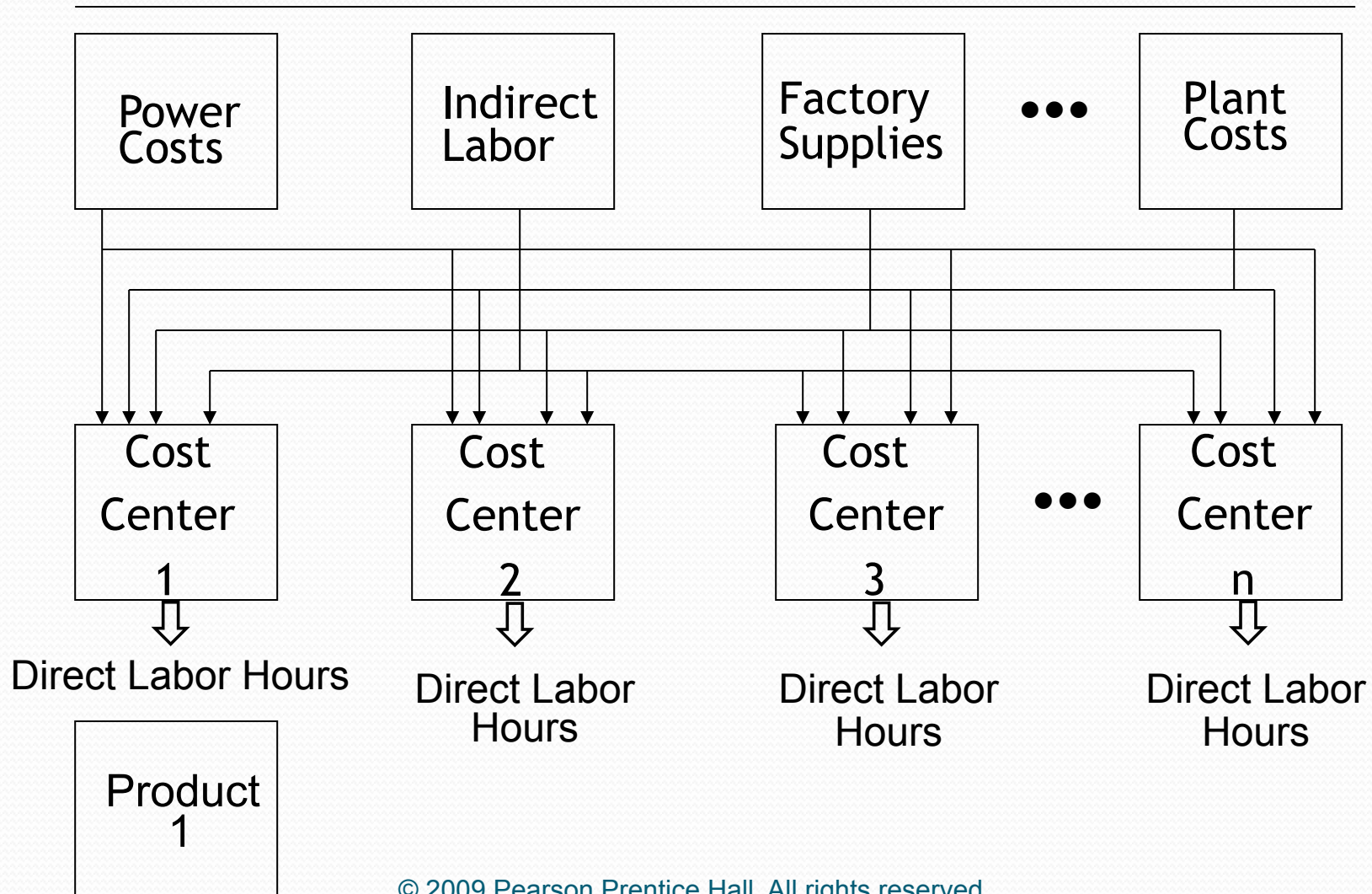


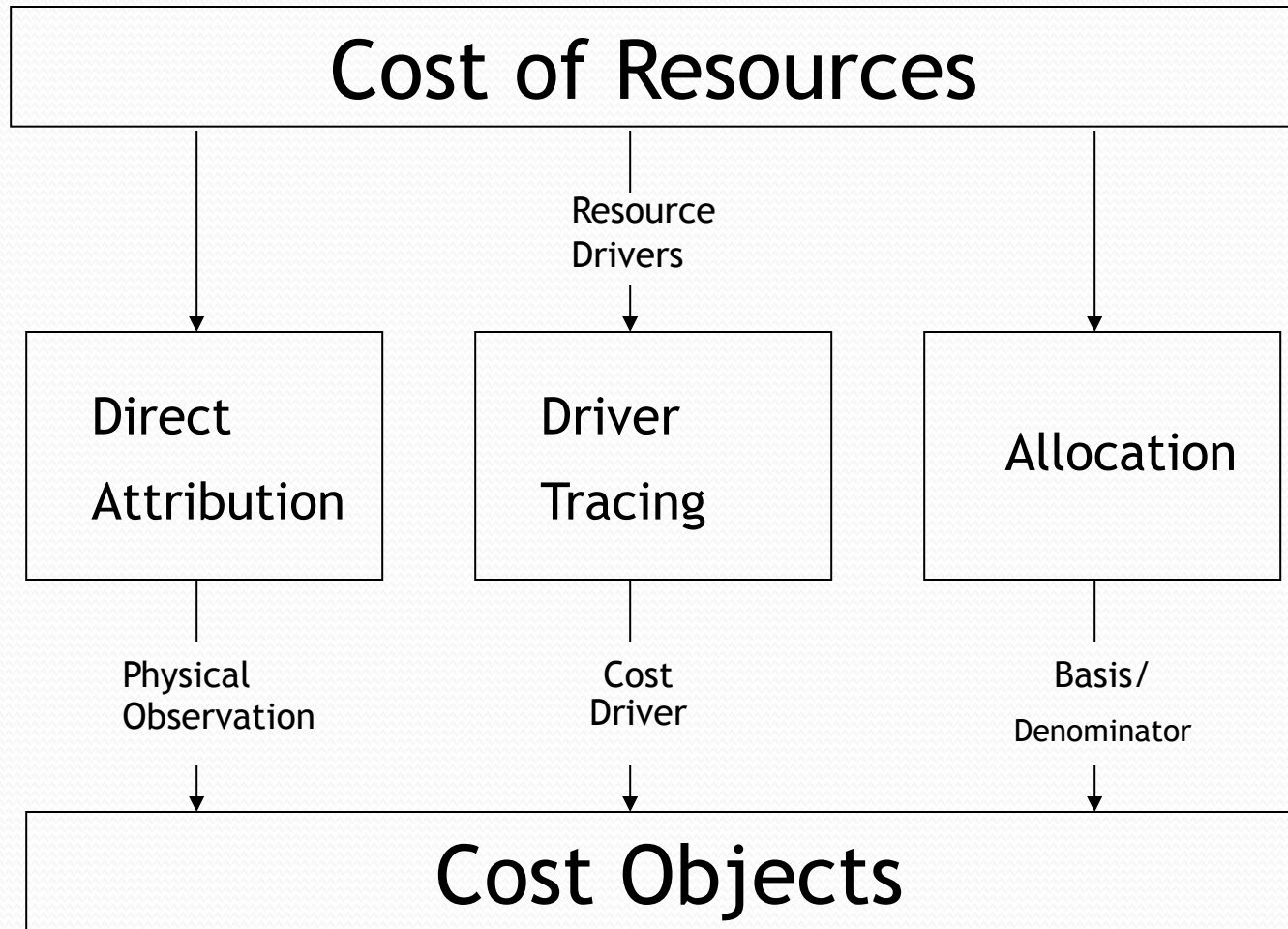
# Chapter 11

## Activity-Based Costing

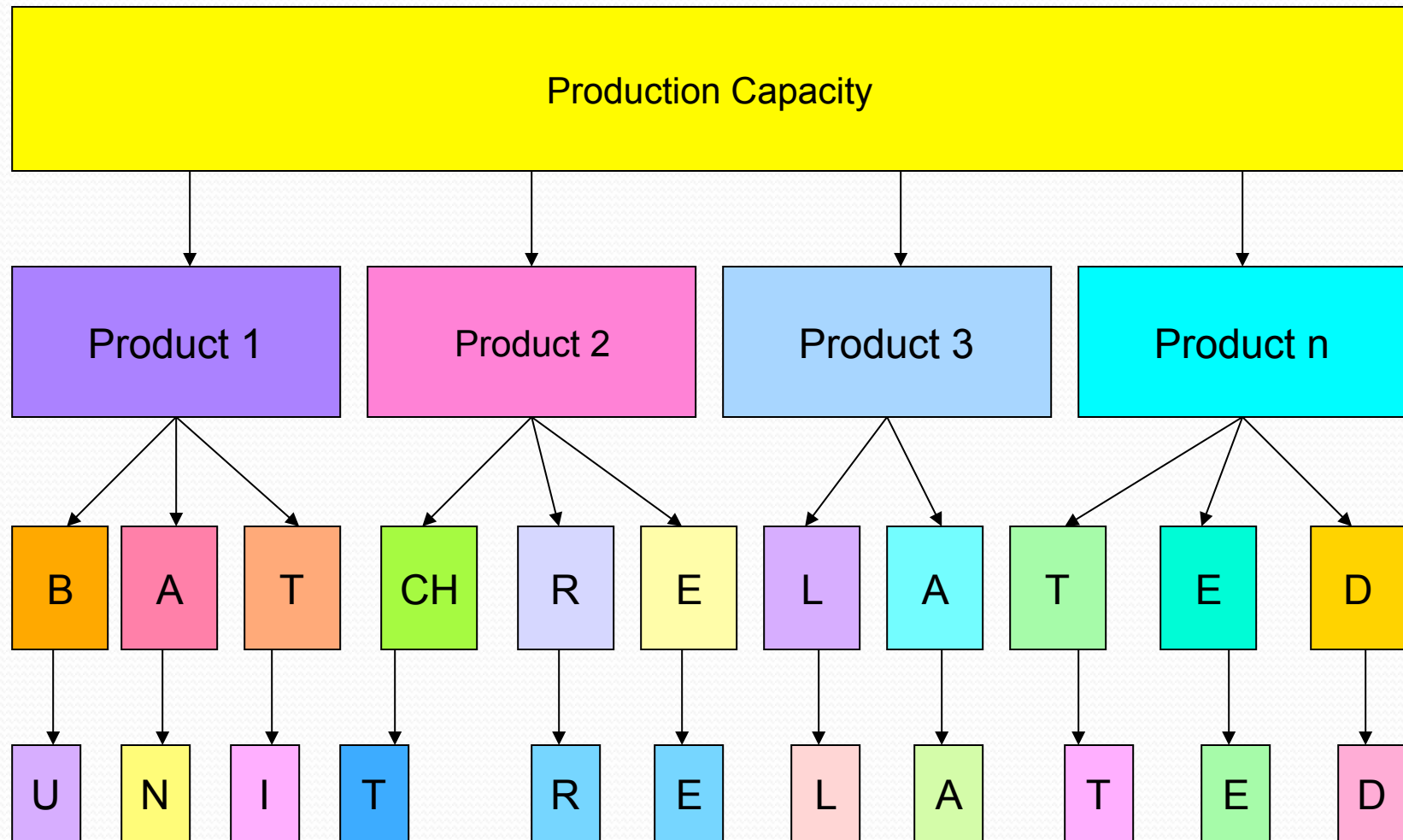
# The Two-Stage Progress Using Direct Labor Hours



# Cost of Resources



# Understanding Cost Behavior



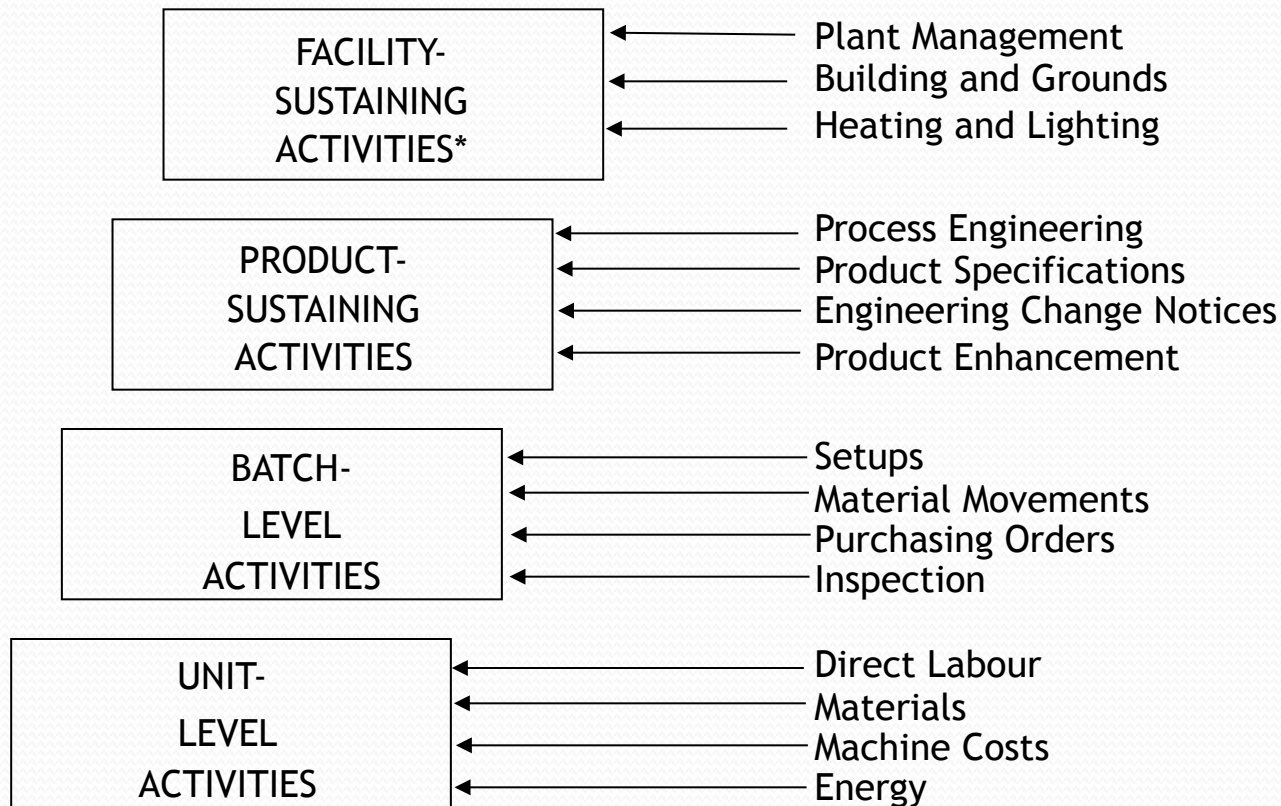
# Activity – Based Costing

An activity is any event or transaction that is a cost driver - that is, that acts as a causal factor in the incurrence of cost in an organization.

1. Machine set ups
2. Purchase orders
3. Quality inspections
4. Production orders (scheduling)
5. Engineering change orders
6. Shipments
7. Material receipts
8. Inventory movements
9. Maintenance requests
10. Scrap/rework orders
11. Machine time
12. Power consumed
13. Kilometers driven
14. Computer-hours logged
15. Beds occupied
16. Flight-hours logged

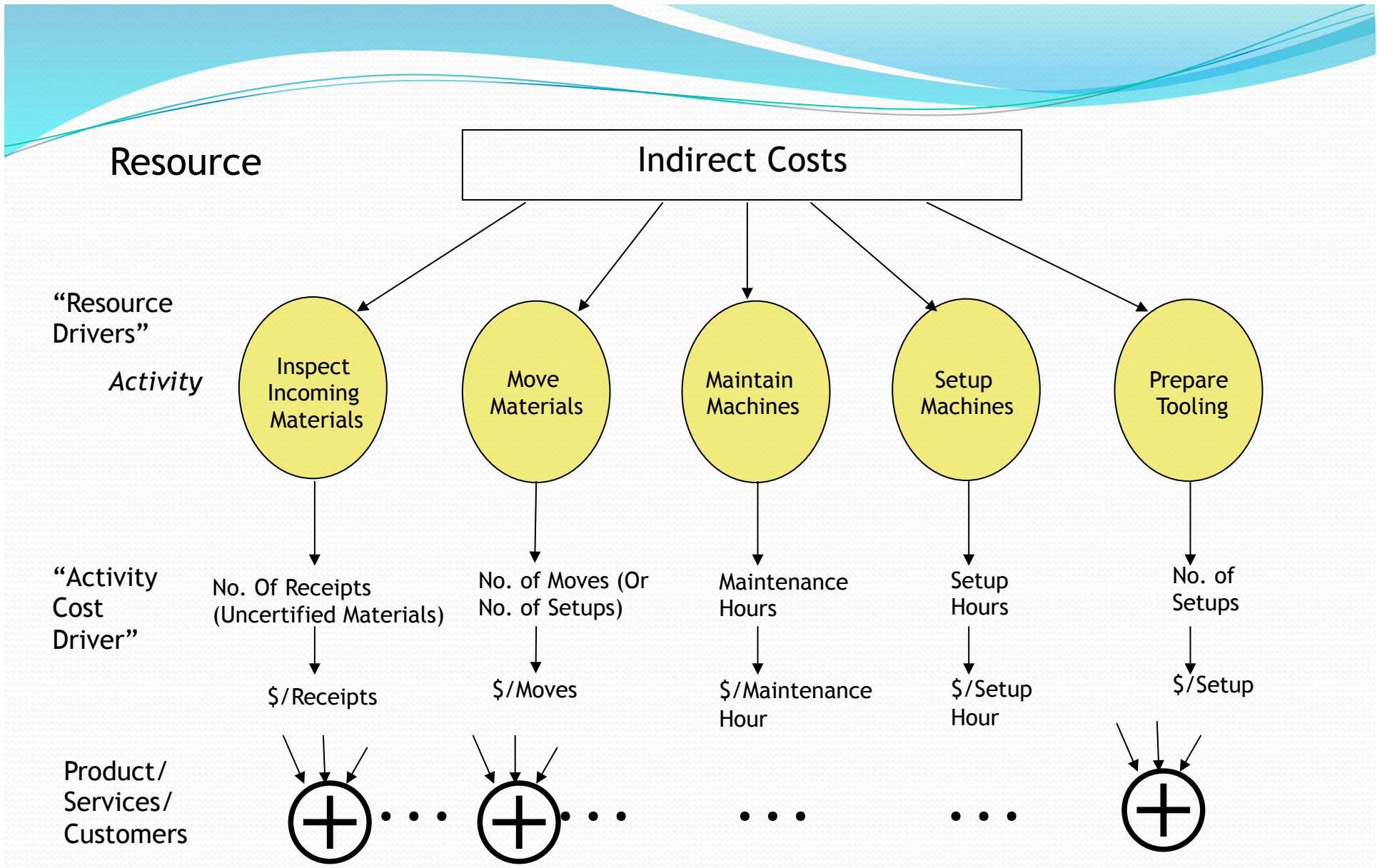
# The Hierarchy of Factory Operating Expenses

## Activity Expenses



\*Plant makes more than one product, this expense is allocated on the bases of value added.

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Activity-Based Costing: Expenses Flow from Resources to Activities to Products, Services, Customers

Salaries  
\$371,917

Energy  
\$118,069

Supplies  
\$76,745

Equipment  
\$23,614

Total \$590,345

Activity  
Based  
Costing

Salaries	Energy	Supplies	Equipment
Process customer orders			\$144,846
Purchase materials			\$136,320
Schedule production			\$72,143
Move material			\$49,945
Set up machines			\$47,599
Inspect items			\$45,235
Maintain product information			\$27,747
Perform engineering changes			\$17,768
Expedite orders			\$16,704
Introduce new products			\$16,648
Resolve quality problems			\$15,390

Total \$590,345



# The Alcatraz Machine Shop

		<b>Material Handling</b>	<b>Prod'cion Sched</b>	<b>Setups</b>	<b>Machining</b>	<b>Finishing</b>	<b>Packaging</b>
Vanessa		20%	70%			10%	
Peter		-	50%		50%		
Pierre				100%			
Pietro		20%		15%	10%	10%	45%
John							100%
Mary		20%	20%	20%	20%	20%	
Mohammad		10%	40%	10%		10%	30%
Etc.							

# The Alcatraz Machine Shop

<b>Manufacturing Overhead Costs</b>	<b>Total</b>	<b>Material Handling</b>	<b>Prod'cion Sched</b>	<b>Setups</b>	<b>Machining</b>	<b>Finishing</b>	<b>Packaging</b>
Indirect labor	\$250,000						
Indirect material	450,000						
Electricity	450,000						
Insurance	150,000						
Dep'tion Equip.	500,000						
Rent	600,000						
Fringe benefits	100,000						
Patent rights	1,000,000						
Dep. Autom. Equip.	1,500,000						
Miscellaneous	324,400						
<b>Total MOH</b>	<b>\$5,324,400</b>	<b>\$258,400</b>	<b>\$114,000</b>	<b>\$160,000</b>	<b>\$3,510,000</b>	<b>\$1,092,000</b>	<b>\$190,000</b>
<b>POR</b>	<b>\$97.52/DLH</b>	<b># parts</b>	<b>#POs</b>	<b># setups</b>	<b>MHrs</b>	<b>DLHrs</b>	<b># OS</b>
		646,000	570	200	117,000	54,600	3,800
<b>Cost/u of cost driver</b>		<b>\$0.40/part</b>	<b>\$200/PO</b>	<b>\$800/setup</b>	<b>\$30/MH</b>	<b>\$20/DLH</b>	<b>\$50/OS</b>

# The Alcatraz Machine Shop

## (Production requirements per product line)

	<b>Quality</b>	<b>Superior</b>	<b>Superb</b>
Units to be produced	10,000	5,000	800
Direct materials cost per unit	\$80	\$50	\$110
Direct labor cost per unit	30	75	180
No. of parts per unit	30	50	120
DLHrs per unit	2	5	12
MHrs per unit	7	7	15
Production Orders	300	70	200
Production setups	100	50	50
Orders shipped	1,000	2,000	800

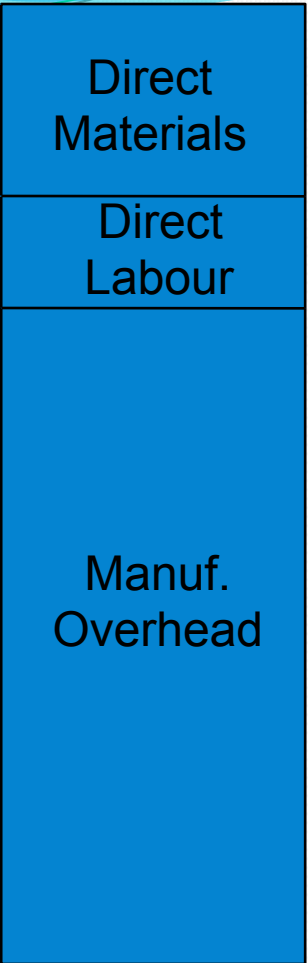
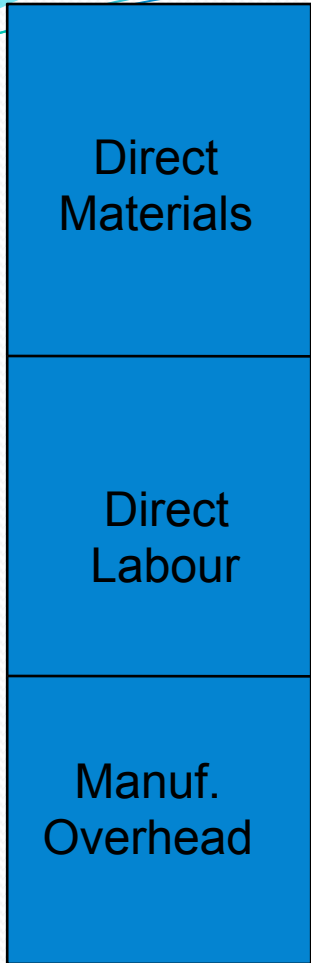
# The Alcatraz Machine Shop

## (Costs per unit using ABC costing)

	<b>Total</b>	<b>Quality</b>	<b>Superior</b>	<b>Superb</b>
Direct materials cost per unit		\$800,000	\$250,000	\$88,000
Direct labor cost per unit		300,000	375,000	144,000
Material handling	\$258,400	120,000	100,000	38,400
Production scheduling	114,000	60,000	14,000	40,000
Setups	160,000	80,000	40,000	40,000
Machining	3,510,000	2,100,000	1,050,000	360,000
Finishing	1,092,000	400,000	500,000	192,000
Packaging	190,000	50,000	100,000	40,000
Total manufacturing costs	\$5,324,400	\$3,910,000	\$2,429,000	\$942,400
Manufacturing costs per unit		\$391.00	\$485.80	\$1,178.00

# The Alcatraz Machine Shop

	Quality	Superior	Superb
Traditional Costing	\$305.00	\$613.00	\$1,460.00
ABC	391.00	485.80	1,178.00
Difference	\$86.00 Under	\$127.20 Over	\$282.00 Over



Plant-Wide Rate

Departmental Rates

ABC One Activity

ABC Micro and Macro Activities

# Activity-Based Costing

1. Identify the activities
  1. Which activities do employees do?
2. Identify each activity costs
3. Identify the cost driver for each activity
4. Identify the annual capacity required per cost driver
5. Identify the unit cost per cost driver
6. Identify the actual consumption of each activity by each product
7. Determine the unit product cost

# Activity-Based Management

## 1. Identify the activities

### 1. Which activities do employees do?

1) Compare the activities performed by the employees with those that they should perform;

2) Identify the activities which add value and those which do not;

3) Eliminate the non-value added activities;

4) Design a new manner in which the same activities may be performed in a more effective and efficient way;

4) Establish a permanent monitoring system as to how these activities are being performed;

5) Implement new ways, more effective and efficient to perform these activities.



# Activity-Based Management

1. Identify the activities
  1. Which activities do employees do?
2. Identify each activity costs
  - 1) Identify the costs which can be reduced or eliminated;
  - 2) Establish a permanent monitoring system to revise these activities' costs;
  - 3) Implement new ways, more effective and efficient to perform these activities.
3. Identify the cost driver for each activity
  - 1) Ensure that the cost driver with the highest  $R^2$  does have a cause-effect relationship.

# Activity-Based Management

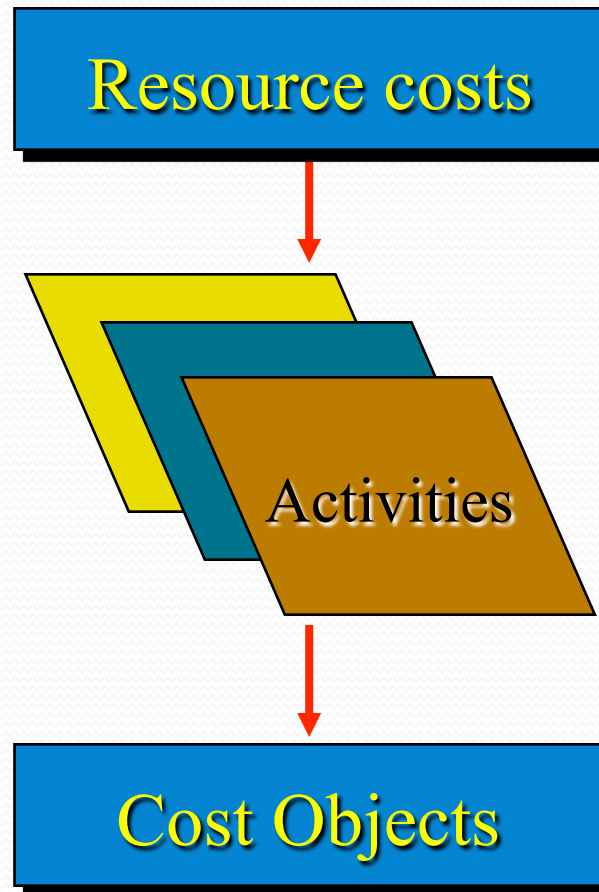
1. Identify the activities
  1. Which activities do employees do?
2. Identify each activity costs
3. Identify the cost driver for each activity
4. Identify the annual capacity required per cost driver
  - 1) What types of personnel do we need to ensure the annual capacity required.
5. Identify the unit cost per cost driver (These are not allocating rates)

# Activity-Based Management

1. Identify the activities
  1. Which activities do employees do?
2. Identify each activity costs
3. Identify the cost driver for each activity
4. Identify the annual capacity required per cost driver
5. Identify the unit cost per cost driver
6. Identify the actual consumption of each activity by each product
  - 1) Redesign the product so that it require les quantity of these activities

# Two-Dimensional ABC and Activity-Based Management

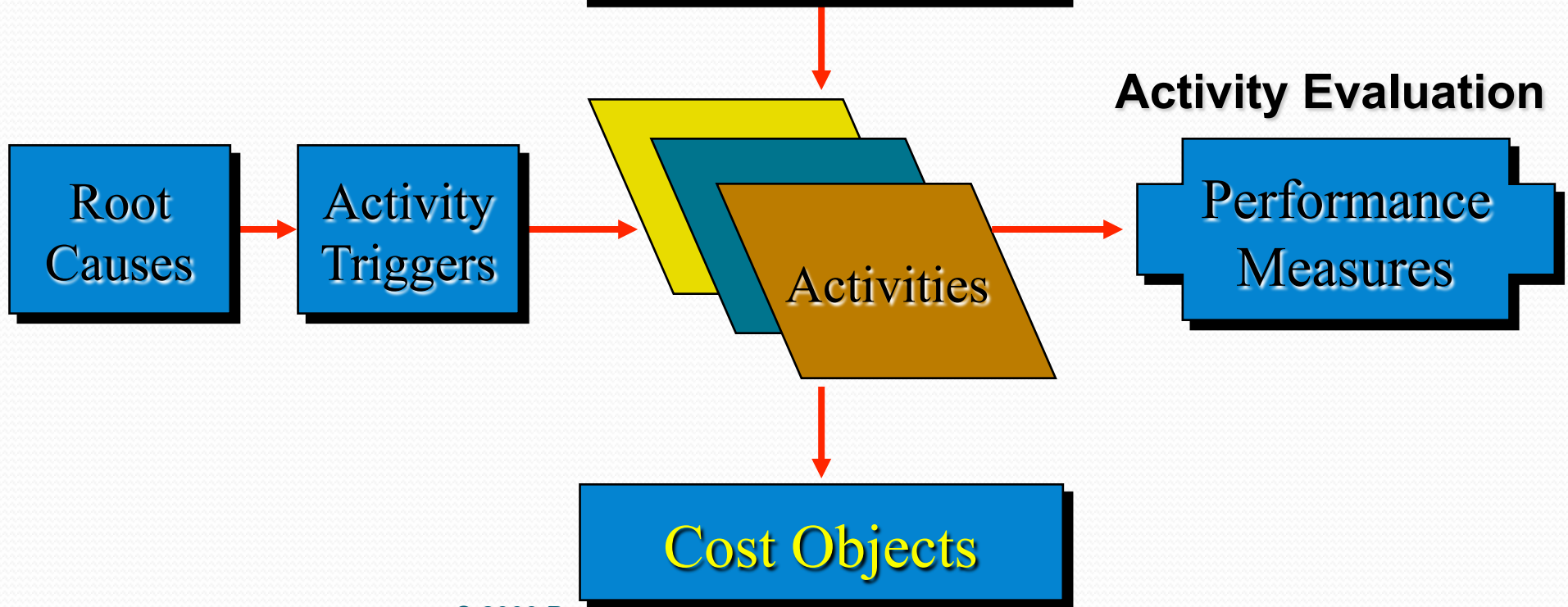
## Cost Assignment View



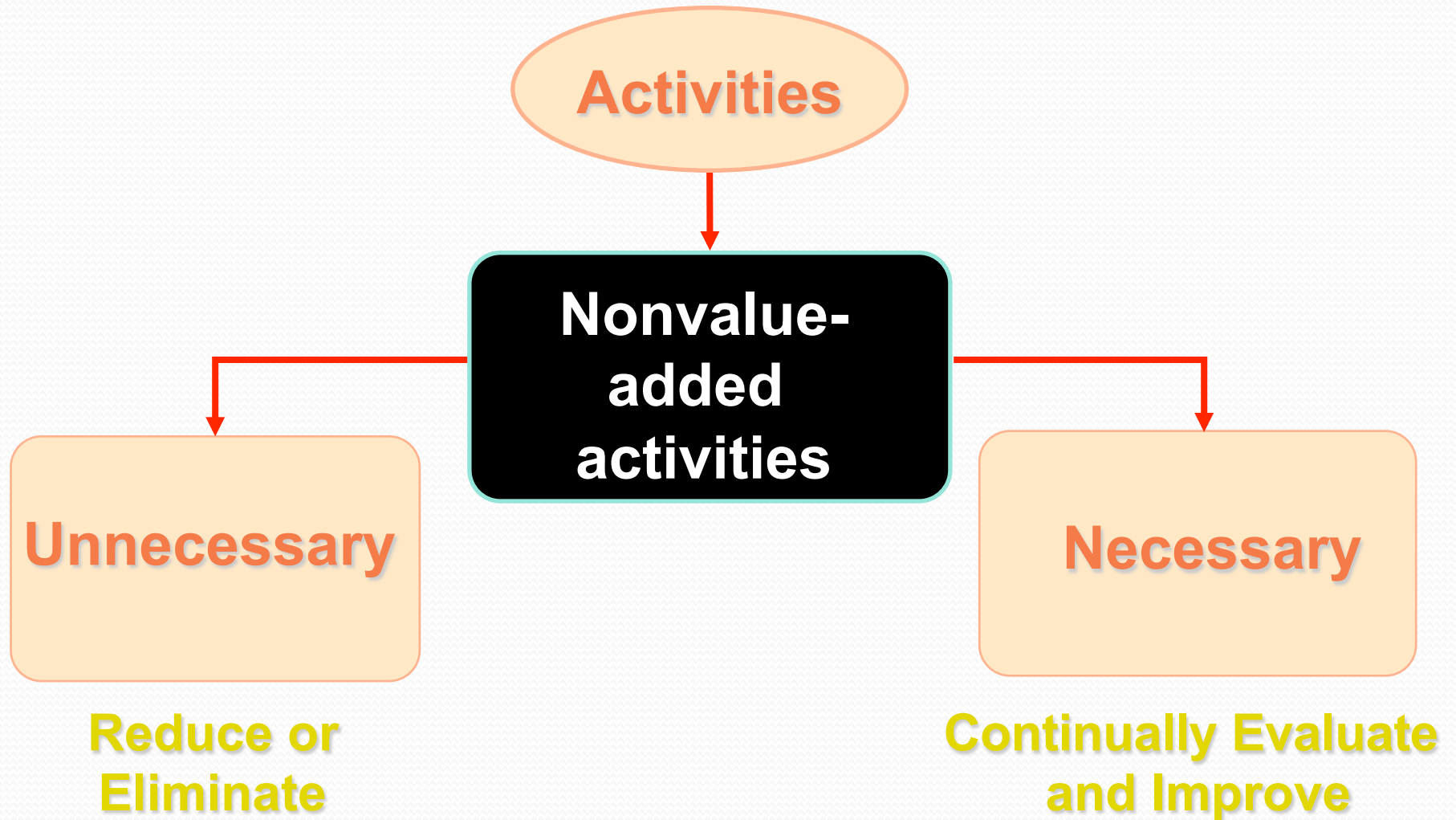
# Two-Dimensional ABC and Activity-Based Management

## Process View Activity Analysis

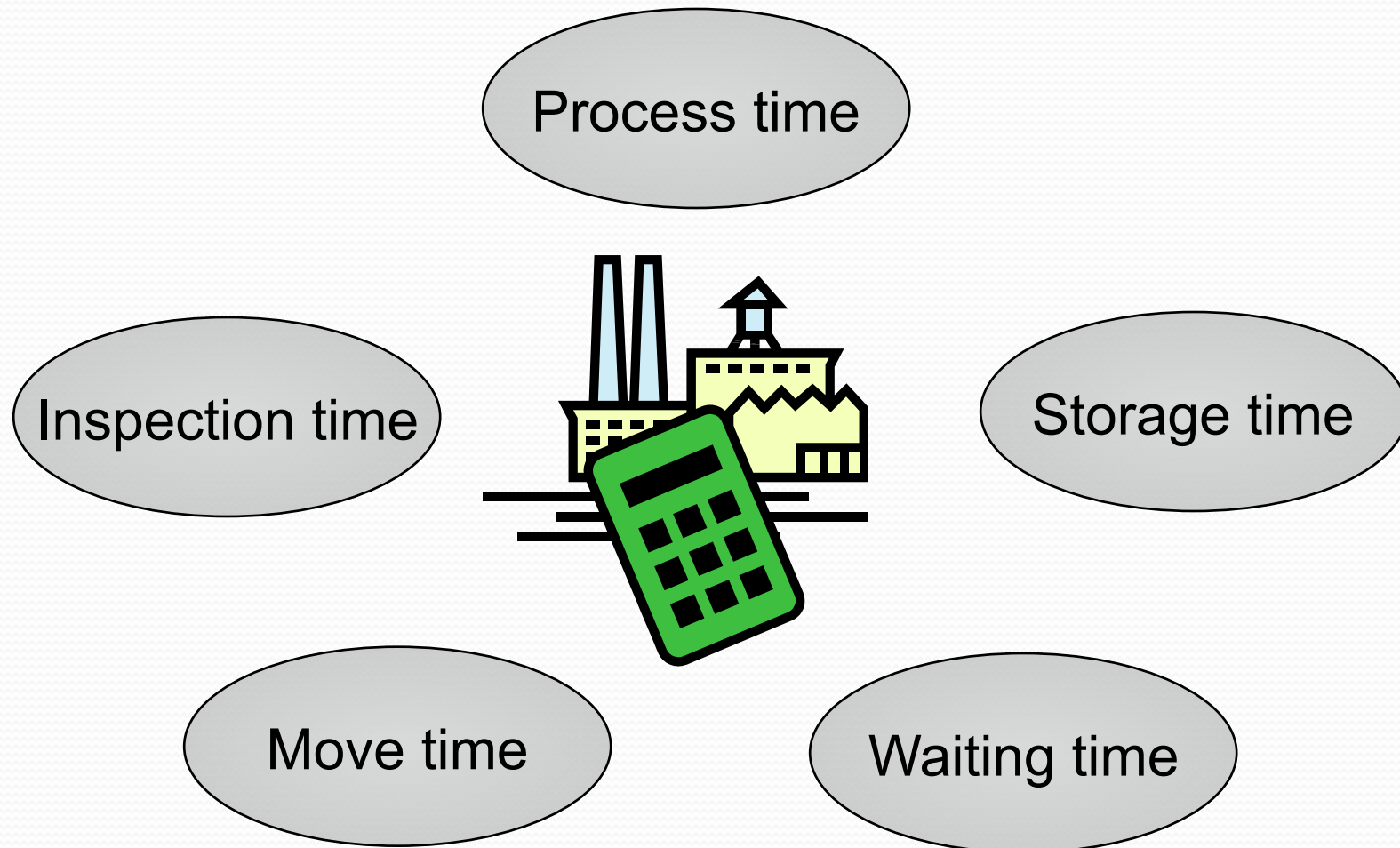
Resource costs



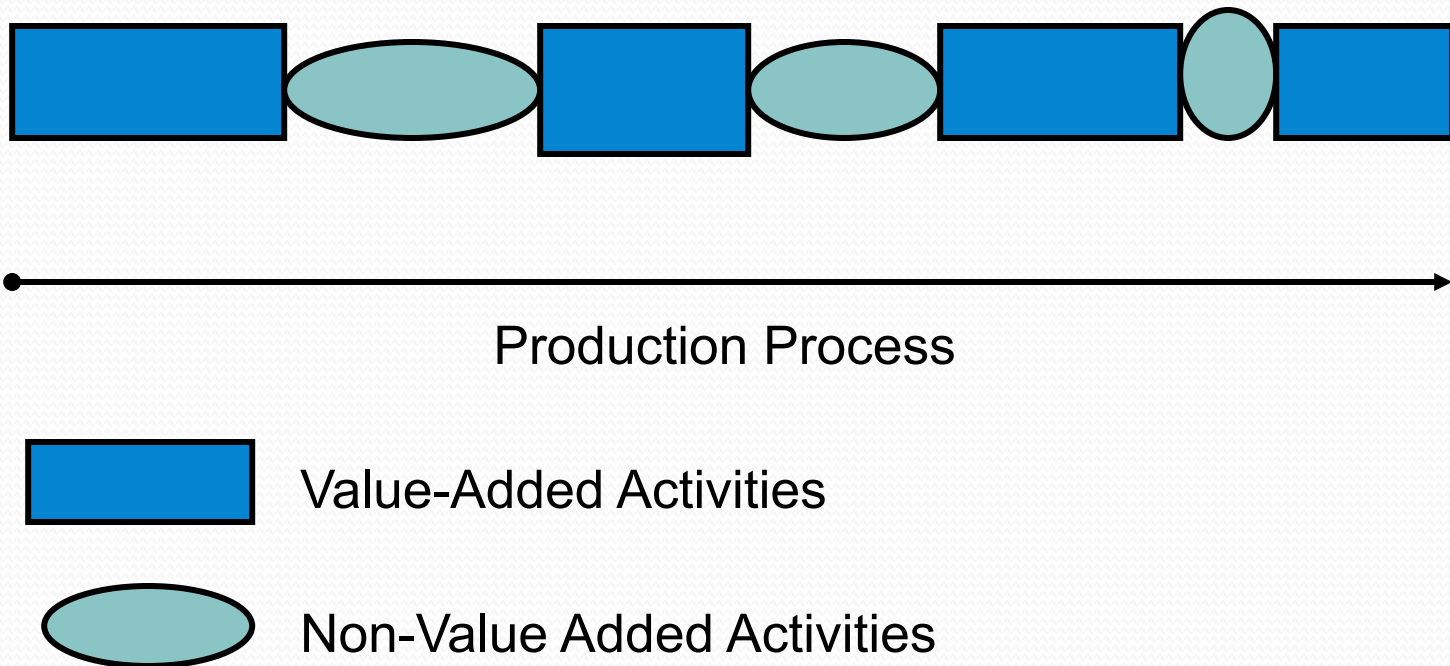
# Elimination of Non-Value-Added Costs



# Using ABM to Eliminate Non-Value-Added Activities and Costs

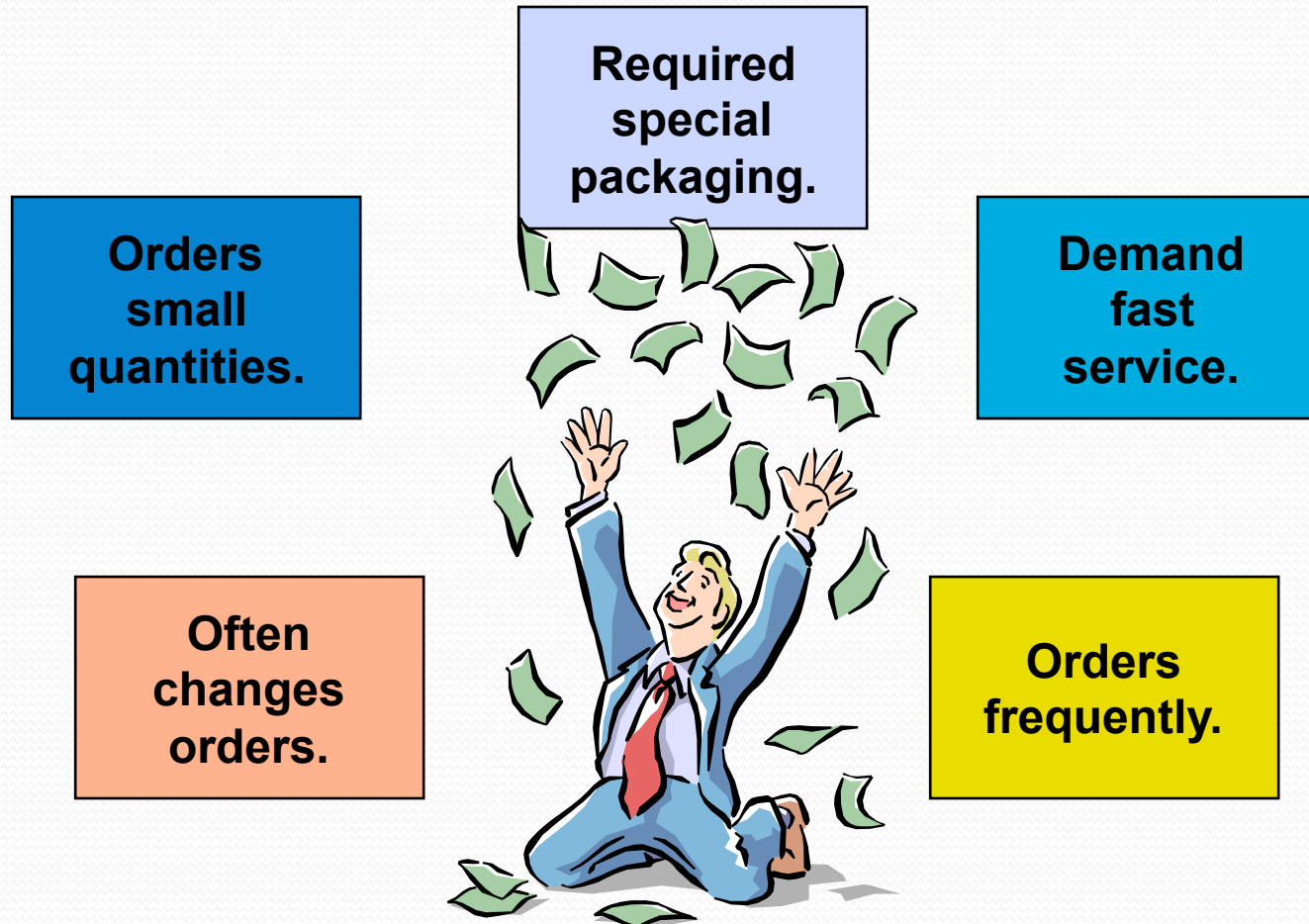


# Activity-Based Management





# Customer Profitability Analysis



**A costly customer**

# Activity-Based Management in the Service Industry

Customer  
Profitability  
Analysis



Activity  
Analysis

# Just-in-Time Inventory and Production Management

No materials are purchased and no products are manufactured until they are needed.



The primary goal of a JIT production system is to reduce or eliminate inventories at every stage of production.

# JIT Purchasing

Long-term contracts with suppliers.

Only a few suppliers.

Parts delivered in small lots.

Grouped payments to vendor.

Minimal inspection of materials.