Chapter 11

Segment Reporting and Balanced Scorecard

Decentralization in Organizations

Decentralization in Organizations

Disadvantages of Decentralization

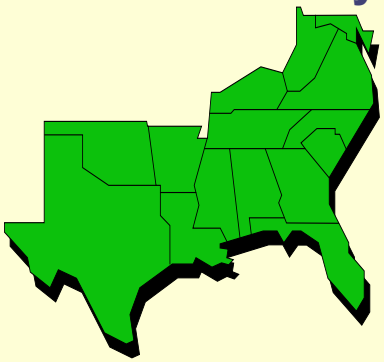
- May be a lack of coordination among autonomous managers.
- Lower-level managers may make decisions without seeing the "big picture."
- Lower-level manager's objectives may not be those of the organization.
- May be difficult to spread innovative ideas in the organization.

Decentralization and Segment Reporting

A **segment** is any part or activity of an organization about which a manager seeks cost, revenue, or profit data. A segment can be . . .

An Individual Store

A Sales Territory



A Service Center

Cost, Profit, and Investments Centers

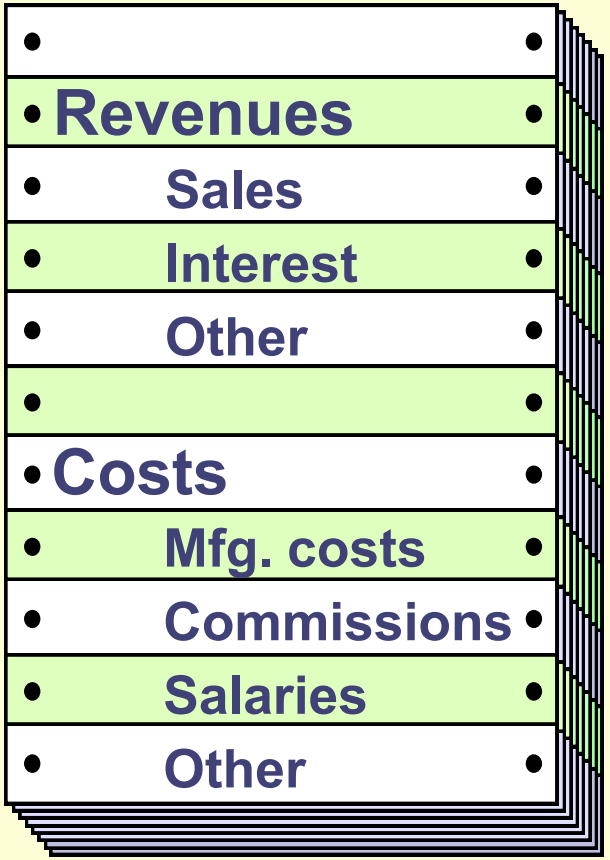
Cost Center

A segment whose manager has control over costs, but not over revenues or investment funds.

Cost, Profit, and Investments Centers

Profit Center

A segment whose manager has control over **both** costs and revenues, but no control over investment funds.



Cost, Profit, and Investments Centers

Investment Center

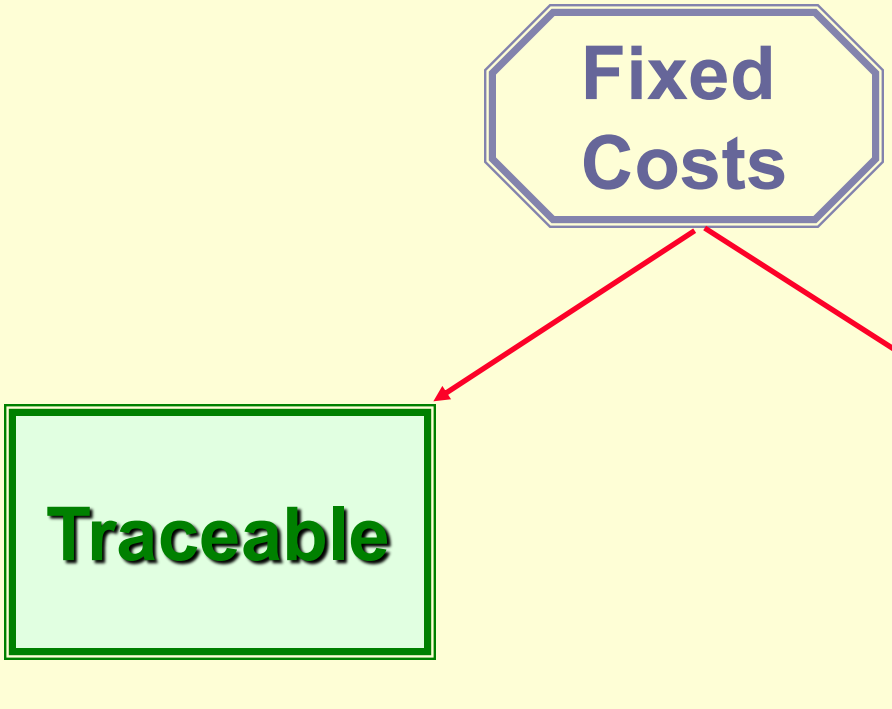
A segment whose manager has control over costs, revenues, and investments in operating assets.

Corporate Headquarters

Cost, Profit, and Investments Centers

Cost, profit, and investment centers are all known as responsibility centers.

Traceable and Common Costs



Don't allocate common costs.

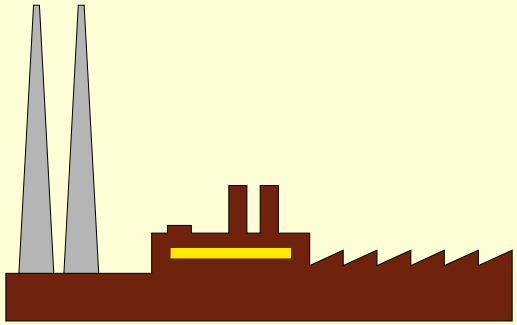
Costs arise because of the existence of a particular segment

A cost that supports more than one segment but that would not go away if any particular segment were eliminated.

Identifying Traceable Fixed Costs

Traceable costs would disappear over time if the segment itself disappeared.

No computer division means . . .

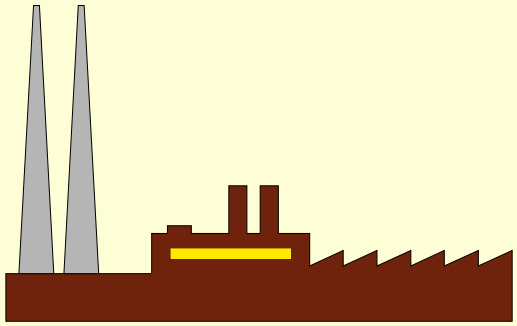


No computer division manager.

Identifying Common Fixed Costs

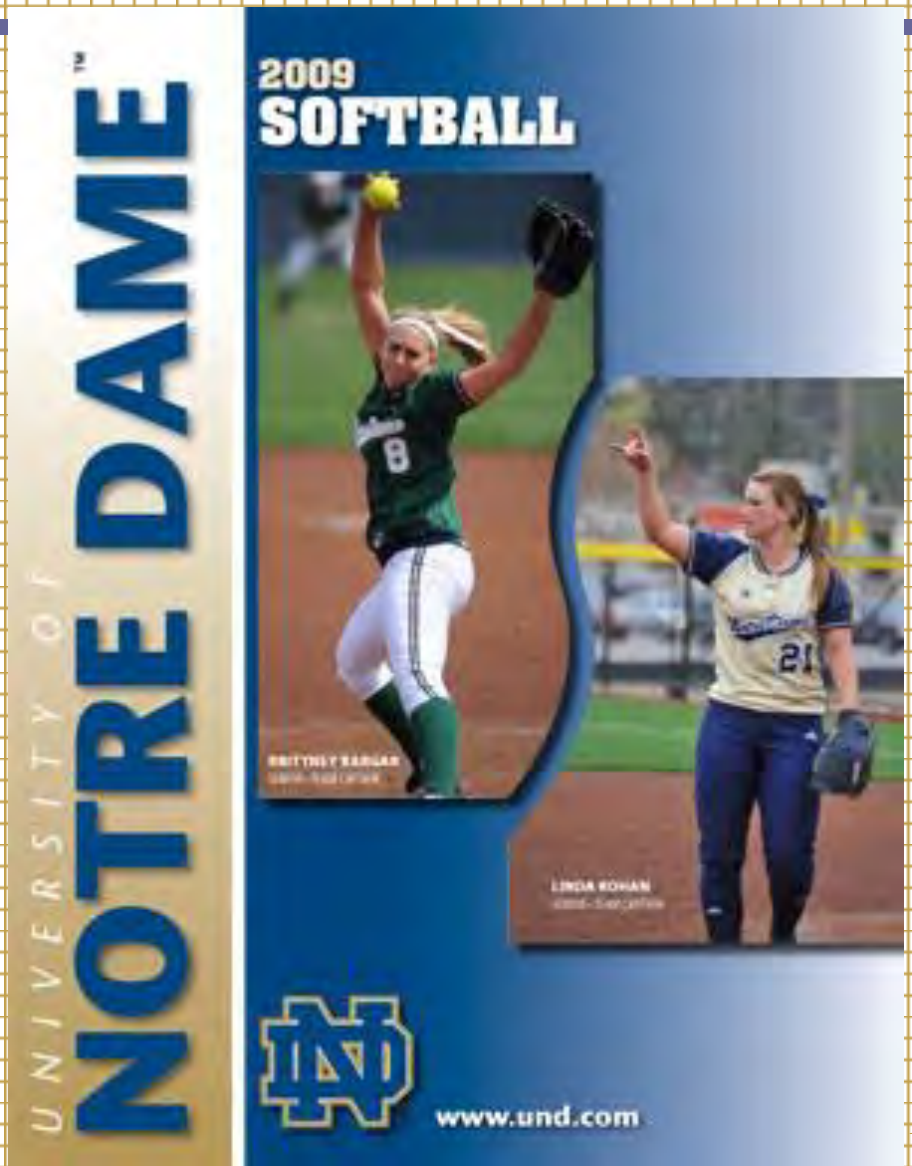
Common costs arise because of overall operation of the company and are not due to the existence of a particular segment.

No computer division but . . .



We still have a company president.

Eliminate a Sport ?



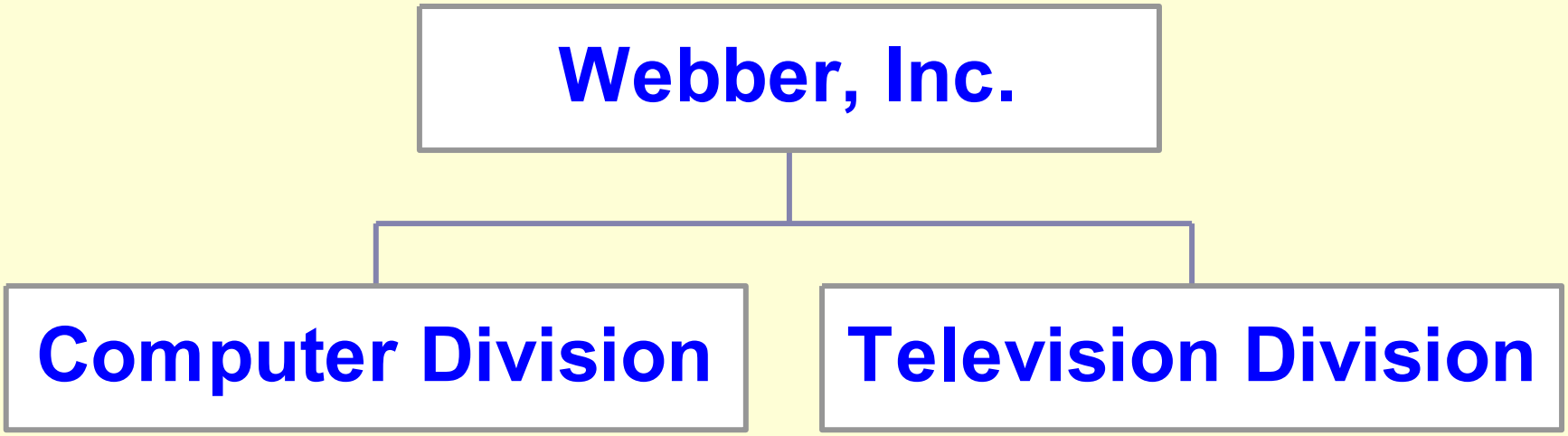
Traceable VARIABLE Costs ...

Traceable Fixed Costs ...

COMMON Fixed Costs ?

Levels of Segmented Statements

Webber, Inc. has two divisions.



Let's look more closely at the Television Division's income statement.

Levels of Segmented Statements

Our approach to segment reporting uses the contribution format.

Income Statement Contribution Margin Format Television Division	
Sales	$ 300,000
Variable COGS	120,000
Other variable costs	30,000
Total variable costs	150,000
Contribution margin	150,000
Traceable fixed costs	90,000
Division margin	$ 60,000

Cost of goods sold consists of variable manufacturing costs.

Fixed and variable costs are listed in separate sections.

Levels of Segmented Statements

Our approach to segment reporting uses the contribution format.

Income Statement Contribution Margin Format Television Division	
Sales	$300,000
Variable COGS	120,000
Other variable costs	30,000
Total variable costs	150,000
Contribution margin	150,000
Traceable fixed costs	90,000
Division margin	$ 60,000

Segment margin is Television's contribution to profits.

Levels of Segmented Statements

Let's see how the Television Division fits into Webber, Inc.

Levels of Segmented Statements

Income Statement			
	Company	Television	Computer
Sales	$ 500,000	$ 300,000	$ 200,000
Variable costs	230,000	150,000	80,000
CM	270,000	150,000	120,000
Traceable FC	170,000	90,000	80,000
Division margin	100,000	$ 60,000	$ 40,000
Common costs			
Net operating income			

Levels of Segmented Statements

Income Statement			
	Company	Television	Computer
Sales	$ 500,000	$ 300,000	$ 200,000
Variable costs	230,000	150,000	80,000
CM	270,000	150,000	120,000
Traceable FC	170,000	90,000	80,000
Division margin	100,000	$ 60,000	$ 40,000
Common costs	25,000		
Net operating income	$ 75,000		

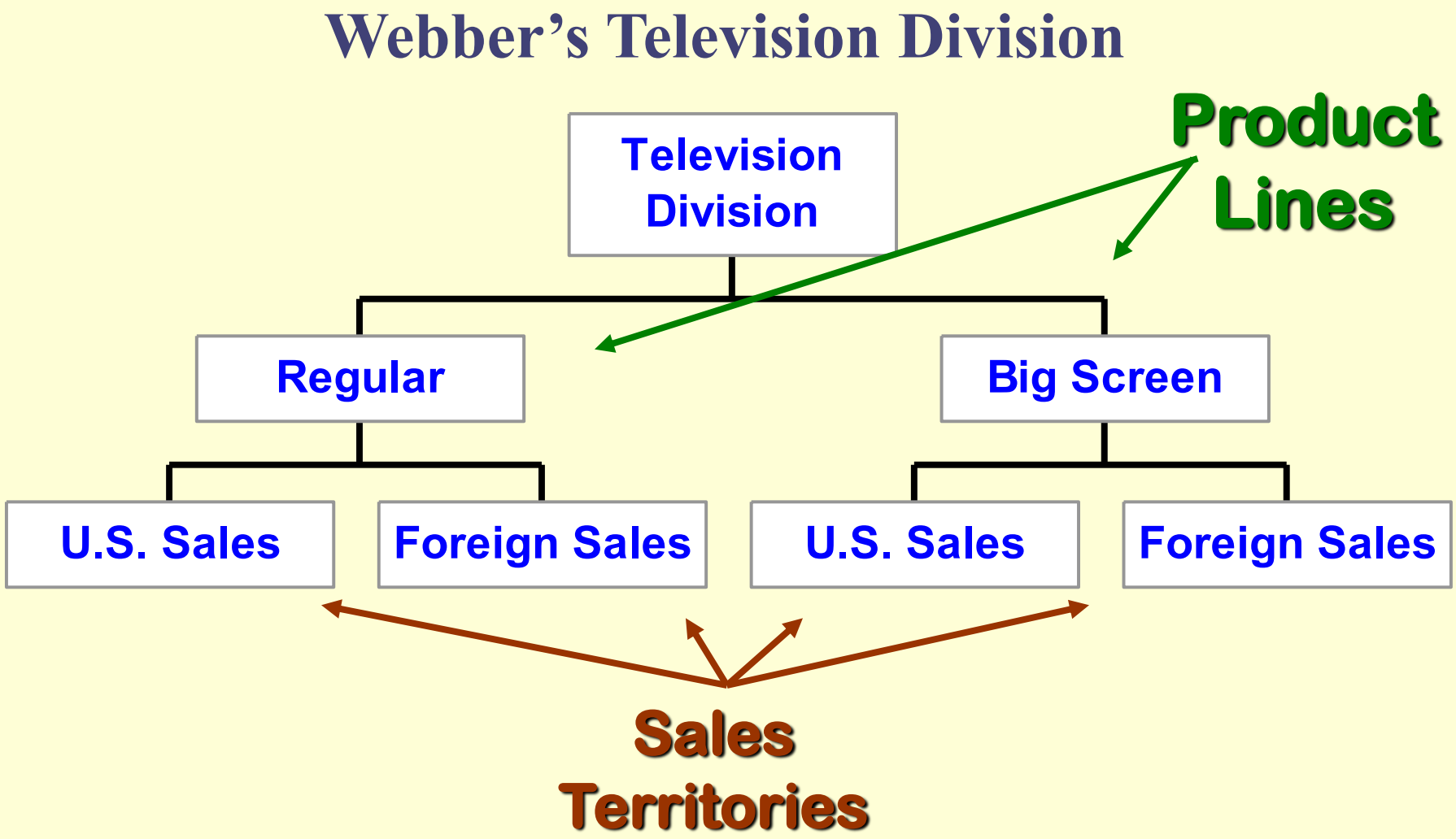
Common costs should not be allocated to the divisions. These costs would remain even if one of the divisions were eliminated.

Traceable Costs Can Become Common Costs

Fixed costs that are traceable on one segmented statement can become common if the company is divided into smaller segments.

Let's see how this works!

Traceable Costs Can Become Common Costs



Traceable Costs Can Become Common Costs

Income Statement			
	Television Division	Regular	Big Screen
Sales		$ 200,000	$ 100,000
Variable costs		95,000	55,000
CM		105,000	45,000
Traceable FC		45,000	35,000
Product line margin		$ 60,000	$ 10,000
Common costs			
Divisional margin			

We obtained the following information from the Regular and Big Screen segments.

Traceable Costs Can Become Common Costs

Income Statement			
	Television Division	Regular	Big Screen
Sales	$ 300,000	$ 200,000	$ 100,000
Variable costs	150,000	95,000	55,000
CM	150,000	105,000	45,000
Traceable FC	80,000	45,000	35,000
Product line margin	70,000	$ 60,000	$ 10,000
Common costs	10,000		
Divisional margin	$ 60,000		

Fixed costs directly traced to the Television Division

$80,000 + $10,000 = $90,000

Traceable Costs Can Become Common Costs

Income Statement			
	Television Division	Regular	Big Screen
Sales	$ 300,000	$ 200,000	$ 100,000
Variable costs	150,000	95,000	55,000
CM	150,000	105,000	45,000
Traceable FC	80,000	45,000	35,000
Product line margin	70,000	$ 60,000	$ 10,000
Common costs	10,000		
Divisional margin	$ 60,000		

Of the $90,000 cost directly traced to the Television Division, $45,000 is traceable to Regular and $35,000 traceable to Big Screen product lines.

Traceable Costs Can Become Common Costs

Income Statement			
	Television Division	Regular	Big Screen
Sales	$ 300,000	$ 200,000	$ 100,000
Variable costs	150,000	95,000	55,000
CM	150,000	105,000	45,000
Traceable FC	80,000	45,000	35,000
Product line margin	70,000	$ 60,000	$ 10,000
Common costs	10,000		
Divisional margin	$ 60,000		

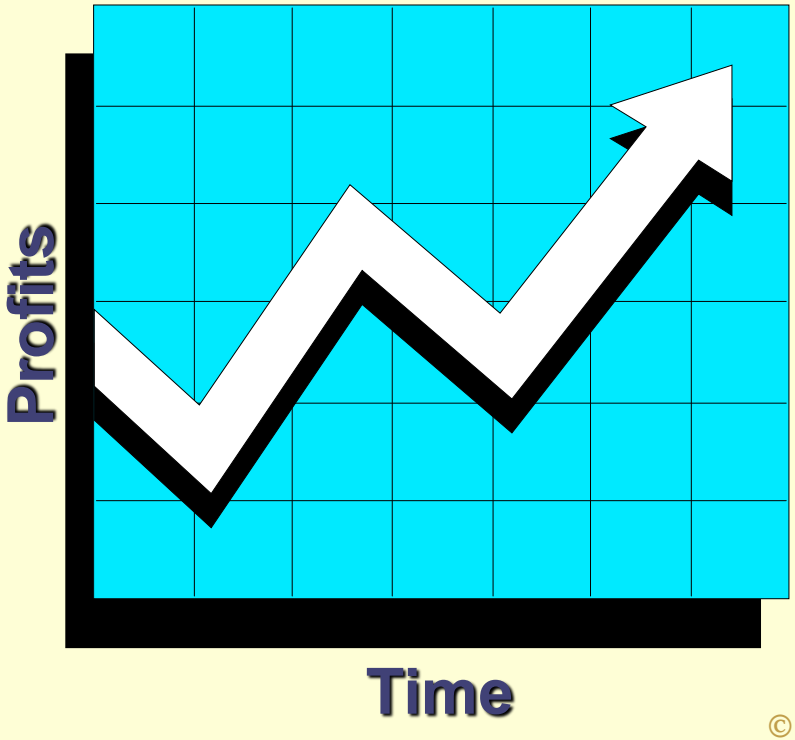
The remaining $10,000 cannot be traced to either the Regular or Big Screen product lines.

Common Fixed Costs.....


Note Saint Shirley and date in attendance !
TRACEABLE Fixed Costs.....

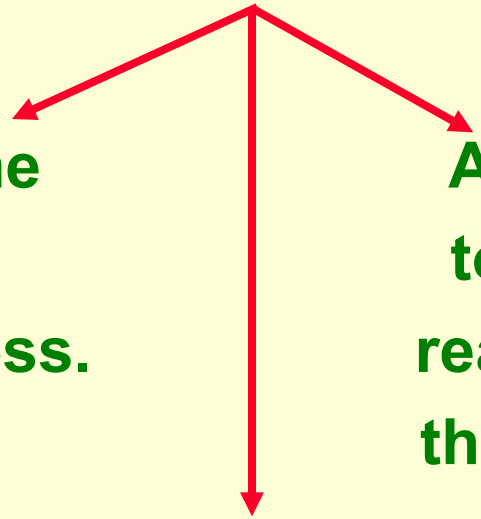
Segment Margin

The segment margin is the best gauge of the long-run profitability of a segment.



Hindrances to Proper Cost Assignment

The Problems



Omission of some costs in the assignment process.

Assignment of costs to segments that are really common costs of the entire organization.

The use of inappropriate methods for allocating costs among segments.

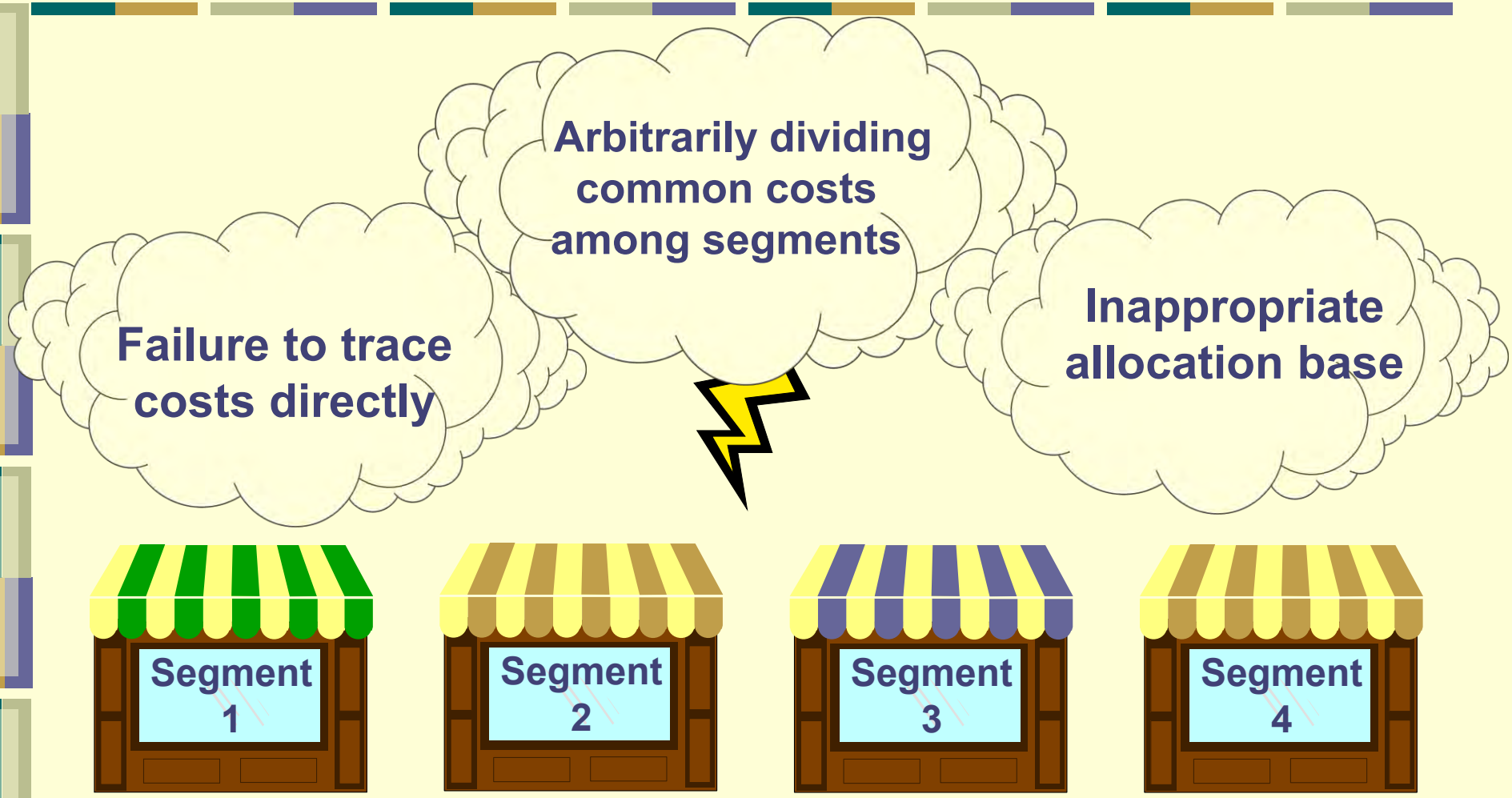
Omission of Costs

Costs assigned to a segment should include all costs attributable to that segment from the company's entire value chain.

Business Functions Making Up The Value Chain

R&D	Product Design	Manufacturing	Marketing	Distribution	Customer Service

Inappropriate Methods of Allocating Costs Among Segments



Allocations of Common Costs

Income Statement			
	Haglund's Lakeshore	Bar	Restaurant
Sales	$ 800,000	$ 100,000	$ 700,000
Variable costs	310,000	60,000	250,000
CM	490,000	40,000	450,000
Traceable FC	246,000	26,000	220,000
Segment margin	244,000	$ 14,000	$ 230,000
Common costs	200,000		
Profit	$ 44,000		

Quick Check ✓

How much of the common fixed cost of $200,000 can be avoided by eliminating the bar?

a. None of it.

b. Some of it.

c. All of it.

Quick Check ✓

How much of the common fixed cost of $200,000 can be avoided by eliminating the bar?

a. None of it.

b. Some of it.

c. All of it.

A common fixed cost cannot be eliminated by dropping one of the segments.

Quick Check ✓

How much of the common fixed cost of $200,000 can be avoided by going out of business entirely?

a. None of it.

b. Some of it.

c. All of it.

Quick Check ✓

How much of the common fixed cost of $200,000 can be avoided by going out of business entirely?

a. None of it.

b. Some of it.

c. All of it.

A common fixed cost can be eliminated if all of the segments it supports are eliminated.

Quick Check ✓

Suppose square feet is used as the basis for allocating the common fixed cost of $200,000. How much would be allocated to the bar if the bar occupies 1,000 square feet and the restaurant 9,000 square feet?

a. 1/10 of $200,000

b. 1/9 of $200,000

c. 9/10 of $200,000

d. 8/9 of $200,000

Quick Check ✓

Suppose square feet is used as the basis for allocating the common fixed cost of $200,000. How much would be allocated to the bar if the bar occupies 1,000 square feet and the restaurant 9,000 square feet?

a. 1/10 of $200,000

b. 1/9 of $200,000

c. 9/10 of $200,000

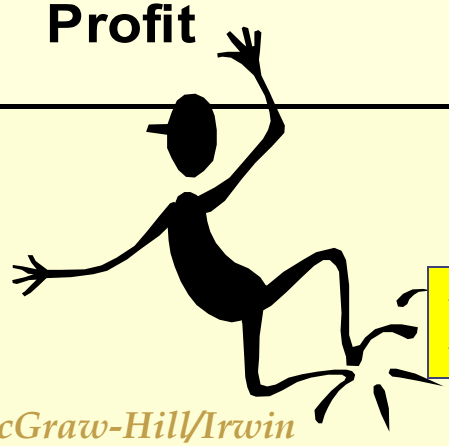
d. 8/9 of $200,000

The total amount of the allocation base is 10,000 square feet. So the bar would be allocated 1/10 of the cost.

Allocations of Common Costs

Income Statement	Haglund's Lakeshore	Bar	Restaurant
Sales	$ 800,000	$ 100,000	$ 700,000
Variable costs	310,000	60,000	250,000
CM	490,000	40,000	450,000
Traceable FC	246,000	26,000	220,000
Segment margin	244,000	14,000	230,000
Common costs	200,000	25,000	175,000
Profit	$ 44,000	$ (11,000)	$ 55,000

Allocated on the basis of sales.



Hurray, now everything adds up!!!

Allocations of Common Costs

Income Statement	Haglund's Lakeshore	Bar	Restaurant
Sales	$ 800,000	$ 100,000	$ 700,000
Variable costs	310,000	60,000	250,000
CM	490,000	40,000	450,000
Traceable FC	246,000	26,000	220,000
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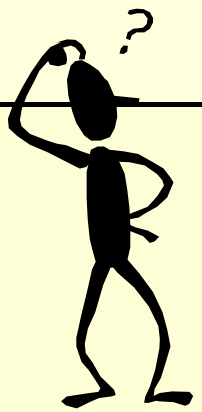
Profit	$ 44,000	$ (11,000)	$ 55,000



Whoops, what about the bar???

Quick Check ✓

Should the bar be eliminated?

a. Yes

b. No

Quick Check ✓

Should the bar be eliminated?

a. Yes

b. No

Quick Check ✓

Should the bar be eliminated?

a. Yes

b. No

The profit was $44,000 before eliminating the bar. If we eliminate the bar, profit drops to $30,000!

	Haglund's Lakeshore	Bar	Restaurant
Sales	$ 700,000		$ 700,000
Variable costs	250,000		250,000
CM	450,000		450,000
Traceable FC	220,000		220,000
Segment margin	230,000		230,000
Common costs	200,000		200,000
Profit	$ 30,000		$ 30,000

Teaching Note

Allocating common fixed costs to the segments those fixed costs support is a recipe for disaster

Return on Investment (ROI) Formula

Income before interest and taxes (EBIT)

$$\text{ROI} = \frac{\text{Net operating income}}{\text{Average operating assets}}$$

Cash, accounts receivable, inventory, plant and equipment, and other productive assets.

Return on Investment (ROI) Formula

Regal Company reports the following:

Net operating income	$ 30,000
Average operating assets	$ 200,000
Sales	$ 500,000

$$\text{ROI} = \frac{\$30,000}{\$200,000} = 15\%$$

Return on Investment (ROI) Formula

$$\text{ROI} = \frac{\text{Net operating income}}{\text{Average operating assets}}$$

$$\text{Margin} = \frac{\text{Net operating income}}{\text{Sales}}$$

$$\text{Turnover} = \frac{\text{Sales}}{\text{Average operating assets}}$$

$$\text{ROI} = \text{Margin} \times \text{Turnover}$$

Return on Investment (ROI) Formula

ROI = Margin × Turnover

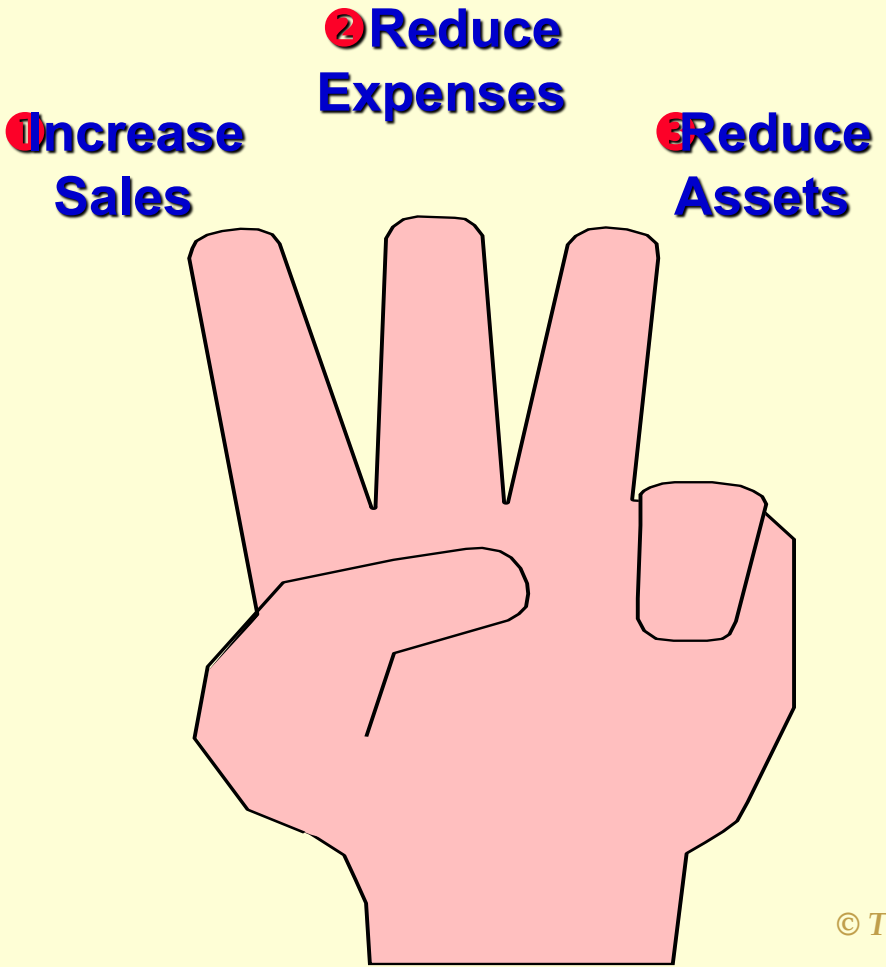
$$\text{ROI} = \frac{\text{Net operating income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average operating assets}}$$

$$\text{ROI} = \frac{\$30{,}000}{\$500{,}000} \times \frac{\$500{,}000}{\$200{,}000}$$

$$\text{ROI} = 6\% \times 2.5 = 15\%$$

Controlling the Rate of Return

Three ways to improve ROI . . .



Controlling the Rate of Return

- Regal's manager was able to increase sales to $600,000 which increased net operating income to $42,000.
- There was no change in the average operating assets of the segment.

Let's calculate the new ROI.

Return on Investment (ROI) Formula

ROI = Margin × Turnover

$$\text{ROI} = \frac{\text{Net operating income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average operating assets}}$$

$$\text{ROI} = \frac{\$42{,}000}{\$600{,}000} \times \frac{\$600{,}000}{\$200{,}000}$$

ROI = 7% × 3.0 = 21%

ROI increased from 15% to 21%

Criticisms of ROI

- In the absence of the balanced scorecard, management may not know how to increase ROI.
- Managers often inherit many committed costs over which they have no control.
- Managers evaluated on ROI may reject profitable investment opportunities.

Criticisms of ROI

- As division manager at Winston, Inc., your compensation package includes a salary plus bonus based on your division's ROI -- the higher your ROI, the bigger your bonus.
- The company requires an ROI of 15% on all new investments -- your division has been producing an ROI of 30%.
- You have an opportunity to invest in a new project that will produce an ROI of 25%.

As division manager would you invest in this project?

Criticisms of ROI

Residual Income - Another Measure of Performance

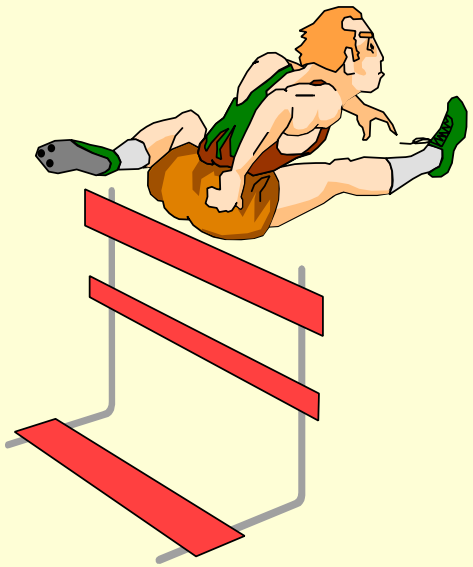
Residual Income

- A division of Zepher, Inc. has average operating assets of $100,000 and is required to earn a return of 20% on these assets.
- In the current period the division earns $30,000.

Let's calculate residual income.

Residual Income

Operating assets	$100,000
Required rate of return ×	20%
Required income	$ 20,000



Actual income	$ 30,000
Required income	(20,000)
Residual income	$ 10,000

Quick Check ✓

Redmond Awnings, a division of Wrapup Corp., has a net operating income of $60,000 and average operating assets of $300,000. The required rate of return for the company is 15%. What is the division's ROI?

a. 25%

b. 5%

c. 15%

d. 20%

Quick Check ✓

Redmond Awnings, a division of Wrapup Corp., has a net operating income of $60,000 and average operating assets of $300,000. The required rate of return for the company is 15%. What is the division's ROI?

a. 25%

b. 5%

c. 15%

d. 20%

ROI = NOI/Average operating assets

= $60,000/$300,000 = 20%

Quick Check ✓

Redmond Awnings, a division of Wrapup Corp., has a net operating income of $60,000 and average operating assets of $300,000. If the manager of the division is evaluated based on ROI, will she want to make an investment of $100,000 that would generate additional net operating income of $18,000 per year?

a. Yes

b. No

Quick Check ✓

Redmond Awnings, a division of Wrapup Corp., has a net operating income of $60,000 and average operating assets of $300,000. If the manager of the division is evaluated based on ROI, will she want to make an investment of $100,000 that would generate additional net operating income of $18,000 per year?

a. Yes

b. No

ROI = $78,000/$400,000 = 19.5%

This lowers the division's ROI from 20.0% down to 19.5%.

Quick Check ✓

The company's required rate of return is 15%. Would the company want the manager of the Redmond Awnings division to make an investment of $100,000 that would generate additional net operating income of $18,000 per year?

a. Yes

b. No

Quick Check ✓

The company's required rate of return is 15%. Would the company want the manager of the Redmond Awnings division to make an investment of $100,000 that would generate additional net operating income of $18,000 per year?

a. Yes

b. No

ROI = $18,000/$100,000 = 18%

The return on the investment exceeds the minimum required rate of return.

Quick Check ✓

Redmond Awnings, a division of Wrapup Corp., has a net operating income of $60,000 and average operating assets of $300,000. The required rate of return for the company is 15%. What is the division's residual income?

a. $240,000

b. $ 45,000

c. $ 15,000

d. $ 51,000

Quick Check ✓

Redmond Awnings, a division of Wrapup Corp., has a net operating income of $60,000 and average operating assets of $300,000. The required rate of return for the company is 15%. What is the division's residual income?

a. $240,000

b. $ 45,000

c. $ 15,000

Net operating income	$60,000
Required return (15% of $300,000)	$45,000
Residual income	$15,000

Quick Check ✓

If the manager of the Redmond Awnings division is evaluated based on residual income, will she want to make an investment of $100,000 that would generate additional net operating income of $18,000 per year?

a. Yes

b. No

Quick Check ✓

If the manager of the Redmond Awnings division is evaluated based on residual income, will she want to make an investment of $100,000 that would generate additional net operating income of $18,000 per year?

a. Yes

b. No

Net operating income	$78,000
Required return (15% of $400,000)	$60,000
Residual income	$18,000

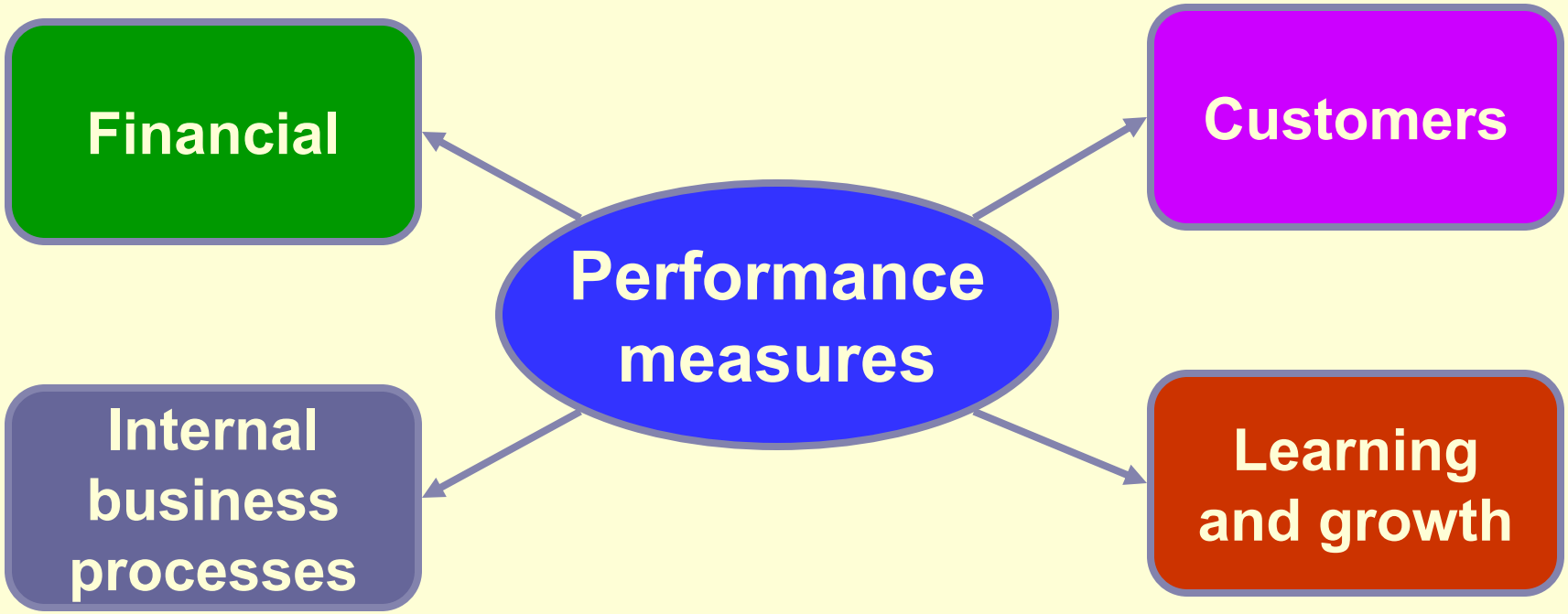
This is an increase of $3,000 in the residual income.

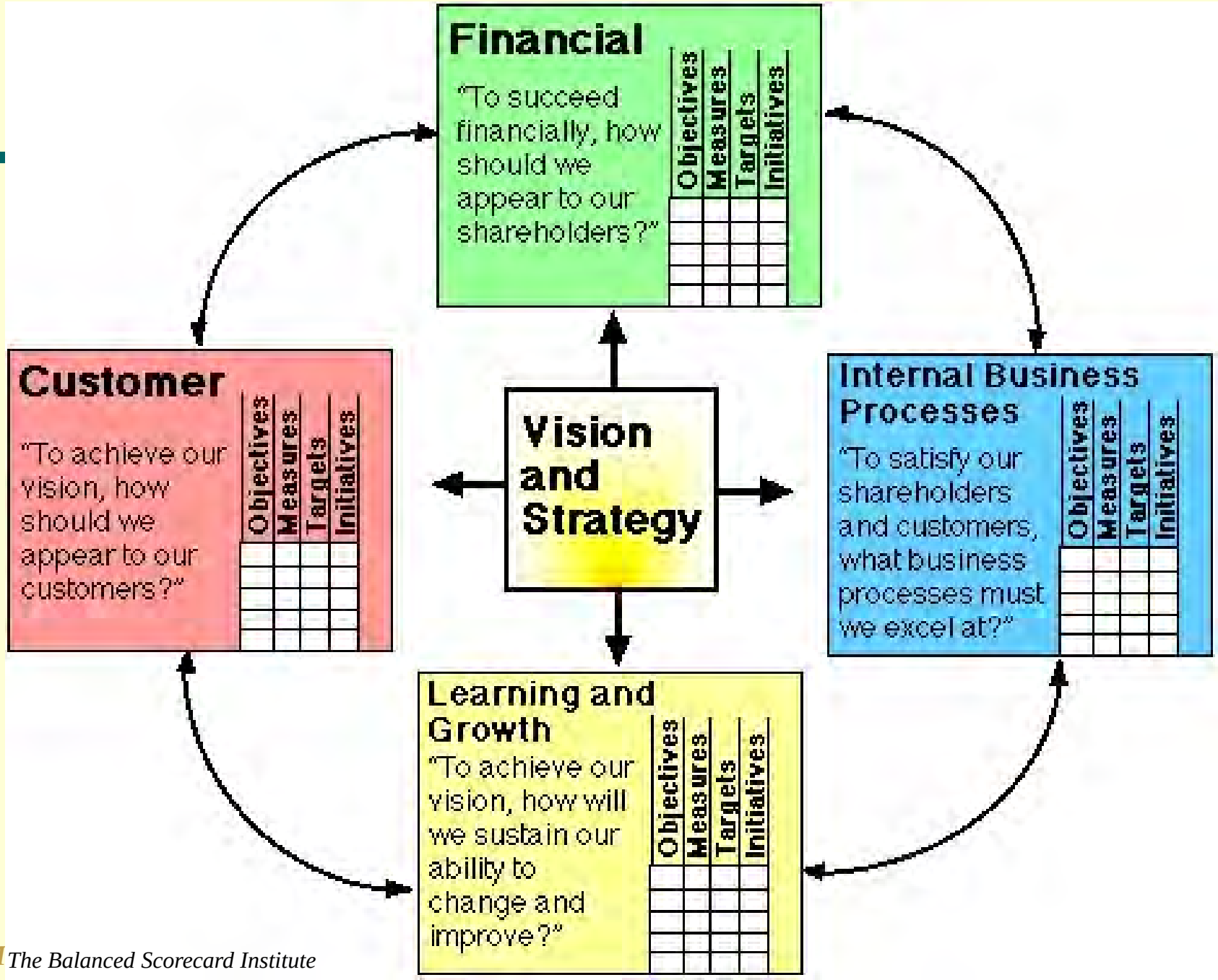
Motivation and Residual Income

Residual income encourages managers to make profitable investments that would be rejected by managers using ROI.

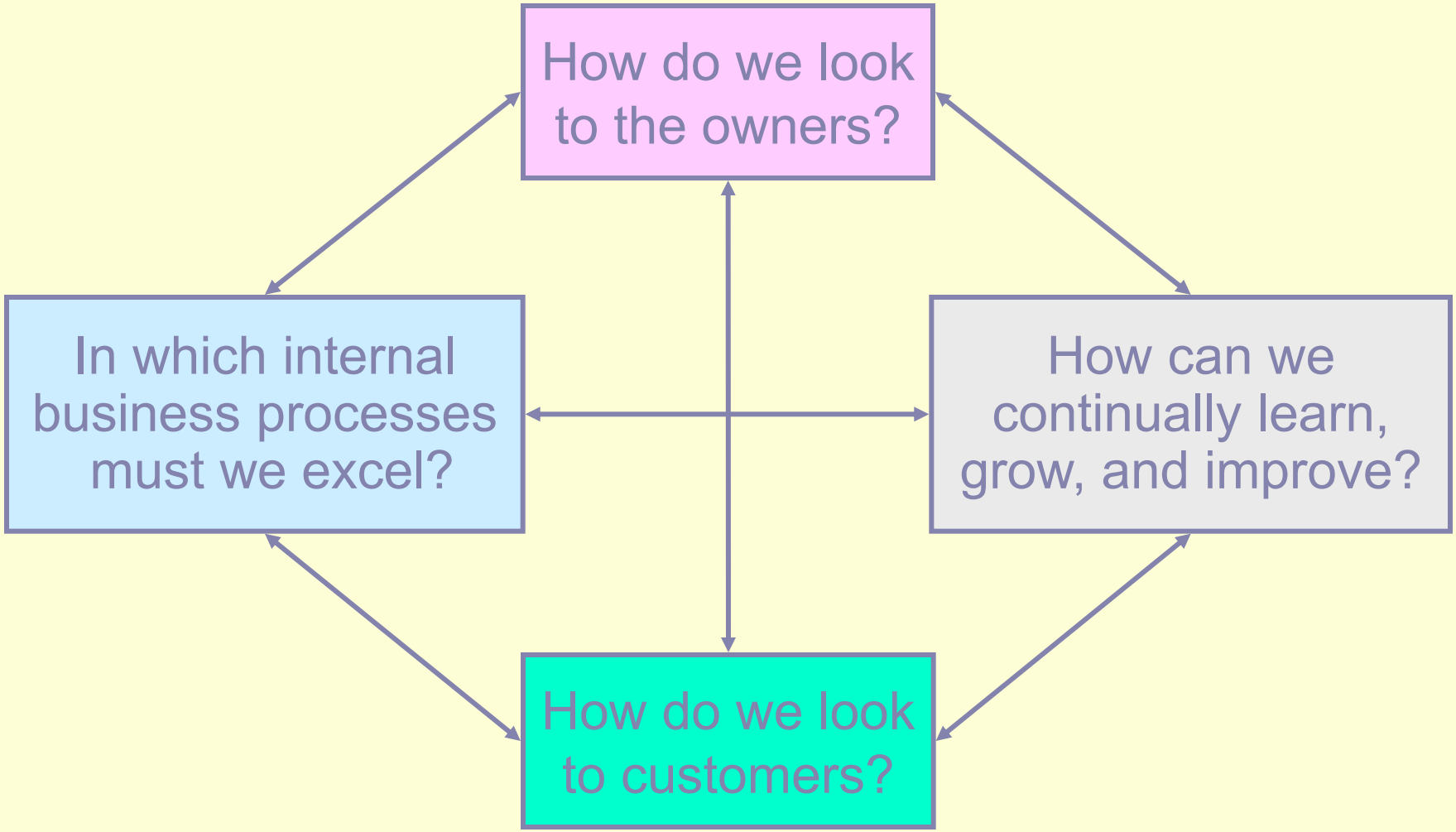
The Balanced Scorecard

Management translates its strategy into performance measures that employees understand and accept.




Financial
"To succeed financially, how should we appear to our shareholders?"
Objectives
Measures
Targets
Initiatives
Customer
"To achieve our vision, how should we appear to our customers?"
Objectives
Measures
Targets
Initiatives
Vision and Strategy
Internal Business Processes
"To satisfy our shareholders and customers, what business processes must we excel at?"
Objectives
Measures
Targets
Initiatives
Learning and Growth
"To achieve our vision, how will we sustain our ability to change and improve?"
Objectives
Measures
Targets
Initiatives

The Balanced Scorecard

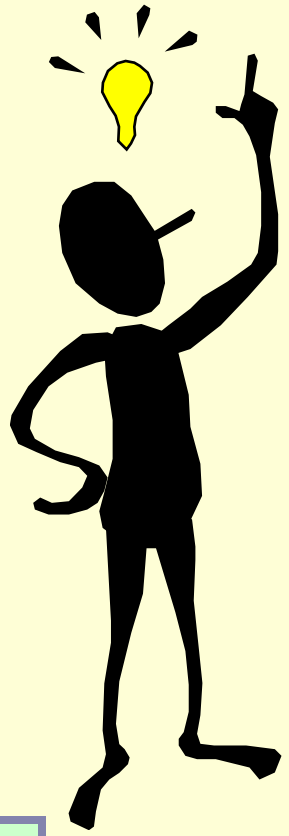


The Balanced Scorecard

Learning improves business processes.

Improved business processes improve customer satisfaction.

Improving customer satisfaction improves financial results.



Benefits of Balance Scorecard

If implemented well:

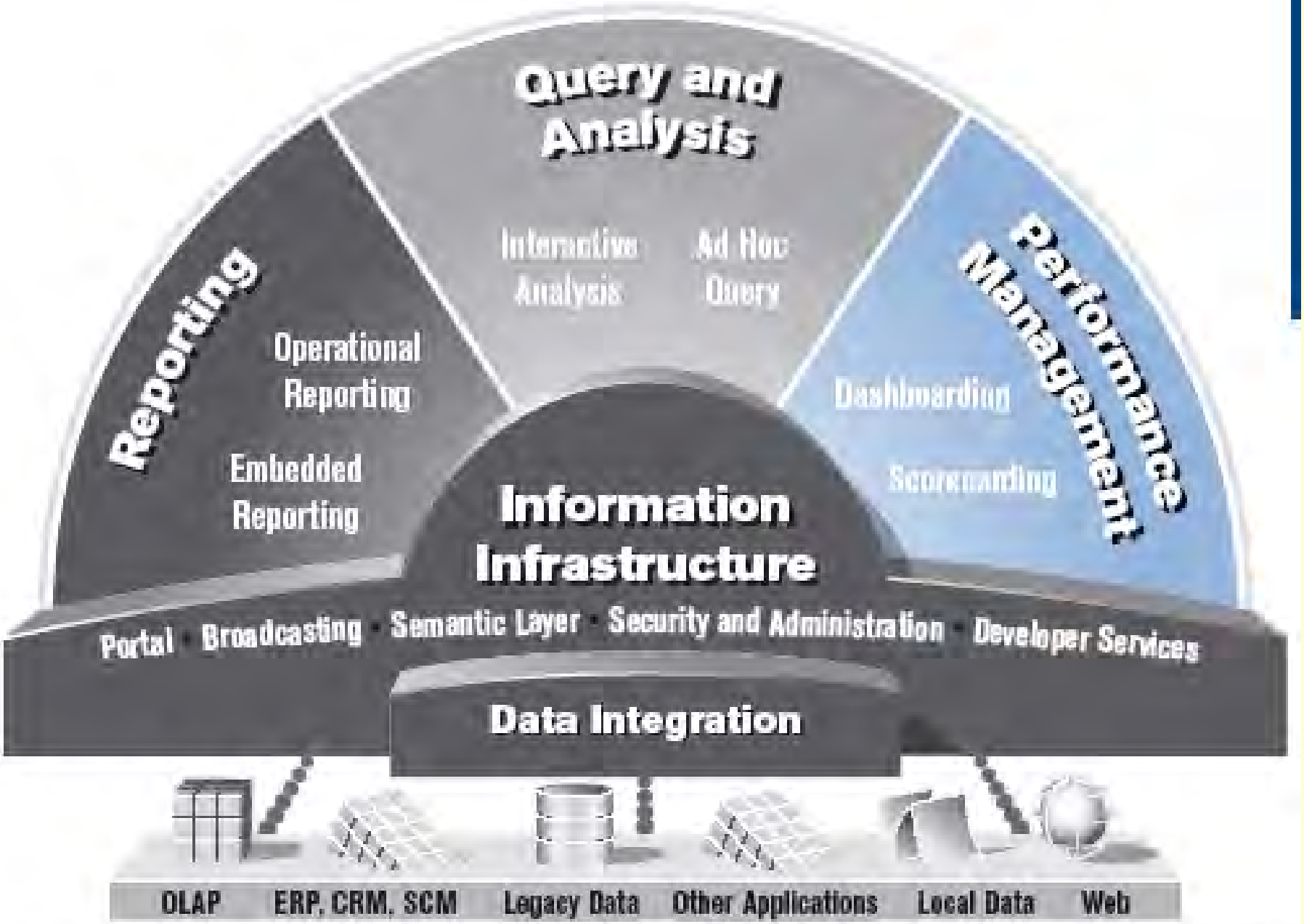
- Forces management to articulate a coherent strategy.
- Strategy is communicated throughout organization.
- Performance measures are more likely to be consistent with strategy and actionable.
- Portfolio of measures reduces gaming problems.
- Feedback loop makes strategy dynamic.

Some Possible Problems

Cultural/behavioral

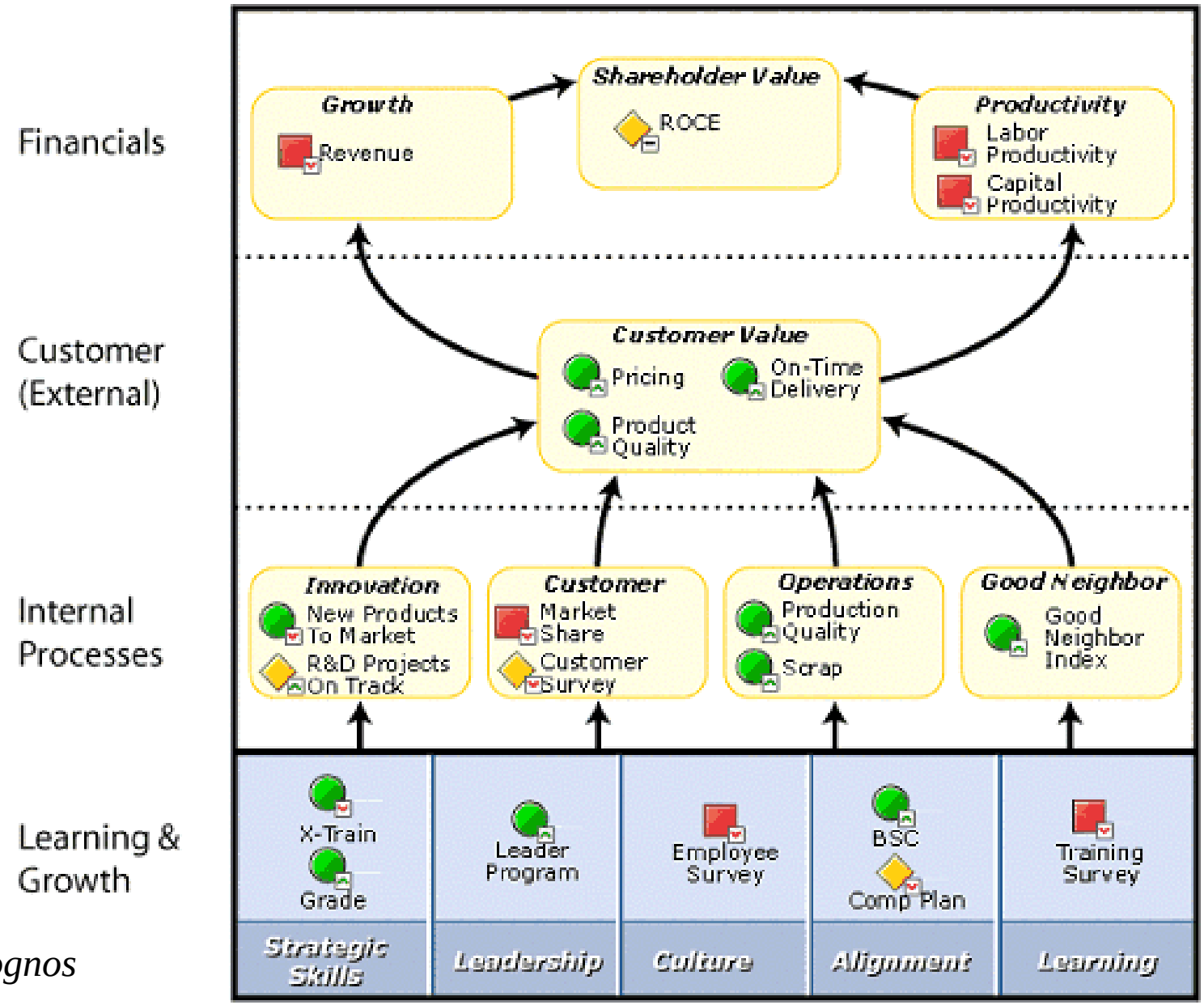
- Program fatigue.
- Culture shock/resistance.
- Every existing performance measure has a champion.
- Gaming still possible.

Enterprise performance management is a process that connects goals, metrics, and people in order to drive improved management, analysis, and action across the organization.



The Business Objects product line provides the industry's leading suite of business intelligence products.

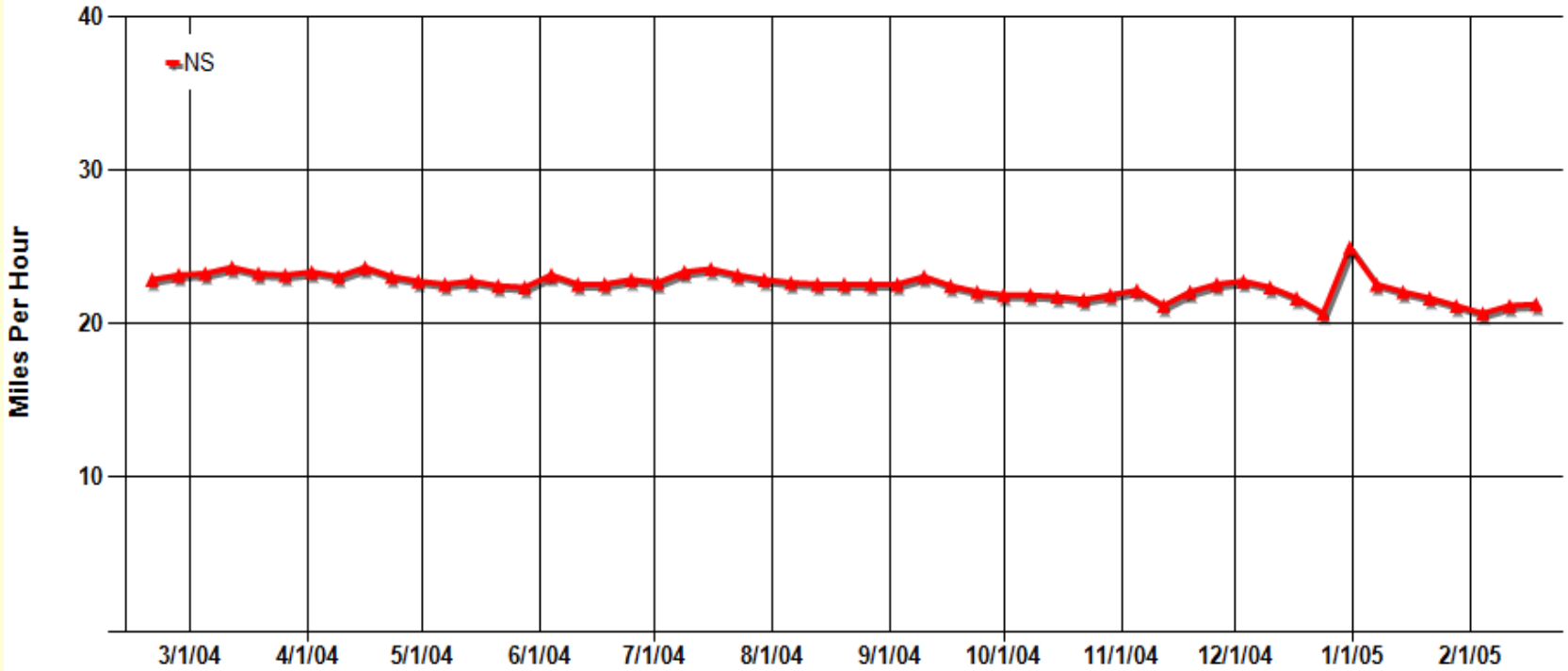
The Enterprise Strategy Map



Cognos

Average Train Speed

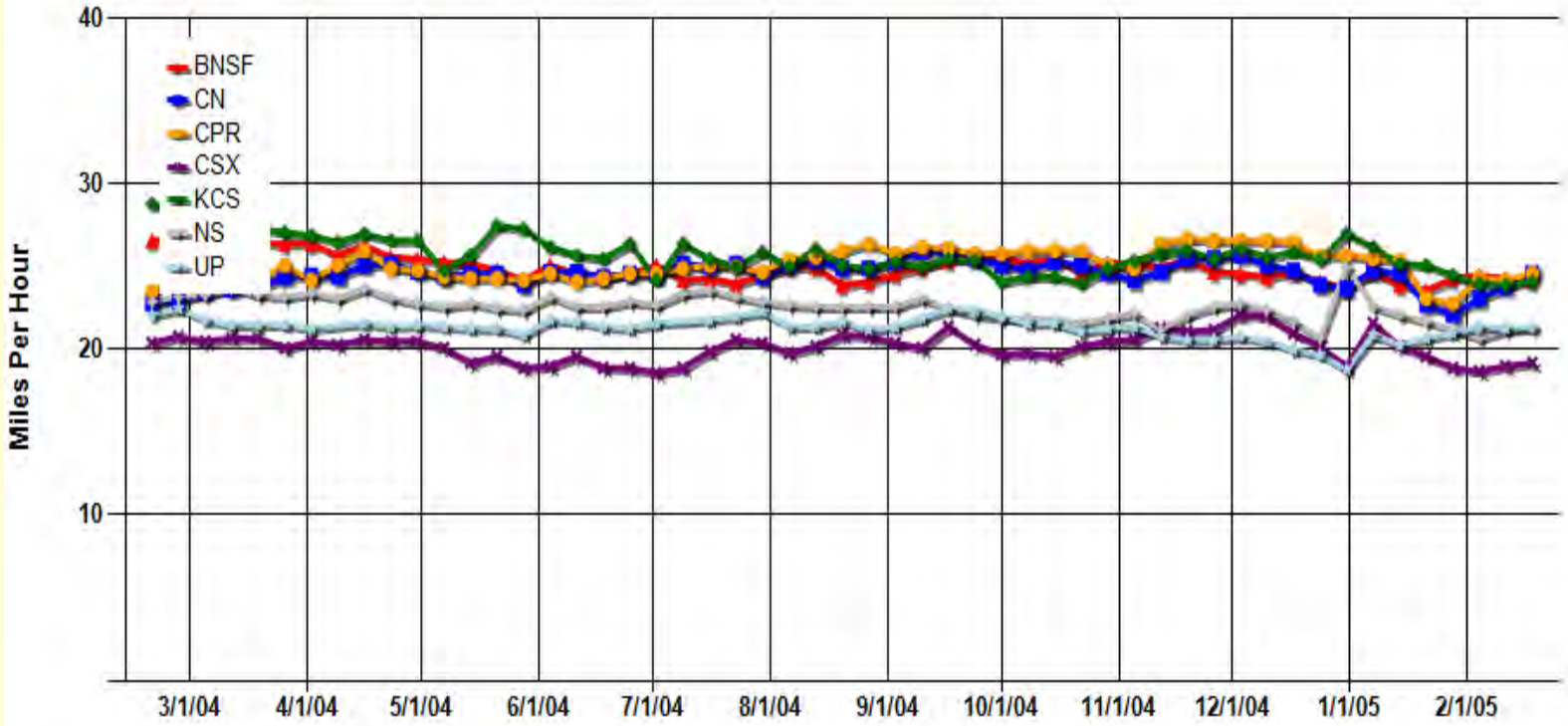
One railroad's performance metrics cannot meaningfully be compared to another railroad's, due to differences in the carriers' calculation methodologies, operational strategies, network characteristics, terrain, traffic mix and volume, length of haul, extent of passenger operations, and other factors such as weather.



Railroad Performances Measures

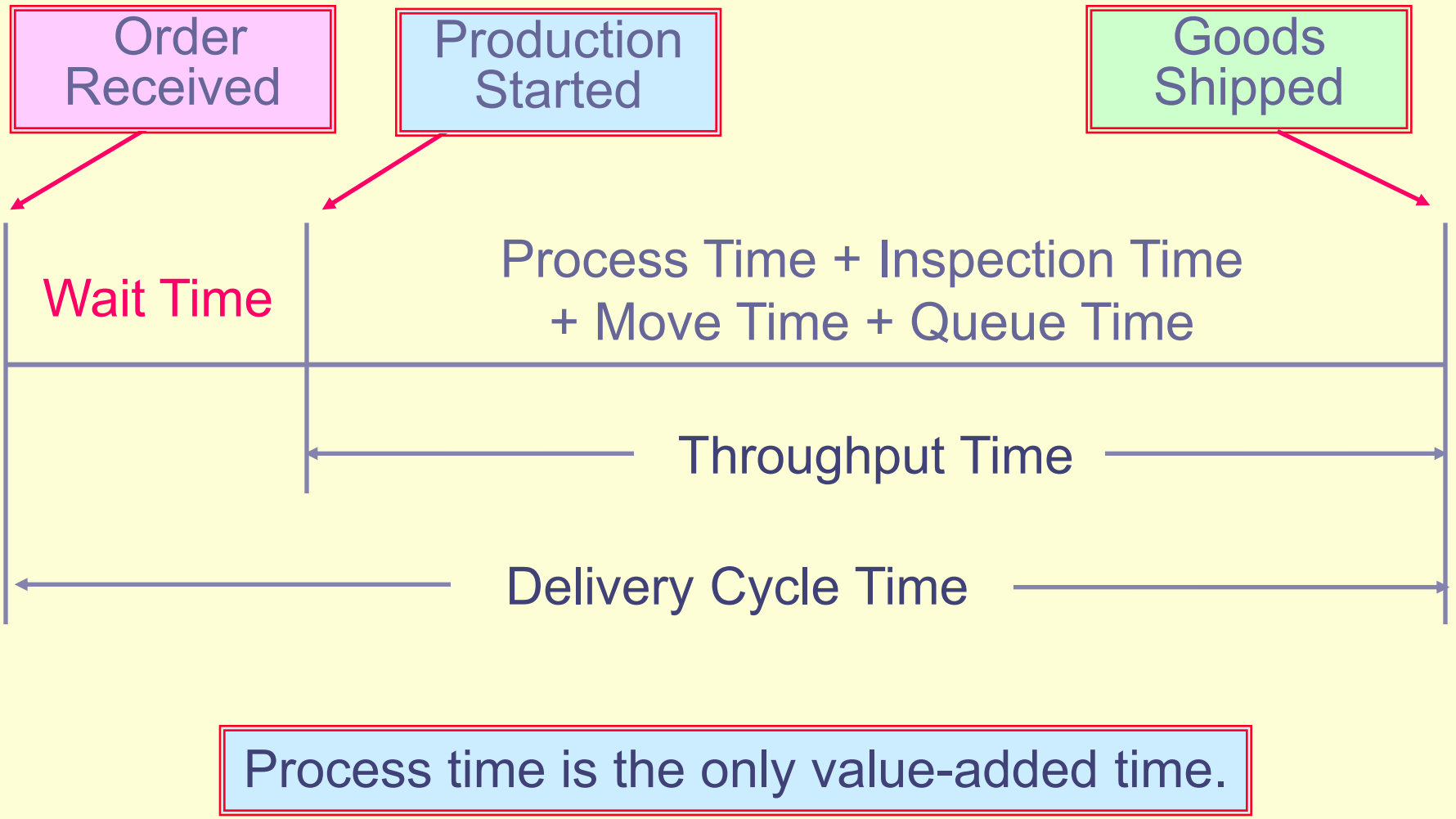
Average Train Speed

One railroad's performance metrics cannot meaningfully be compared to another railroad's, due to differences in the carriers' calculation methodologies, operational strategies, network characteristics, terrain, traffic mix and volume, length of haul, extent of passenger operations, and other factors such as weather.



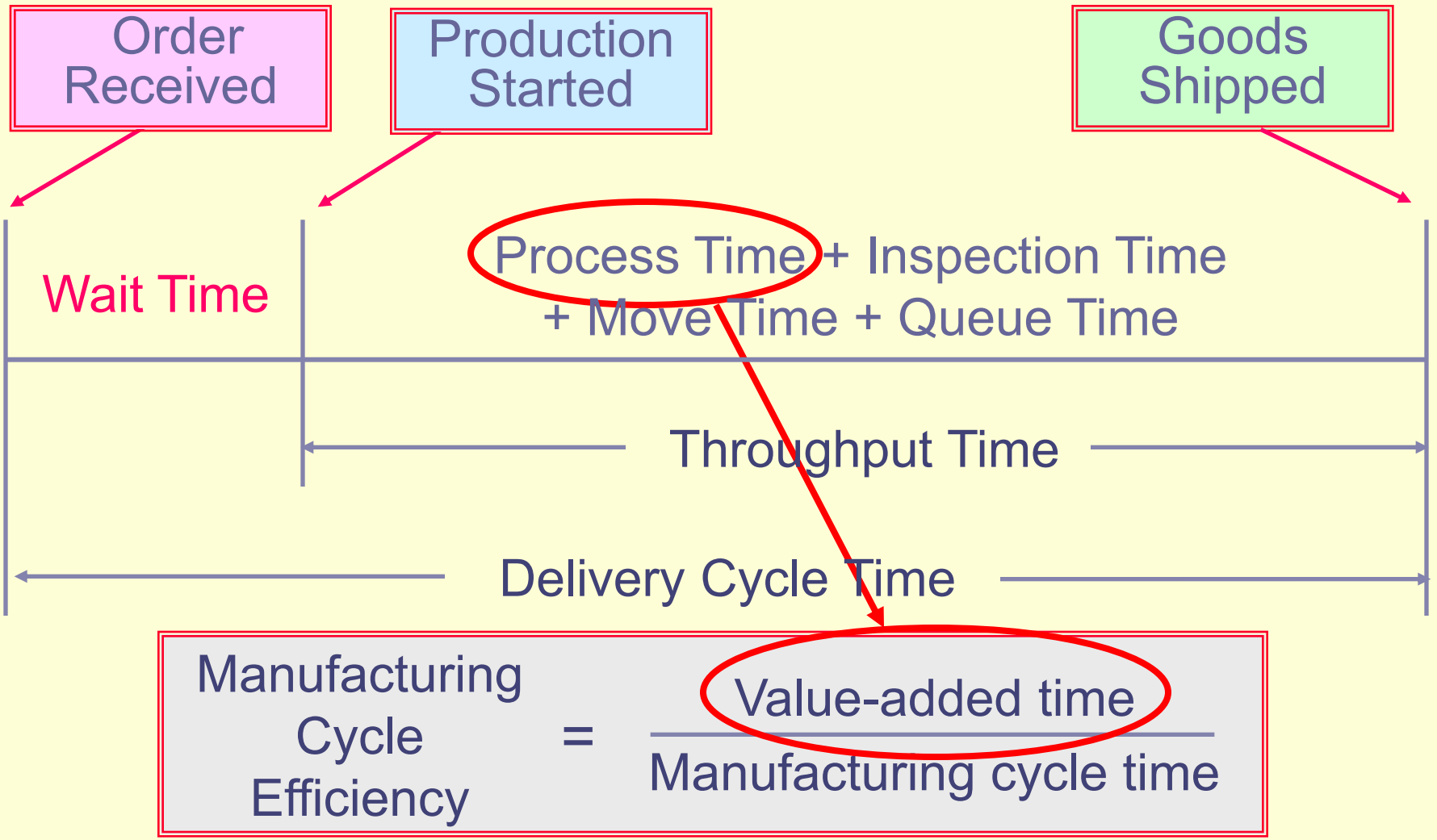
Railroad Performances Measures

Delivery Performance Measures



Process time is the only value-added time.

Delivery Performance Measures



$$\text{Manufacturing Cycle Efficiency} = \frac{\text{Value-added time}}{\text{Manufacturing cycle time}}$$

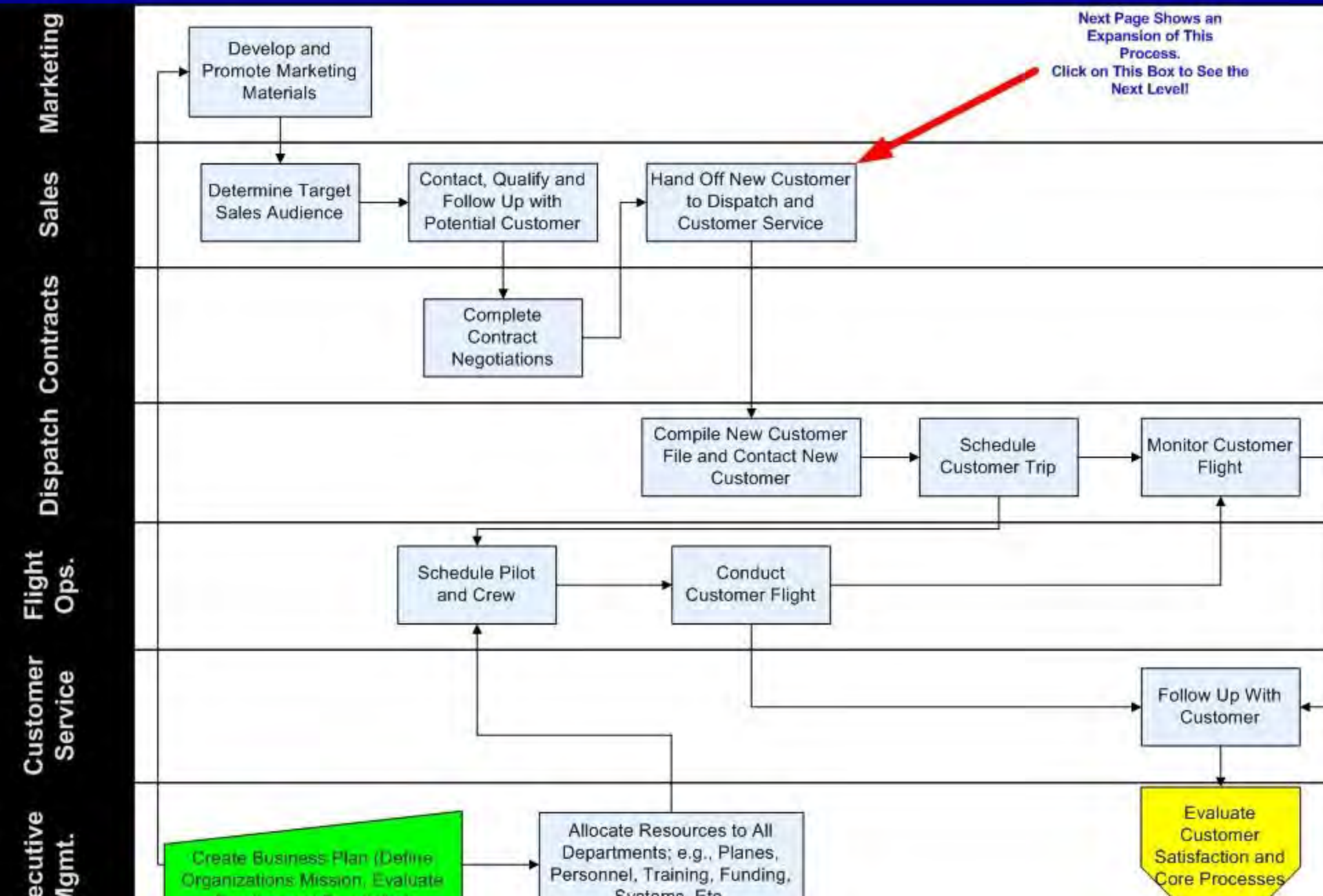
For what are you willing to pay?

Value-added vs. Non-Value-added

- Concept of “Re-engineering”
- Development of “process maps”
- Identify value-added and non-value-added steps
- Very detailed procedure
- Goal: Eliminate or minimize non-value-added steps
- Consider separation of duties and internal controls

SAE Total Quality Management Process Map

rganizational Core Processes



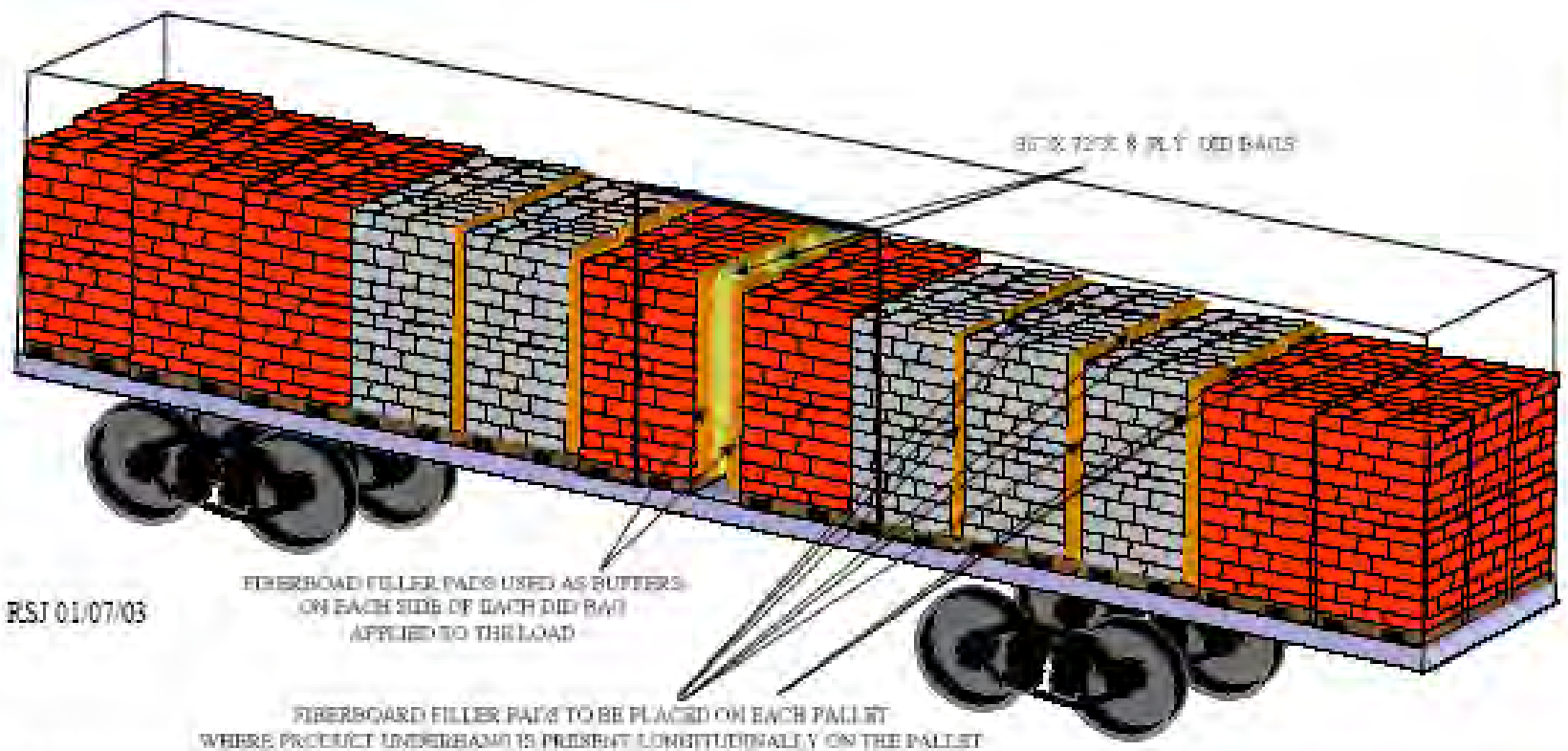
BNSF

BURLINGTON NORTHERN SANTA FE RAILWAY

LOAD AND RIDE SOLUTIONS DRAWING

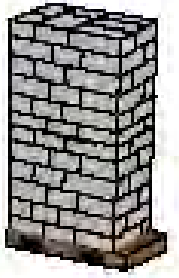
CASED BEER

LOADING METHOD FOR PALLETIZED/STRETCH-WRAPPED NON-INTERIOR BULKHEAD EQUIPPED RAILCARS

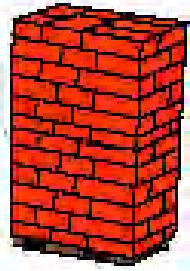


RSJ 01/07/03

EXAMPLE OF PRODUCT UNDERHANG



EXAMPLE OF PRODUCT OVERHANG



NOTE DID BAGS MUST NOT BE USED IN A VOID LARGER THAN 12", MUST BE INFLATED BETWEEN 4 & 6 PSI DEPENDING ON PRODUCT LOADED,

Quick Check ✓

A TQM team at Narton Corp has recorded the following average times for production:

Wait	3.0 days	Move	0.5 days
Inspection	0.4 days	Queue	9.3 days
Process	0.2 days		

What is the throughput time?

a. 10.4 days

b. 0.2 days

c. 4.1 days

d. 13.4 days

Quick Check ✓

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Process	0.2 days		

What is the throughput time?

a. 10.4 days

Throughput time = Process + Inspection + Move + Queue
= 0.2 days + 0.4 days + 0.5 days + 9.3 days
= 10.4 days

Quick Check ✓

A TQM team at Narton Corp has recorded the following average times for production:

Wait	3.0 days	Move	0.5 days
Inspection	0.4 days	Queue	9.3 days
Process	0.2 days		

What is the MCE?

a. 50.0%

b. 1.9%

c. 52.0%

d. 5.1%

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What is the MCE?

a. 50.0%
b. 1.9%
c. 52.0%
d. 5.1%

MCE = Value-added time ÷ Throughput time
= Process time ÷ Throughput time
= 0.2 days ÷ 10.4 days
= 1.9%

Quick Check ✓

A TQM team at Narton Corp has recorded the following average times for production:

Wait	3.0 days	Move	0.5 days
Inspection	0.4 days	Queue	9.3 days
Process	0.2 days		

What is the delivery cycle time?

a. 0.5 days
b. 0.7 days
c. 13.4 days
d. 10.4 days

Delivery cycle time = Wait time + Throughput time
= 3.0 days + 10.4 days
= 13.4 days

A TQM team at Narton Corp has recorded the following average times for production:

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End of Chapter 11