

Process-based Accounting: Leveraging Processes to Predict Results



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The Current Situation

- Conventional accounting reports the results of past performance.
- The information is historical, like driving a car using the rear view mirror.
- Not timely and limited in value to managing the operations of the enterprise.
- Excludes non-financial information.
- Necessary for reporting purposes.

Reference:

1. *The Handbook of Process-Based Accounting*

by James A. Brimson

2. <http://www.aicpa.org>

American Institute of Certified Public Accountants

The fundamental nature of many businesses has changed

From: Asset intensive

To: Knowledge intensive

.... as reflected in the way Wall Street values companies.

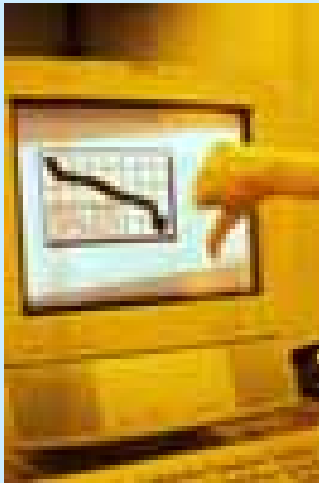
Early 1980's Book value was 95% of market value

Early 2000's Book value was 28% of market value

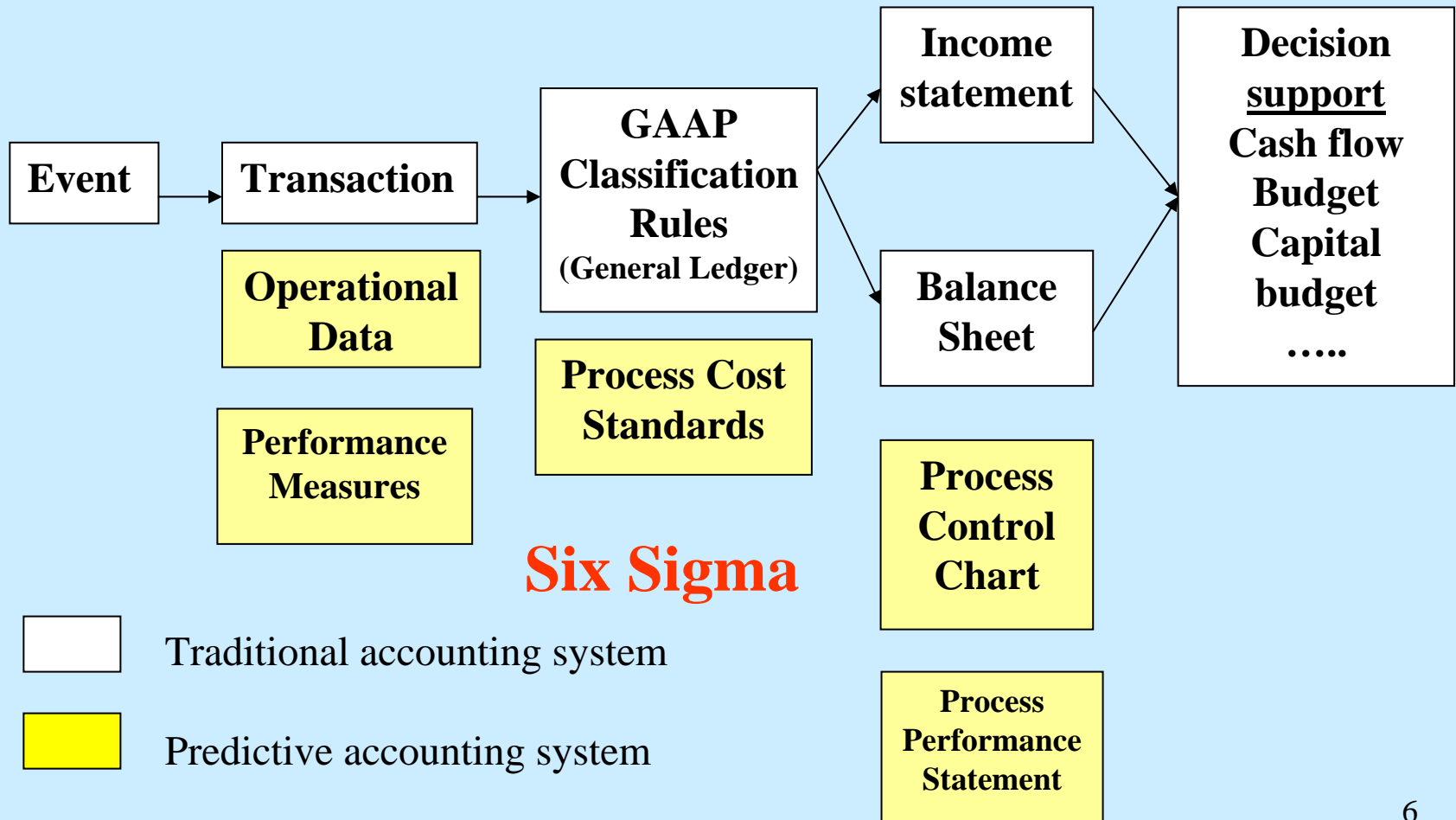
Fortune Magazine

What is process-based/
predictive accounting?

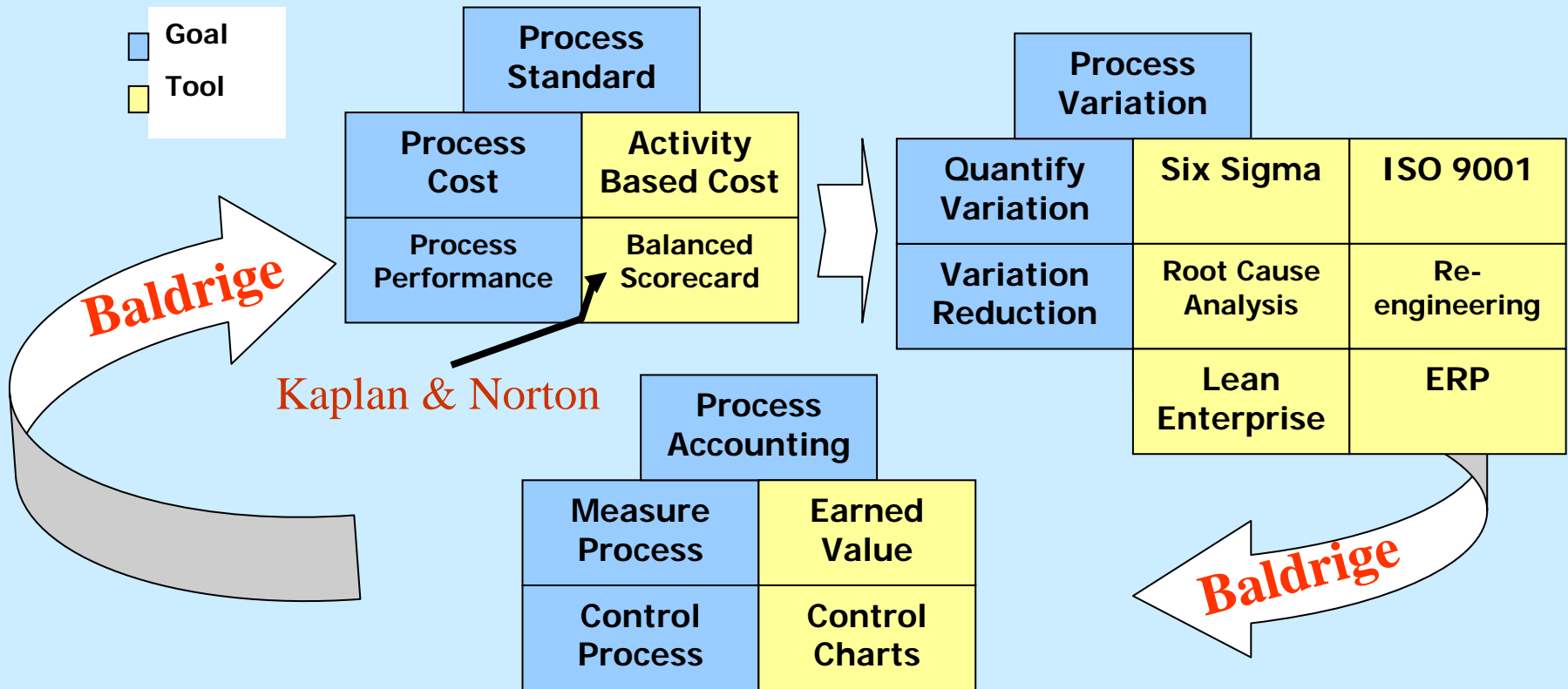
**Process-based or “Predictive”
accounting
uses process information to project
future financial and non-financial
performance;
that is, *forward-looking*
information.**



Predictive accounting builds on conventional accounting practices



It uses process tools and adds a process framework (Baldrige and Six Sigma)



Predictive accounting is implemented in two stages

Stage 1
Enterprise Level

Stage 2
Department Level

Manage by Fact
Process Performance
Statement
Manage by Fact



Focus on the Future
Forward-looking
Financial Report





Process-based / Predictive Accounting...

- Gives you the information you need to close the current month's books today rather than next month.
- Leverages KPIs and process information to predict outcomes and then manage those expected outcomes to greater competitive advantage.
- Allows adjustment for "key events" that could impact the process and change expected results.

Stage 1 Enterprise Level

Process Performance Statement

Process	Amount	Strategic Measure	Value	Target	Velocity	Variation	Value
Sales	\$ 40,000						
Raw Materials	9,000						
Understand markets and customers	280	Revenue per customer	\$4	\$5	----	1.3	\$5,700
Develop vision and strategy	110	Shareholder value	+2%	+5%	---	2.1	800
Design products and services							
Research & Development	600	Average revenue per patent	\$11,240	\$15,000	----	1.1	250
Introduce new product/service	250	Revenue per new prod	\$10,040	\$15,000	----	1.3	200
Refine existing products/services	400	Target cost achievement	88%	98%	----	1.4	32,000
Market and Sell							
Market products	860	Revenue per lead	\$0.10	\$0.15	----	2.0	750
Sell products or services to relevant segments	1,250	% contacts sold	45%	60%	3.8 weeks	2.0	18,000
Process customer orders	320	Accurate & on-time	92%	100%	5.5 days	0.8	\$5,700
Produce and deliver for manufacturing/service							
Procure materials	1,500	Targeted time, quality and price	84%	100%	25 days	2.3	

•••••

Understand where you spend your money-- spending by process

<u>Process</u>	<u>Amount</u>
Sales	\$ 40,000
Raw Materials	9,000
Understand markets and customers	280
Develop vision and strategy	110
Design products and services	
Research & Development	600
Introduce new product/service	250
Refine existing products/services	400
Market products	860
Sell products or services to relevant segments	1,250
Process customer orders	320
.....	

Understand how effectively your processes operate

Process	Strategic Measure	Value	Target
Sales			
Raw Materials			
Understand markets and customers	Revenue per customer	\$4	\$5
Develop vision and strategy	Shareholder value	+2%	+5%
Design products and services			
Research & Development	Average revenue per patent	\$11,240	\$15,000
Introduce new product/service	Revenue per new prod	\$10,040	\$15,000
Refine existing products/services	Target cost achievement	88%	98%
Market and Sell			
Market products	Revenue per lead	\$0.10	\$0.15
Sell products or services to relevant segments	% contacts sold	45%	60%
Process customer orders	Accurate & on-time	92%	100%
Produce and deliver for manufacturing/service			
Procure materials	Targeted time, quality and price	84%	100%
.....			

Understand how quickly your processes convert cash

<u>Process</u>	<u>Velocity</u>
Sales	
Raw Materials	
Understand markets and customers	----
Develop vision and strategy	---
Design products and services	
Research & Development	----
Introduce new product/service	----
Refine existing products/services	----
Market and Sell	
Market products	----
Sell products or services to relevant segments	3.8 weeks
Process customer orders	5.5 days
Produce and deliver for manufacturing/service	
Procure materials	25 day
.....	

Understand much your processes vary (Higher Sigma – More Stable Process)

Process	Variation (Sigma)
Sales	
Raw Materials	
Understand markets and customers	1.3
Develop vision and strategy	2.1
Design products and services	
Research & Development	1.1
Introduce new product/service	1.3
Refine existing products/services	1.4
Market and Sell	
Market products	2.0
Sell products or services to relevant segments	2.0
Process customer orders	0.8
Produce and deliver for manufacturing/service	
Procure materials	2.3
.....	

Understand how much value your processes have created

(Every Process Creates or Destroys Value)

Process	Value
Sales	
Raw Materials	
Understand markets and customers	\$5,700
Develop vision and strategy	800
Design products and services	
Research & Development	250
Introduce new product/service	200
Refine existing products/services	32,000
Market and Sell	
Market products	750
Sell products or services to relevant segments	18,000
Process customer orders	15,700
Produce and deliver for manufacturing/service	
Procure materials	
.....	



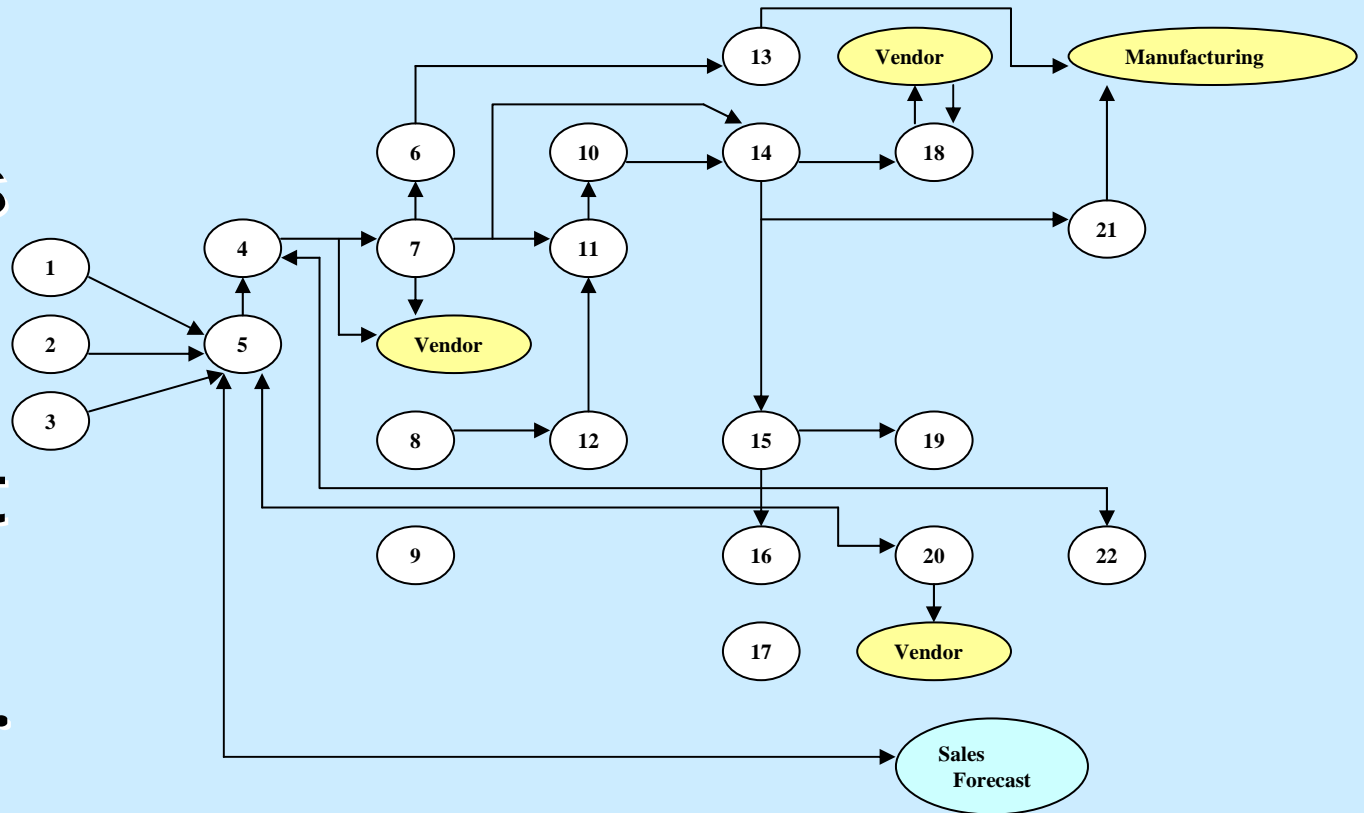
Stage 2

Department Level

How Predictive Accounting Works

- Create a process flowchart.
- Create a process cost standard for each step in the process.
- Develop a statistical understanding to determine the probability that the process will function as defined.

Processes are easy to document via flowchart.



Procure Material			
1	Develop sales forecast	Sales	
2	Take customer phone order	Sales	
3	Take customer mail order	Sales	
4	Issue Requisition	Planning	
5	Run MRP	Planning	
6	Resolve vendor problems	Purchasing	
7	Issue Purchase Orders	Purchasing	
8	Expedite orders	Purchasing	
9	Certify vendor	Purchasing	
10	Move material	Receiving	
11	Receive material	Receiving	
12	Expedite material		Receiving
13	Expedite material		Quality
14	Inspect material		Quality
15	Reject material		Quality
16	Returns goods to vendor		Quality
17	Certify vendor		Quality
18	Pay vendor invoice		Accounting
19	Contact vendor		Accounting
20	Issue debit order		Accounting
21	Store material		Warehouse
22	Cycle count inventory		Warehouse

Processes often begin and end in different periods, leading to predictability.



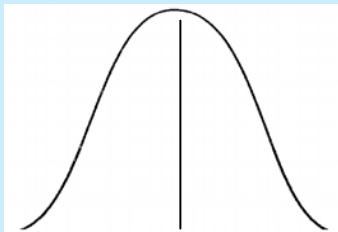


**Predictive Accounting is
NOT Forecasting!!!**

Predictive accounting can also be used to calculate non-financial performance measures, as well as process cost

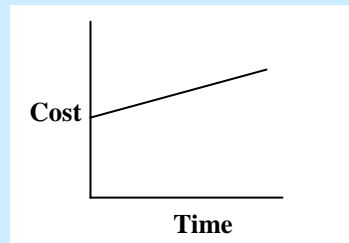
Variation causes
higher resource usage

Quality



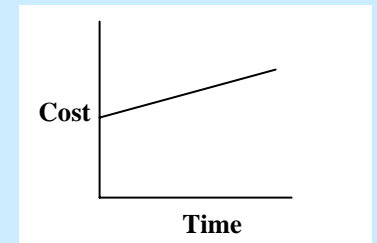
Longer time causes
higher resource usage

Process Time

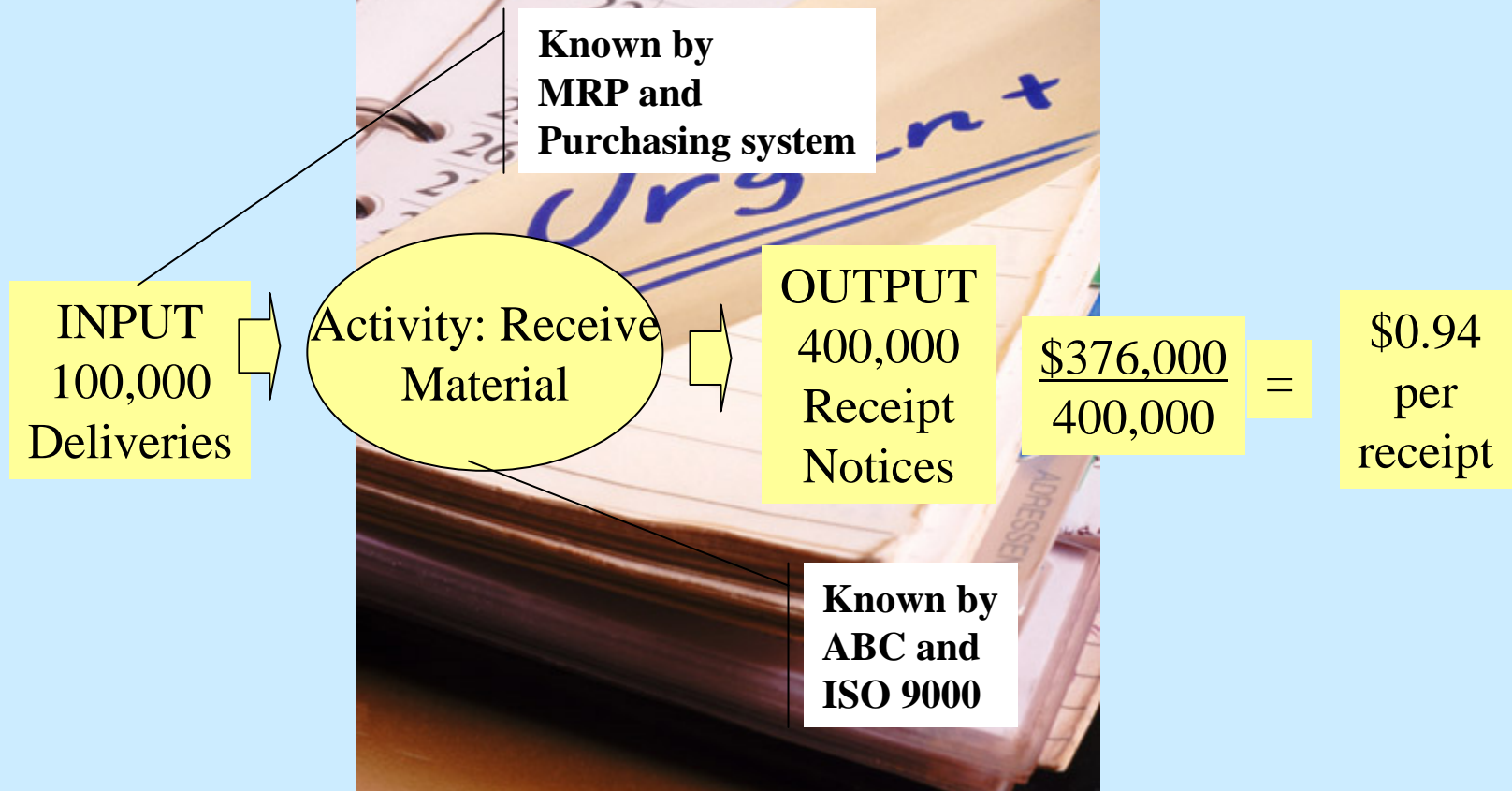


Longer time causes
greater working capital

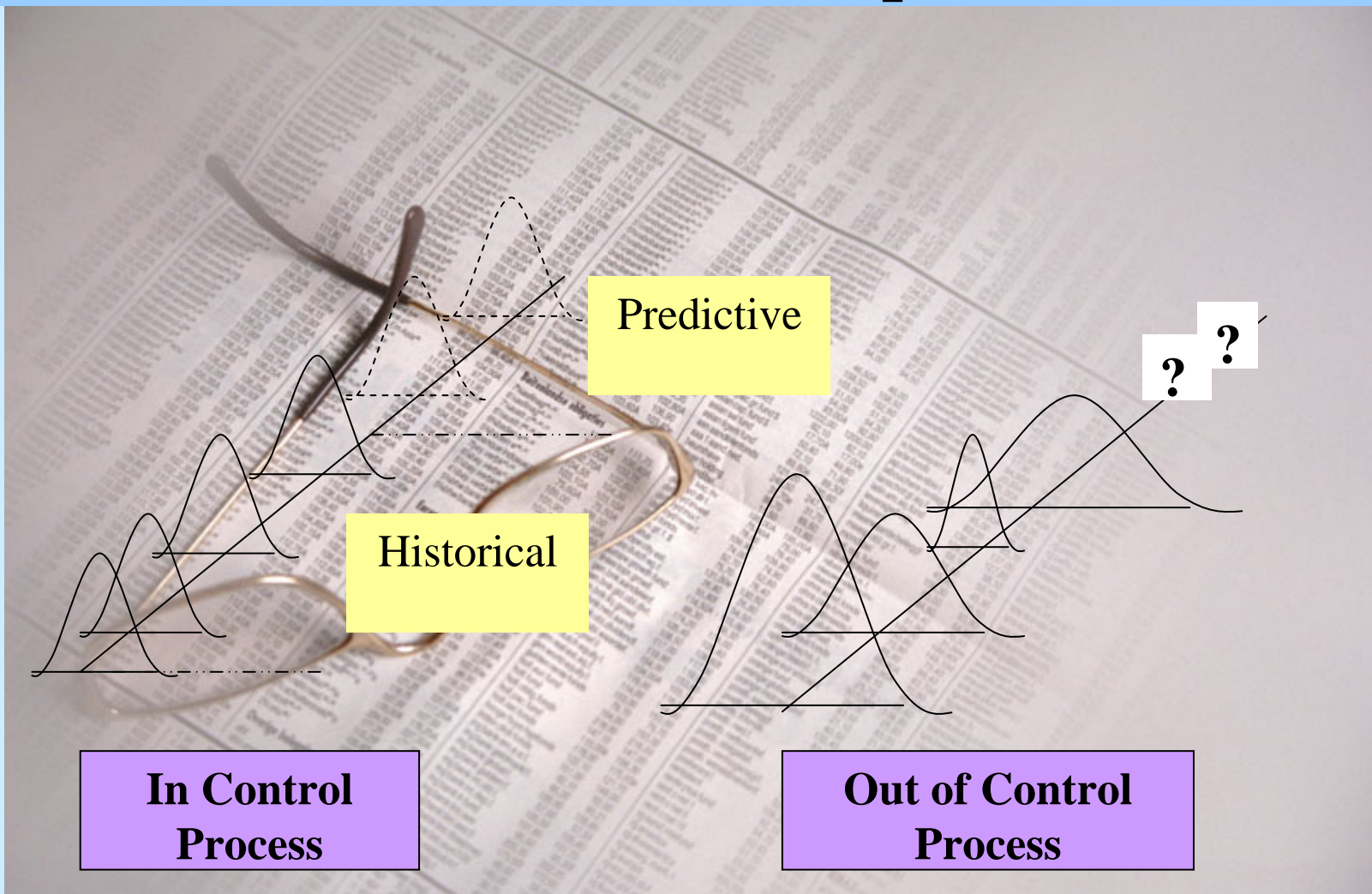
Cycle Time



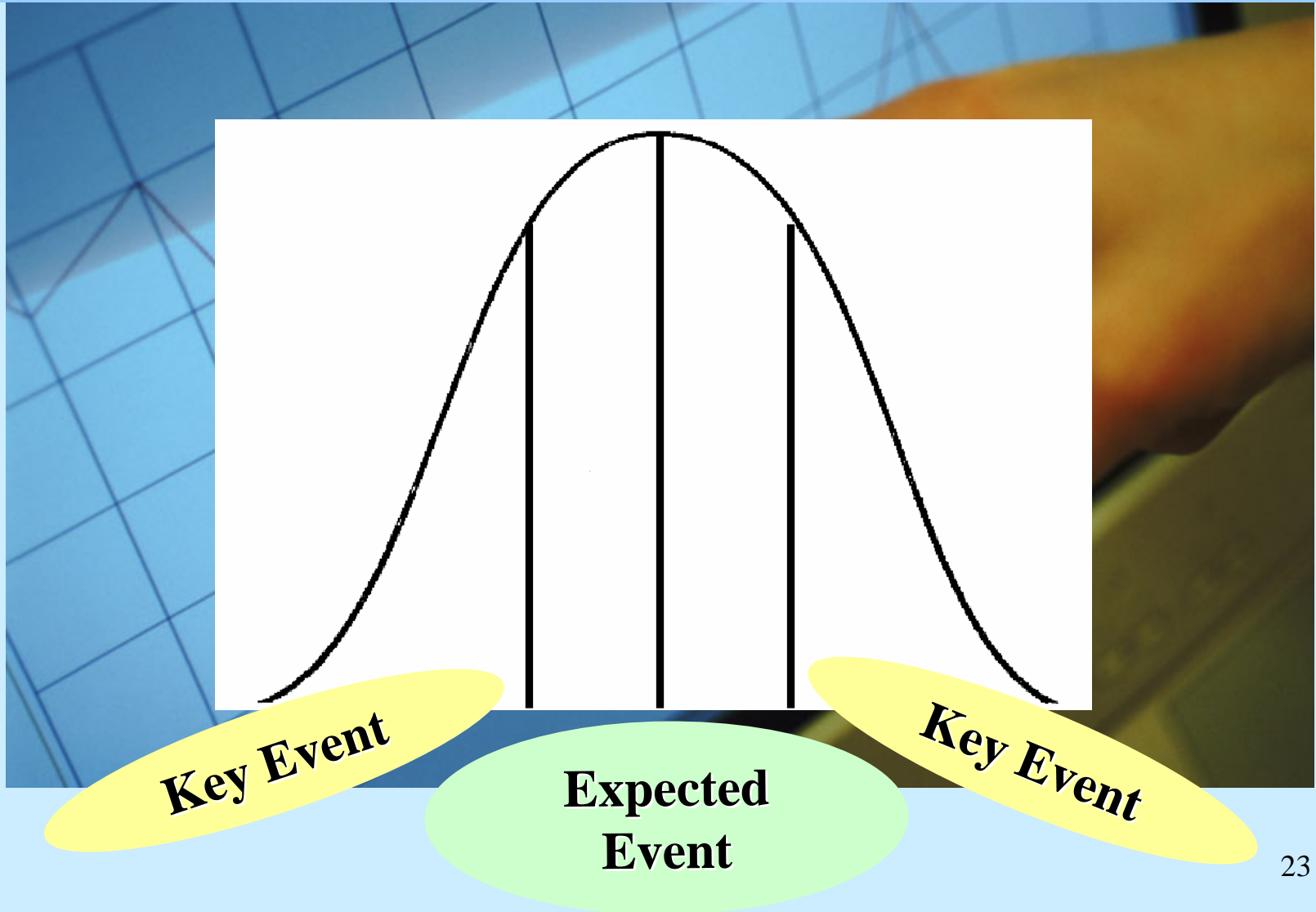
Workload is relatively well understood in the short term



... predictability is directly related to amount of variation in time it takes to complete a unit of work



Impact of key event versus expected event



Examples of Key Events...

- Terrorist attack.
- Introduction of a new technology that competes with your product.
- Bankruptcy of a key customer.
- Strike at a key supplier.
- Unexpected personnel change.

Conclusion: We can predict cost implications in the short-term relatively well

IF

(1) Processes are stable

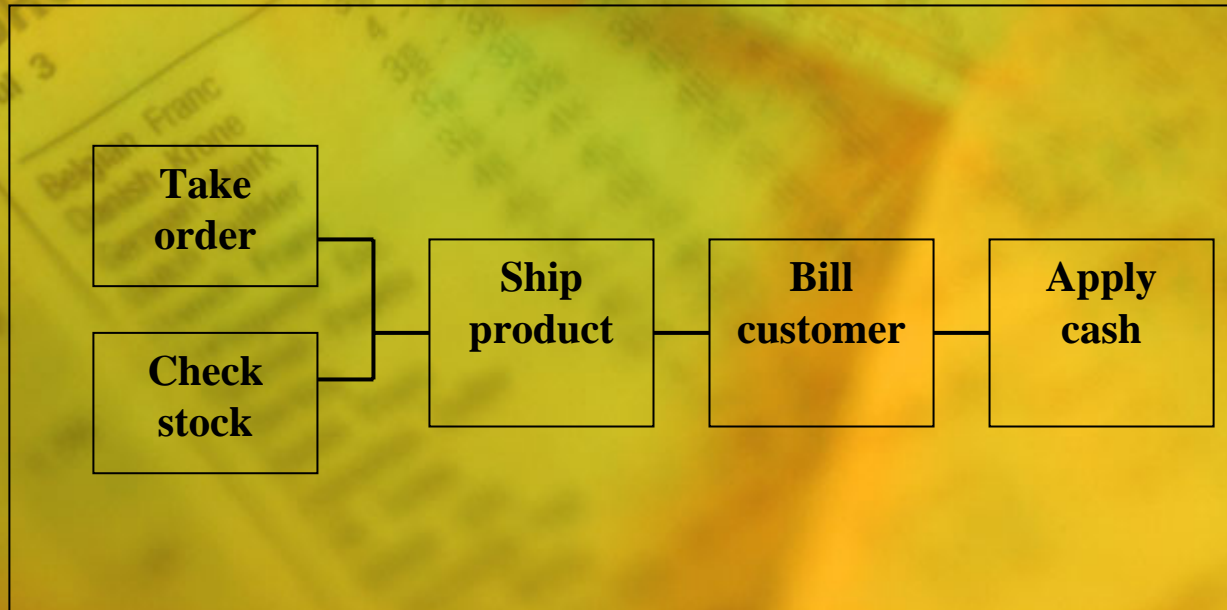
(2) Key events are understood

(3) We adjust the process cost standard for difficult work.

How to implement

Step 1

Define the processes and activities of a company



Step 2

Develop an activity resource consumption standard for each activity

Activity: Apply cash

Resources consumed:

Clerk	6 minutes
PC workstation	6 minutes
Software	6 minutes per transaction
Facilities	100 square feet

Outputs consumed:

of cash applications 15,000 per year (1,250 per month)

Cost of resources consumed:

Collection clerk	\$12.50 per hour for 1/10 hour	\$1.25
PC workstation	\$3,000 cost; 3 year life; \$1,000 x (12 ÷ (9,500/6))	0.05
AR software	1 cash appl * \$0.05 / cash appl	0.05
Facilities	\$13.50 per square foot per year; \$1,350 x (12 ÷ (9,500/6))	<u>0.07</u>

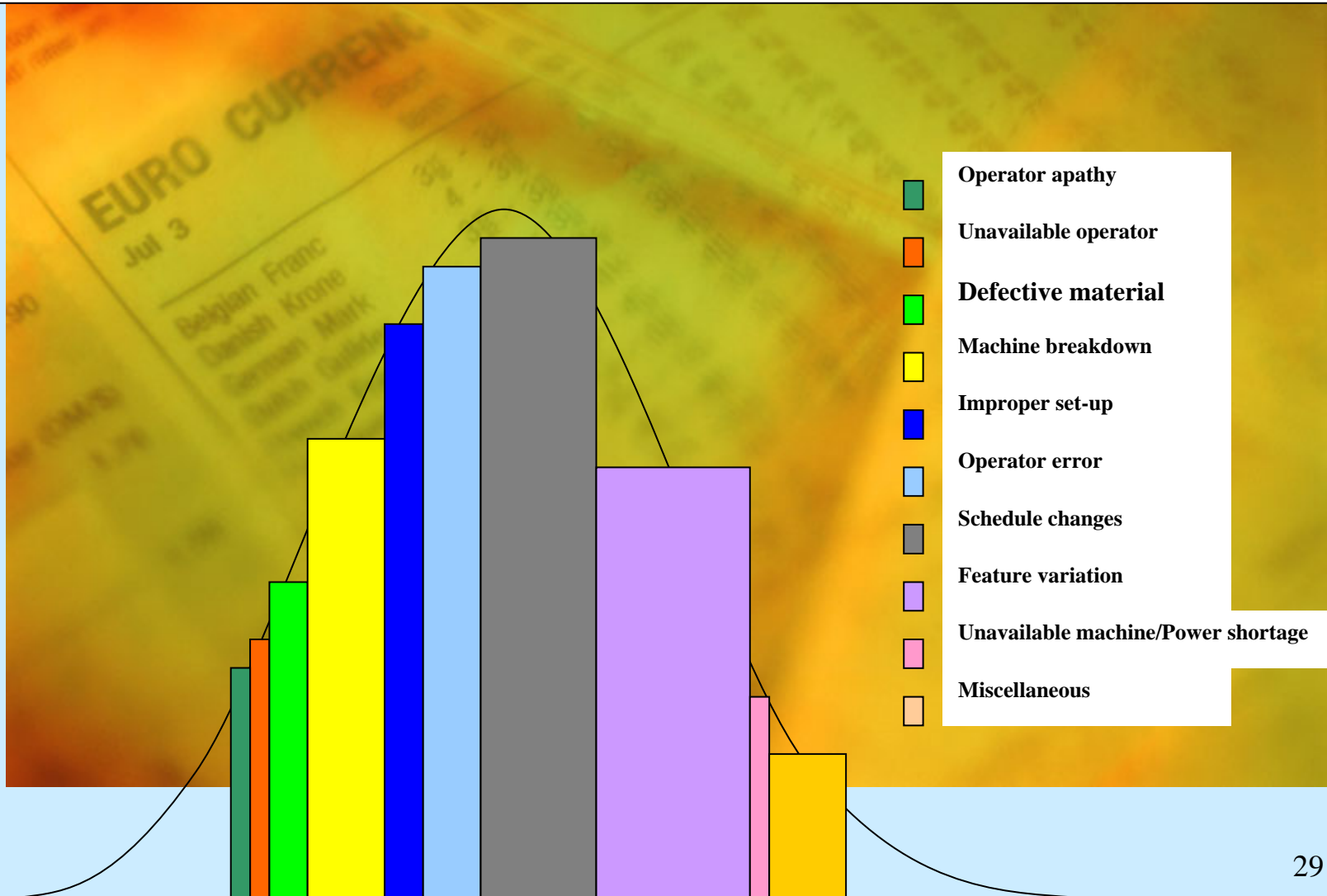
Cost per cash application processed

\$1.42

Activity Standard

Step 3

Determine amount of process variation by performing a root cause analysis



Step 4

Develop the planned workload using a key event planning table

Key event Table			
<u>Level</u>	<u>Output</u>	<u>Relationship</u>	<u>Timing</u>
1	Sales		
2	Sales orders	Average order size	Concurrent
3	Cash applications	1 per sales order	Lag-30 days

Planned workload					
<u>Level</u>	<u>Output</u>	<u>Period 1</u>	<u>Period 2</u>	<u>Period 3</u>	<u>Period 4</u>
1	Sales (units)	100K	150K	125K	100K
2	Sales orders	1000	1500	1250	1000
3	Cash applications	980	1000	1500	1250

Earned Value Reporting:

How we keep the Predictive Accounting data current.

Key earned value questions:

What has been accomplished? What did it cost?

Earned value approach:

- **Determine the outputs completed during the current period.**
- **Use the activity standard.**
- **Multiply the outputs by the activity standard**

Step 5

Track the actual workload accomplished during the analysis period

Level	Output	Actual workload			
		Period 1	Period 2	Period 3	Period 4
1	Sales	95K	140K	105K	90K
2	Sales orders	960	1420	1200	980
3	Cash applications	170	965	1430	1235

Step 6

Track the actual cost incurred by the group

Actual cost	
<u>Cost account description</u>	<u>Amount</u>
Salary and Wages	\$2,000.00
Depreciation	83.33
Software cost	85.00
Facilities cos	<u>112.50</u>
Total	\$2,280.83

Step 7

Compute the earned value by multiplying the actual work accomplished by the process standard

Earned value cost								
Process	Resource	process rate	# of outputs	Cost	Salary and Wages	Depreciation	Software	Facilities
Apply cash	Clerk	6 minutes	965	\$1.25	\$1,206.25			
	PC Workstation	6 minutes	965	\$0.05		\$ 48.25		
	Software	6 minutes	965	\$0.05			\$ 48.25	
	Facilities	6 minutes	965	\$0.07				\$ 67.55
Research error	Clerk	20 minutes	100	\$4.17	\$ 417.00			
	PC Workstation	20 minutes	100	\$0.20		\$ 20.00		
	Facilities	20 minutes	100	\$0.35				\$ 35.00
Total earned value					\$1,623.25	\$ 68.25	\$ 48.25	\$ 102.55

Step 8

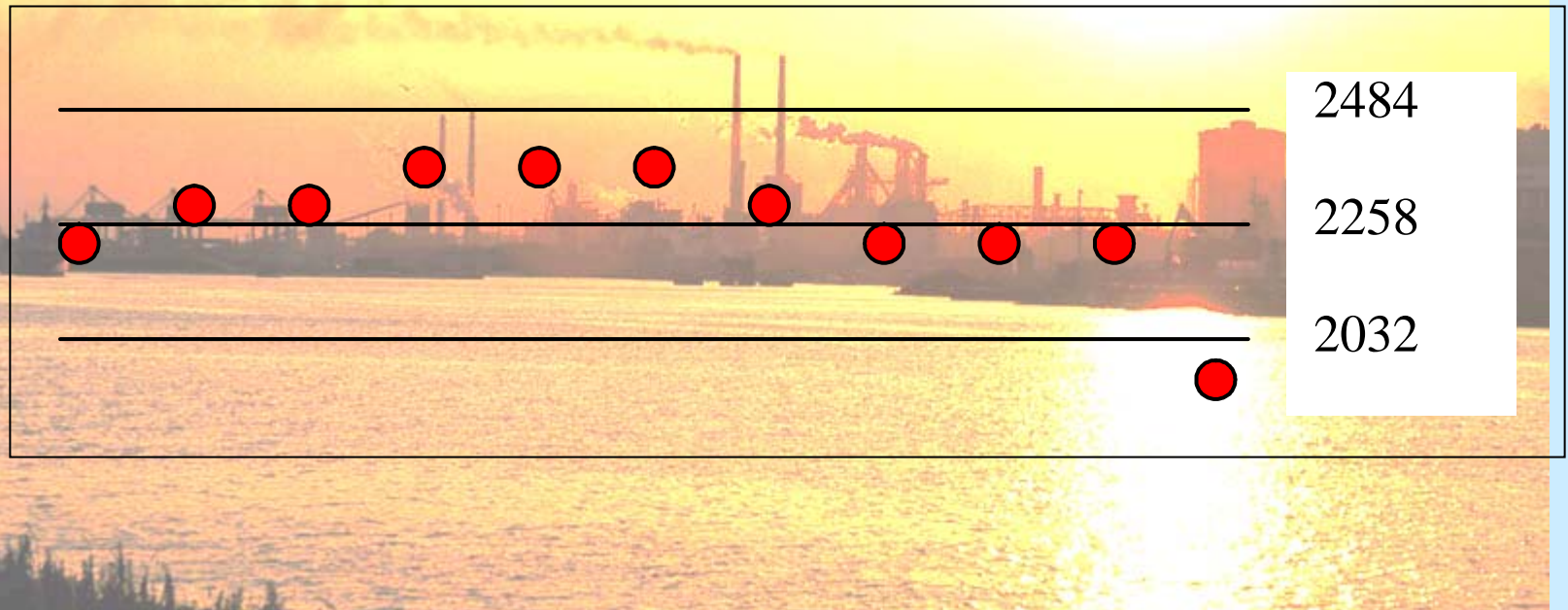
Compute the difference between earned value and the actual cost

Earned value variance calculation

<u>Cost account description</u>	<u>Actual</u>	<u>\$Earned Value</u>	<u>\$Variance</u>
Salary and Wages	\$2,000.00	\$1,623.25	\$376.75
Depreciation	83.33	\$ 68.25	\$ 15.08
Software cost	62.50	\$ 48.25	\$ 14.25
Facilities cost	112.50	\$ 102.55	\$ 9.95
Total	\$2,258.33	\$1,842.30	\$416.03

Step 9

Plot the variance on a control chart to determine whether the earned value is within control limits.



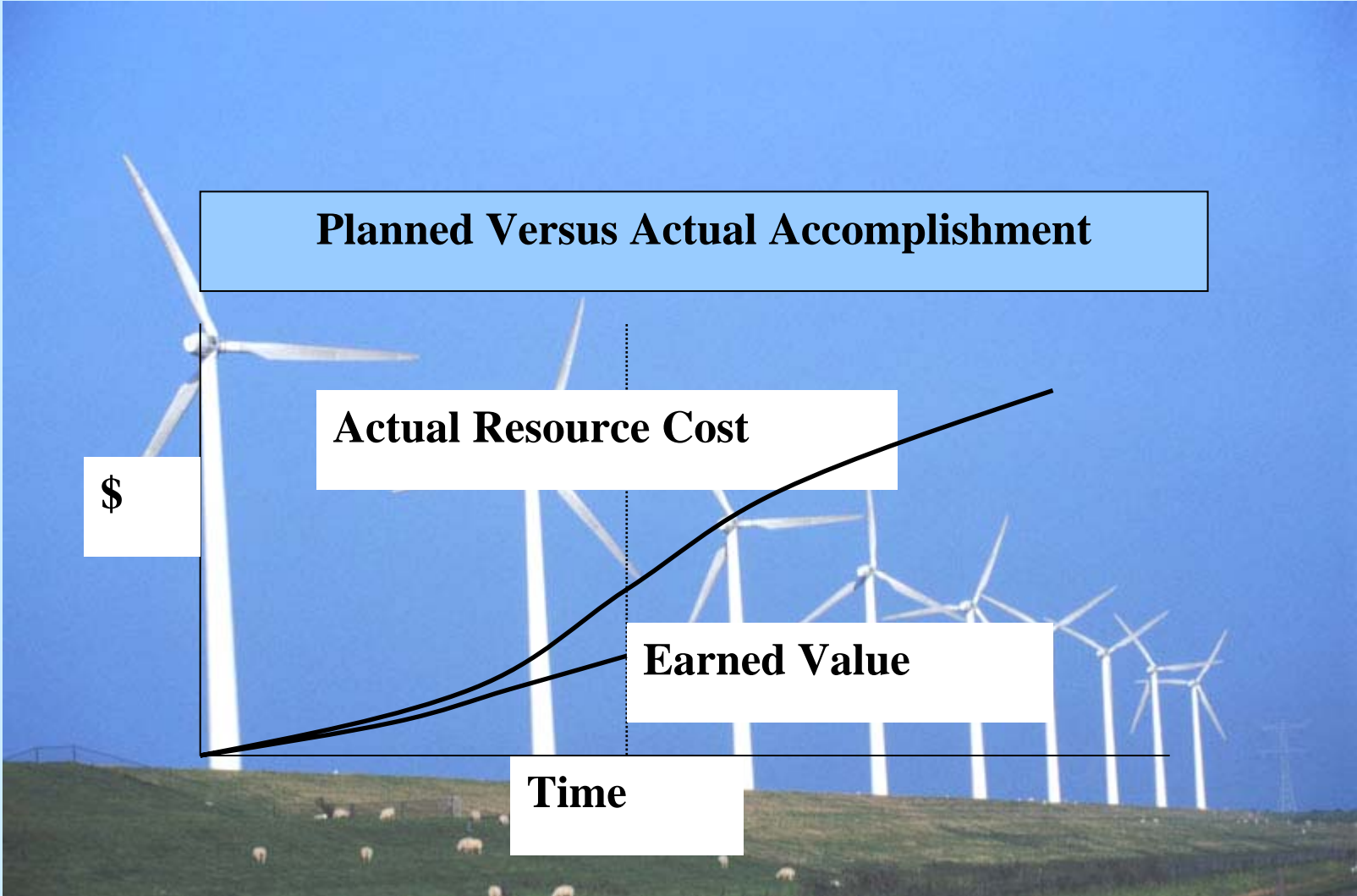
Planned Versus Actual Accomplishment

\$

Actual Resource Cost

Earned Value

Time



Implications for your Company

