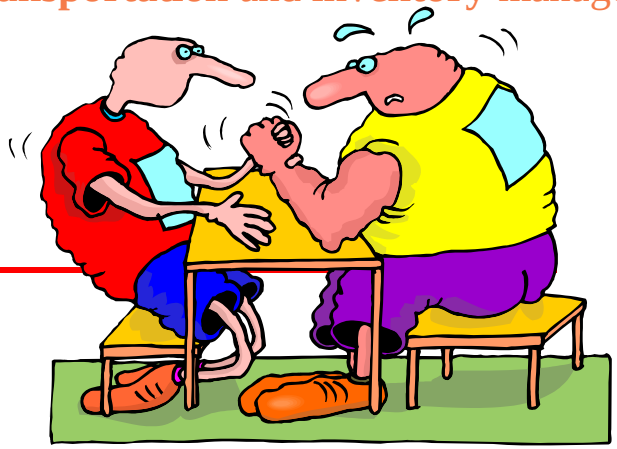
Traditional View: Cost breakdown of a manufactured good

- Profit **10%**
- **Supply Chain Cost** **20%**
- Marketing Cost **25%**
- Manufacturing Cost **45%**



Effort spent for supply chain activities are invisible to the customers.

Supply Chains in US Economy in 2007

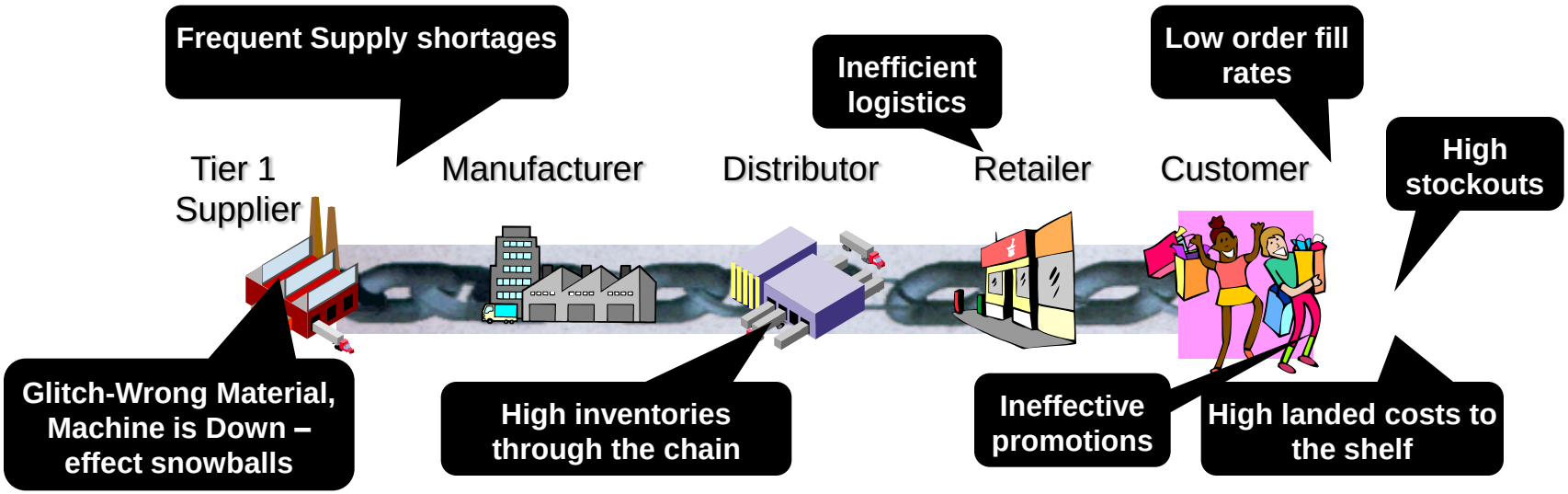


- **Logistics related activity 11%, 10.5%, 10.1% of GDP in 1990, 1996, 2007.**
- **Inventory Carrying Costs – 2,026 B inventory** — **487 B**
  - **Interest** — **103 B**
  - **Taxes, Obsolescence, Depreciation, Insurance** — **273 B**
  - **Warehousing** — **111 B**
- **Transportation Costs** — **671 B**
  - **Truck – Intercity** — **455 B**
  - **Truck – Local** — **216 B**
  - **Railroads** — **58 B**
  - **Water (International 33 + Domestic 5)** — **38 B**
  - **Oil pipelines** — **10 B**
  - **Air (International 16 + Domestic 25)** — **41 B**
  - **Forwarders** — **30 B**
- **Shipper Related Costs** — **8 B**
- **Logistics Administration** — **54 B**

Total **1397 B**

Importance of Supply Chain Management

- **In 2000, the US companies spent $1 trillion (10% of GNP) on supply-related activities (movement, storage, and control of products across supply chains).**
  Source: State of Logistics Report



- **Eliminating inefficiencies in supply chains can save millions of $.**

What can Supply Chain Management do?

- P&G (Proctor&Gamble) estimates it saved retail customers $65 M (in 18 months) by collaboration with retailers resulting in a better match of supply and demand.

- Estimated that the grocery industry could save $30 billion (10% of operating cost) by using effective logistics and supply chain strategies
  - A typical box of cereal spends 104 days from factory to sale
  - A typical car spends 15 days from factory to dealership
  - Faster turnaround of the goods is better?

- Laura Ashley (retailer of women and children clothes) turns its inventory 10 times a year five times faster than 3 years ago
  - inventory is emptied 10 times a year, or an item spends about 12/10 months in the inventory.
  - To be responsive, it relocated its main warehouse next to FedEx hub in Memphis, TE.

- National Semiconductor used air transportation and closed 6 warehouses, 34% increase in sales and 47% decrease in delivery lead time.

Top 25 Supply Chains

AMR research http://www.amrresearch.com publishes reports on supply chains and other issues.

The Top 25 supply chains report comes out in Novembers.

The table on the right-hand side is from *The Second Annual Supply Chain Top 25* prepared by Kevin Riley and Released in November 2005.

	Vendor	2004 Rank (change)	AMR Research Opinion[1] (40%)	ROA[2] (25%)	Inventory Turns[3] (25%)	Trailing 12 Months Growth (10%)	Composite Score[4]
1	Dell	1	346	13.1%	86.8	18.7%	19.37
2	Procter & Gamble	3 (+1)	289	11.4%	5.7	18.5%	13.23
3	IBM	4 (+1)	278	13.2%	16.7	8.0%	12.89
4	Nokia	2 (-2)	234	14.1%	12.7	7.0%	11.54
5	Toyota Motor	6 (+1)	213	4.8%	11.1	34.0%	11.24
6	Johnson & Johnson	7 (+1)	191	16.0%	3.0	13.1%	10.91
7	Samsung Electronics	New to Top 25	110	15.7%	9.2	31.5%	10.67
8	Wal-Mart Stores	5 (-3)	241	8.5%	7.3	10.3%	10.41
9	Tesco	9 (0)	207	6.7%	24.3	8.5%	9.66
10	Johnson Controls	8 (-2)	172	5.4%	24.2	17.3%	9.21
11	Intel	19 (+8)	131	15.6%	3.7	13.5%	9.18
12	Anheuser-Busch	20 (+8)	129	13.9%	11.7	5.6%	8.29
13	Woolworths	12 (-1)	80	8.7%	12.1	31.1%	8.18
14	The Home Depot	21 (+7)	108	12.9%	4.7	12.8%	7.81
15	Motorola	New to Top 25	92	5.0%	7.9	35.3%	7.79
16	PepsiCo	10 (-6)	89	15.1%	8.0	8.5%	7.55
17	Best Buy	18 (+1)	112	9.6%	7.2	11.8%	7.13
18	Cisco Systems	New to Top 25	59	12.5%	4.7	16.8%	6.74
19	Texas Instruments	New to Top 25	24	11.4%	4.3	27.9%	6.55
20	Lowe's	22 (+2)	68	10.3%	4.0	18.2%	6.53
21	Nike	New to Top 25	57	13.8%	4.1	12.2%	6.50
22	L'Oreal	23 (+1)	29	19.9%	4.7	3.6%	6.41
23	Publix Super Markets	New to Top 25	42	13.7%	12.9	10.3%	6.31
24	Sysco	New to Top 25	43	11.6%	16.7	12.2%	6.17
25	Coca-Cola	17 (-8)	54	15.5%	4.8	4.4%	6.09

SCM Generated Value

Minimizing supply chain costs

while keeping a reasonable service level

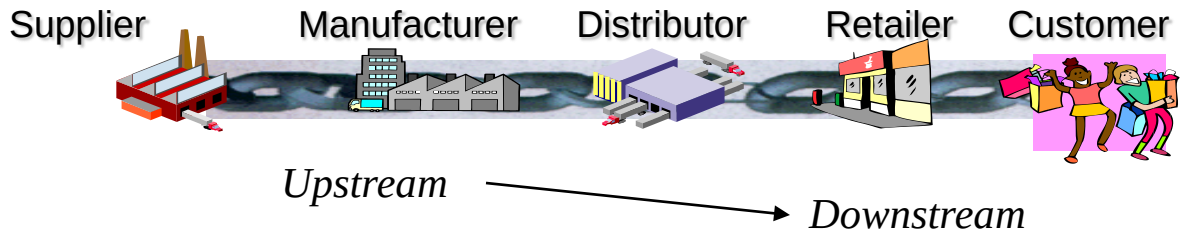
customer satisfaction/quality/on time delivery, etc.

This is how SCM contributes to the bottom line

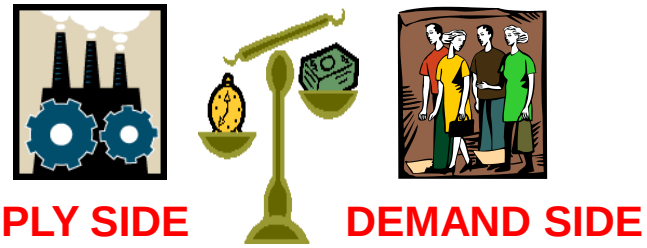
SCM is not strictly a cost reduction paradigm!

A picture is better than 1000 words!
How many words would be better than 3 pictures?

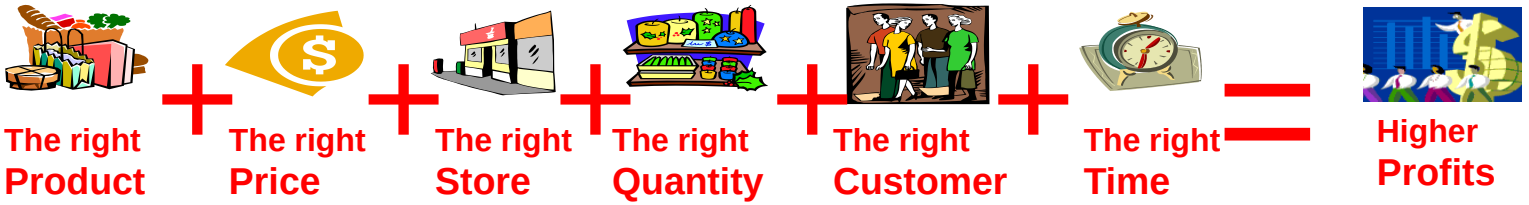
- A supply chain consists of



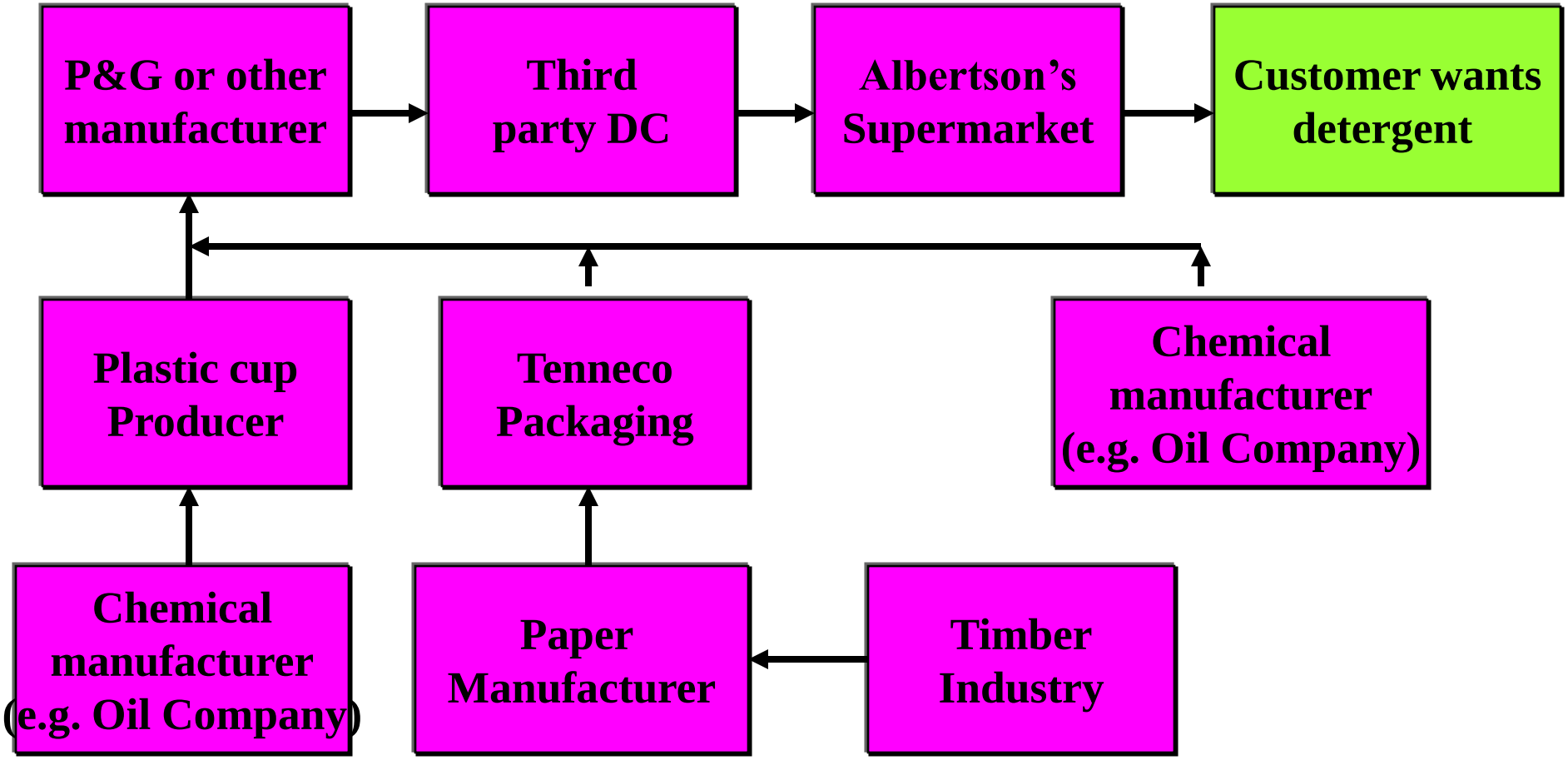
- aims to Match Supply and Demand, profitably for products and services



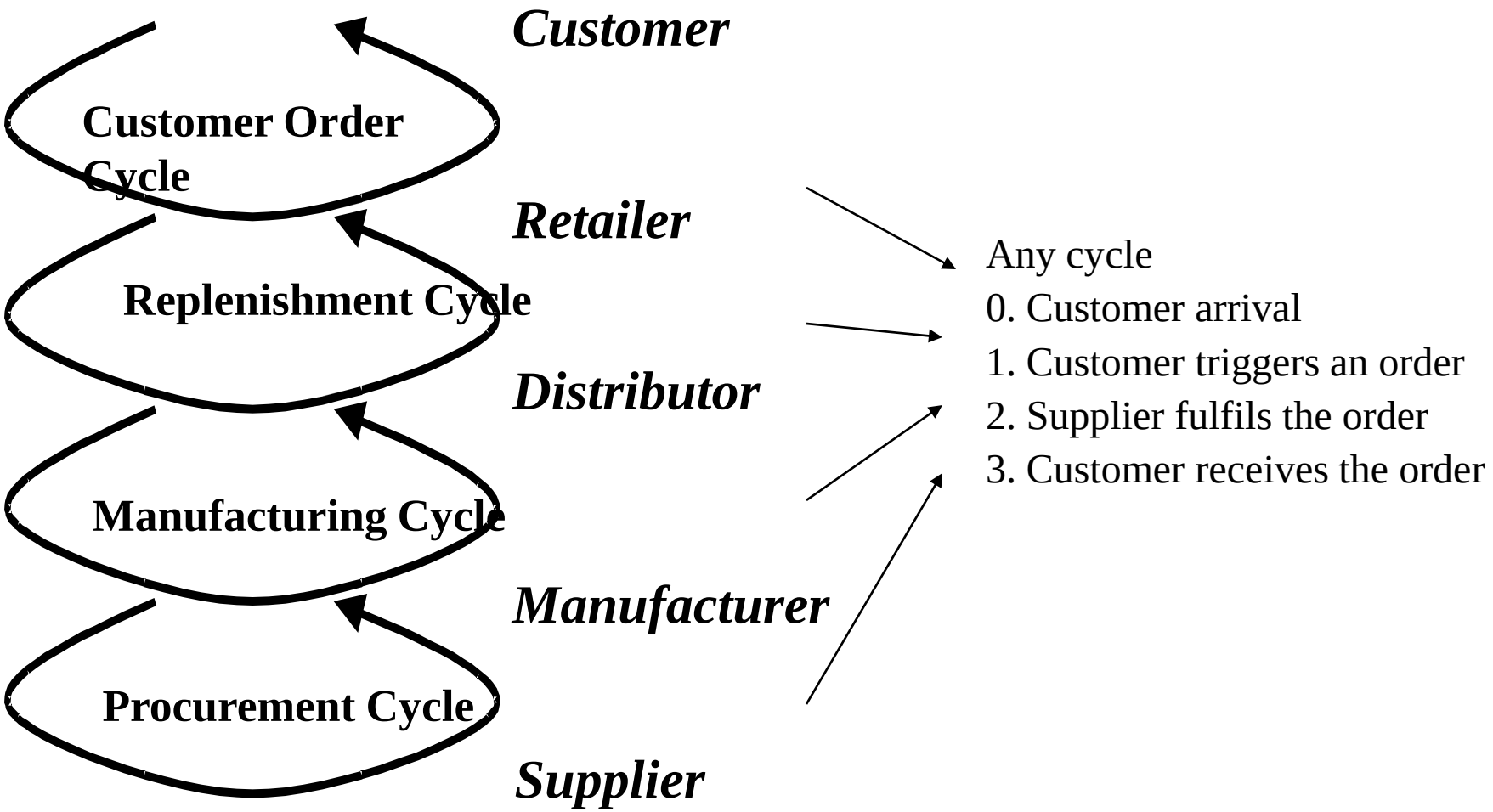
- achieves



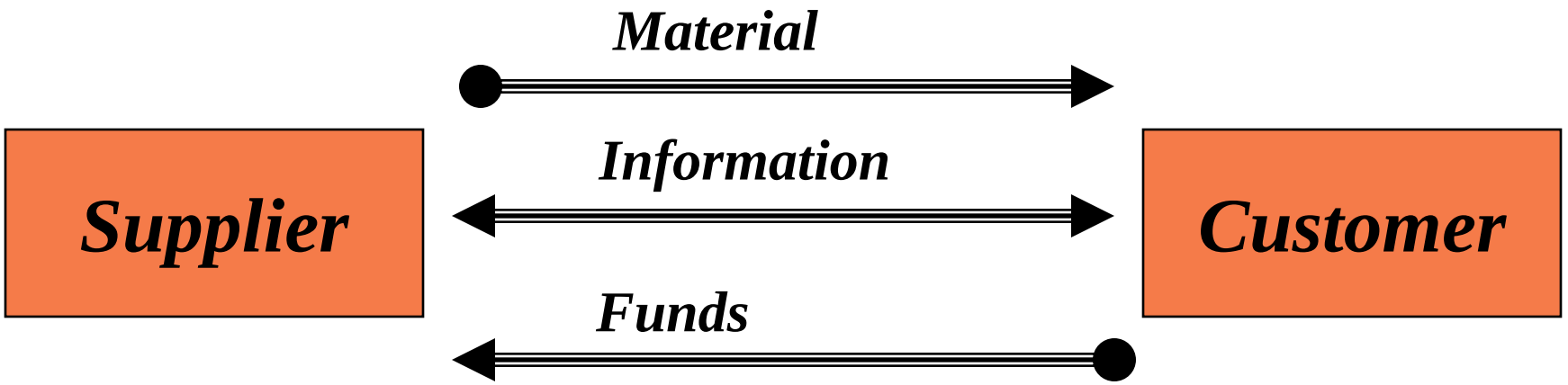
An example: Detergent supply chain



Cycle View of Supply Chains



Flows in a Supply Chain



The flows resemble a chain reaction.

Push vs Pull System

- What instigates the movement of the work in the system?

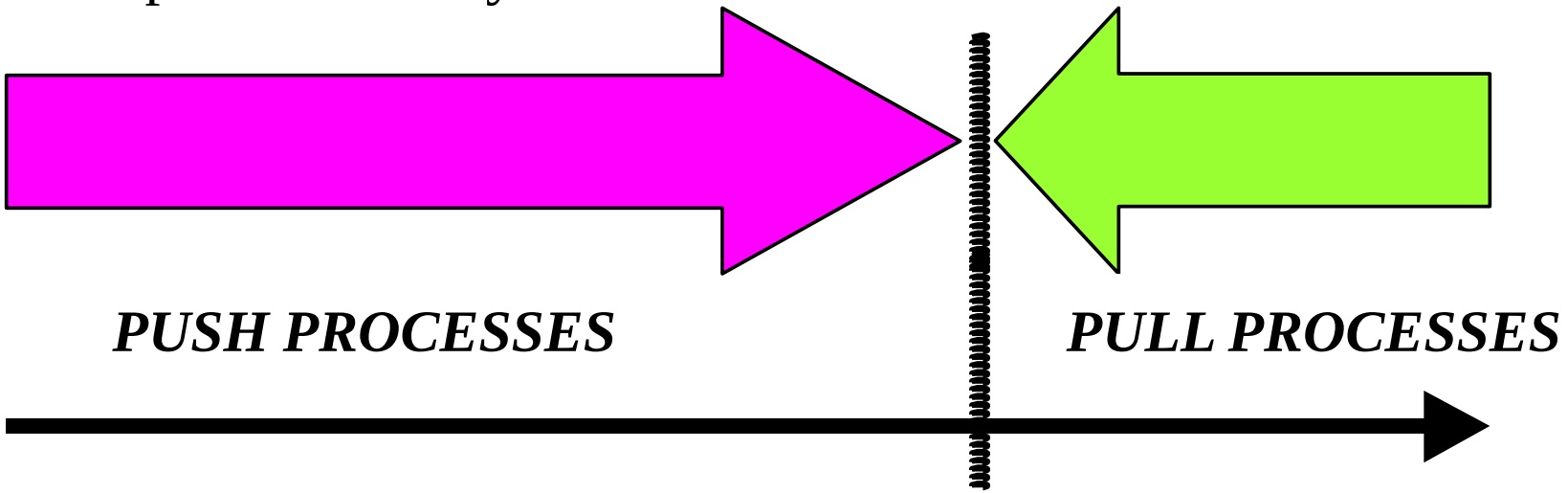
- In Push systems, work release is based on downstream demand forecasts
  - Keeps inventory to meet actual demand
  - Acts proactively
    - » e.g. Making generic job application resumes today (e.g.: exempli gratia)

- In Pull systems, work release is based on actual demand or the actual status of the downstream customers
  - May cause long delivery lead times
  - Acts reactively
    - » e.g. Making a specific resume for a company after talking to the recruiter

Push/Pull View of Supply Chains

Typically, Procurement, Manufacturing and Replenishment cycles

Typically, Customer Order Cycle



PUSH PROCESSES

PULL PROCESSES

Customer Order Arrives

Push-Pull boundary

Examples of Supply Chains

- Dell / Compaq, computer (assembly) industry
  - Dell buys some components for a product from its suppliers after that product is purchased by a customer. Extreme case of a pull process.
- Amazon / Barnes and Noble, bookstores
  - Amazon is strictly an online store. Amazon uses more pull processes.
- Zara / Benetton, apparel (=clothing) industry
  - Zara is a Spanish company selling apparel with a short design-to-sale cycle to avoid markdowns. Zara uses relatively more pull.
- Toyota / GM / Volkswagen, car manufacturers
  - Toyota provides reasonable quality at reasonable cost. Car manufacturing is mostly done as push process.

Summary

- **Components of supply chains.**
- **Significance of supply chain management.**
- **Push vs. Pull processes.**