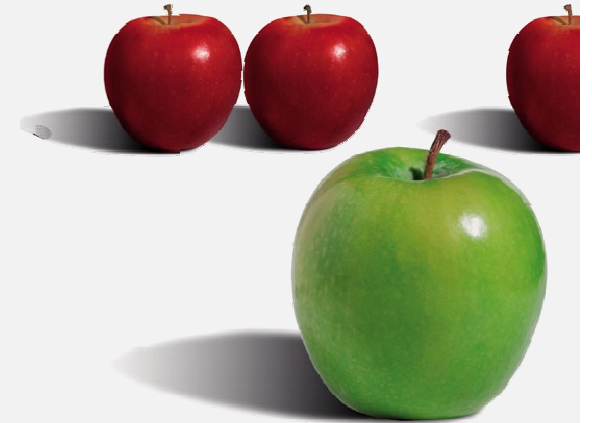


# Bridging the Gap between Quality and Finance

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John M. Cachat, CQE

Oct 19 2011

**ASQ Cleveland Section 0800**

# About John M. Cachat

- **25 years experience in computerizing quality**
  - USAF Research Project (1985)
  - Founder of enterprise quality software company (1988)
  - Chair of ASQ technical committee on computerizing quality (1992)
- **Trusted advisor** to global organizations, government agencies, and professional groups
- **President of Silico**
  - Research into next generation of technology
  - Focus on people, process, and then the technology
  - Subject matter expert on business process management



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# “Quality” in Your Organization

Is it just a cost of doing business?

**OR**

Is it a competitive advantage?



# Today's Discussion

- Quality professionals need a better understanding of financial terms and approaches
- CFOs need a better understanding of Quality terms and approaches
- Everyone needs to learn how to significantly improve situations over which they have control



# Are We That Different?

<b>Finance – SOX, GAAP</b>	<b>Quality – ISO, GMP, AS</b>
Documentation	Documentation
Training	Training
Audits	Audits
Risk Management	Controls

# Are We That Different?

Finance	Quality
Likes Numbers	Likes Numbers
Likes Processes and Audits	Likes Processes and Audits
Discusses Cash, Profit, etc.	Discusses PPM, CAR, Cpk, etc.
Reports what happened	<b><i>Can explain why it happened</i></b>

# The Disconnect

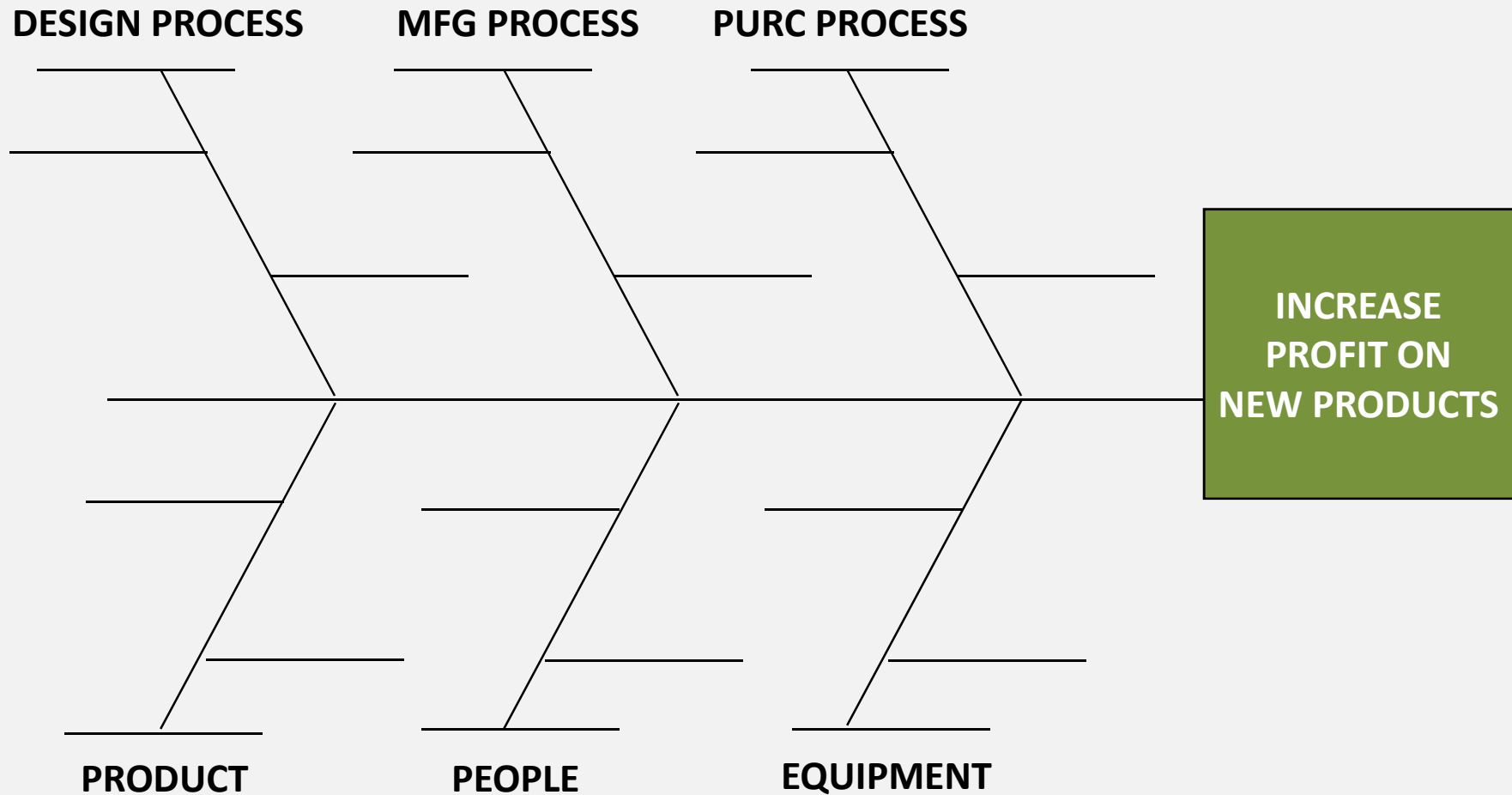
- Finance has been consumed with GAAP and audited financial statements for external reporting
- Operations is not happy with standard financial reports
  - Operations ability to understand?
  - Financial ability to provide information?
- Great gains can be made from “management accounting”

# Management Accounting

- Information for internal business support
- Great gains can be made by Quality and Accounting working together
- The main focus should be cause and effect analysis
- **What makes this number go up or down?**

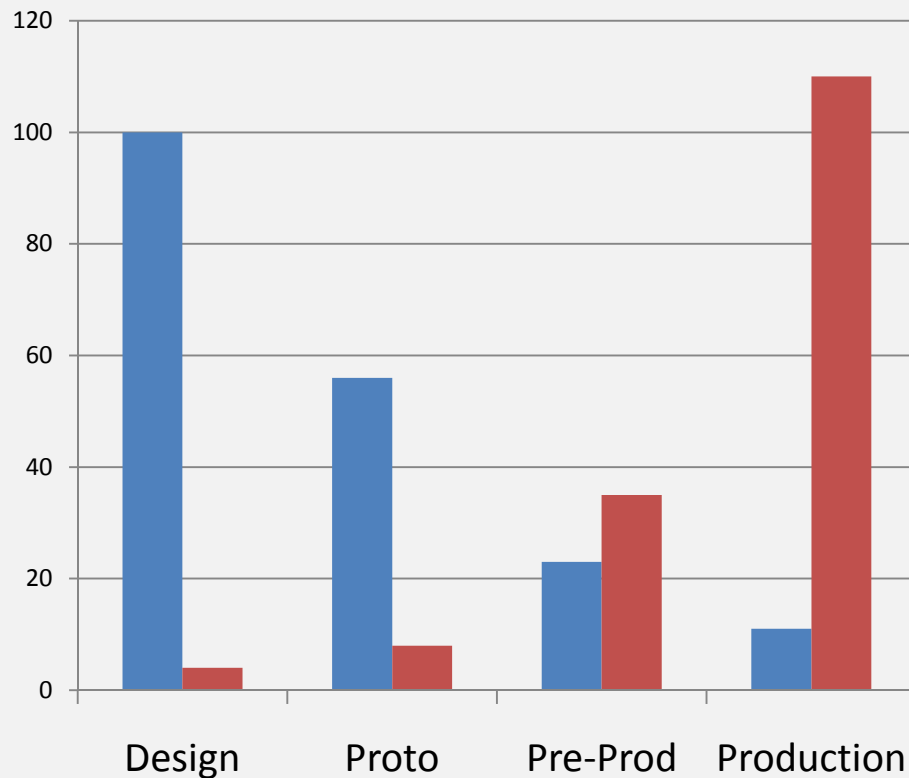
# Cause and Effect Example

## Increase Profit on New Products



# Increase Profit on New Products

## Number of Engineering Changes by Product Stage

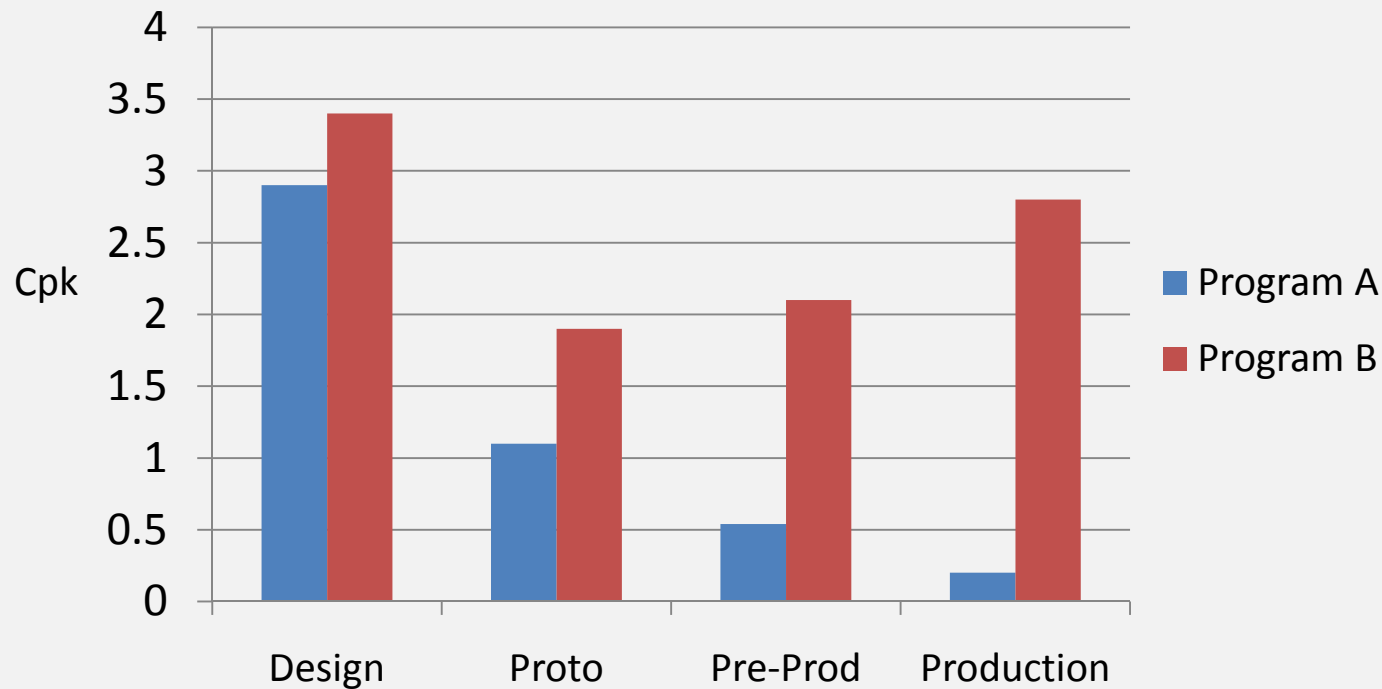


■ Program A  
■ Program B

**INCREASE  
PROFIT ON  
NEW PRODUCTS**

# Increase Profit on New Products

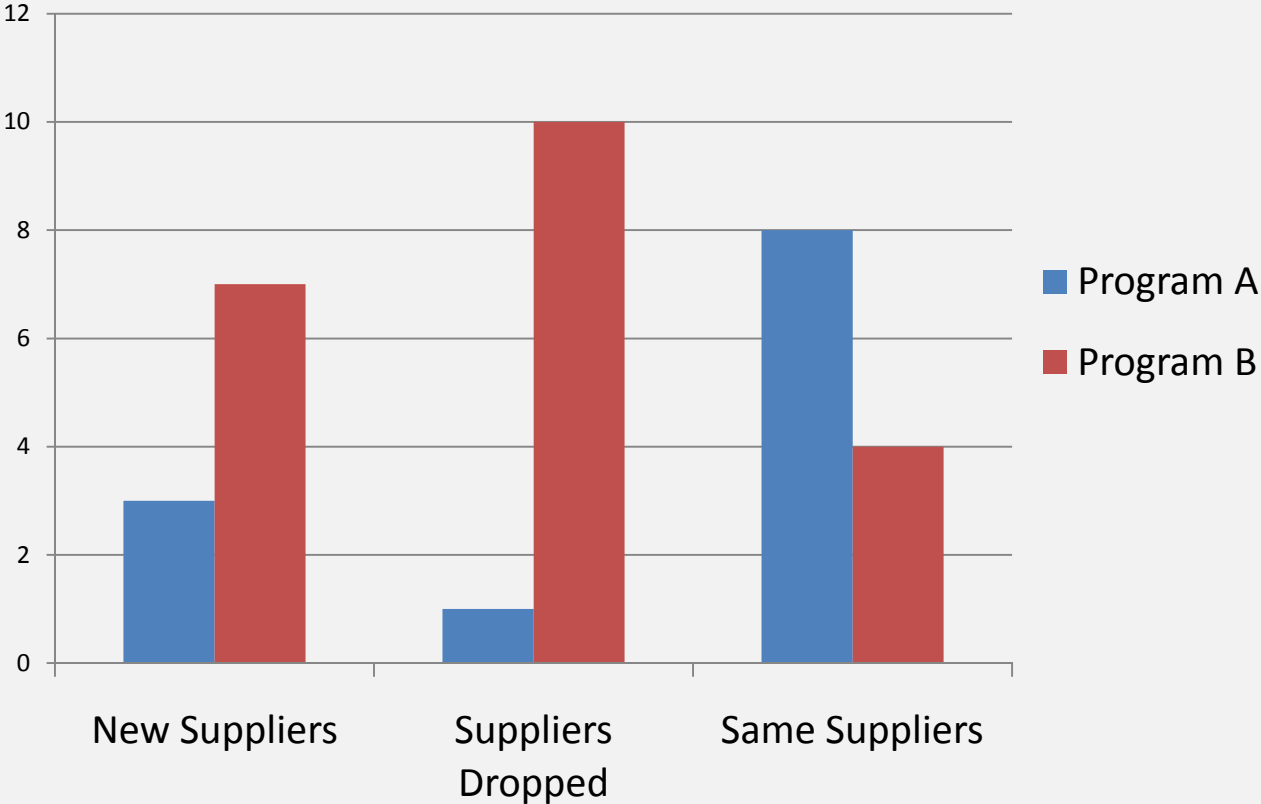
## Process Capability by Product Stage



**INCREASE  
PROFIT ON  
NEW PRODUCTS**

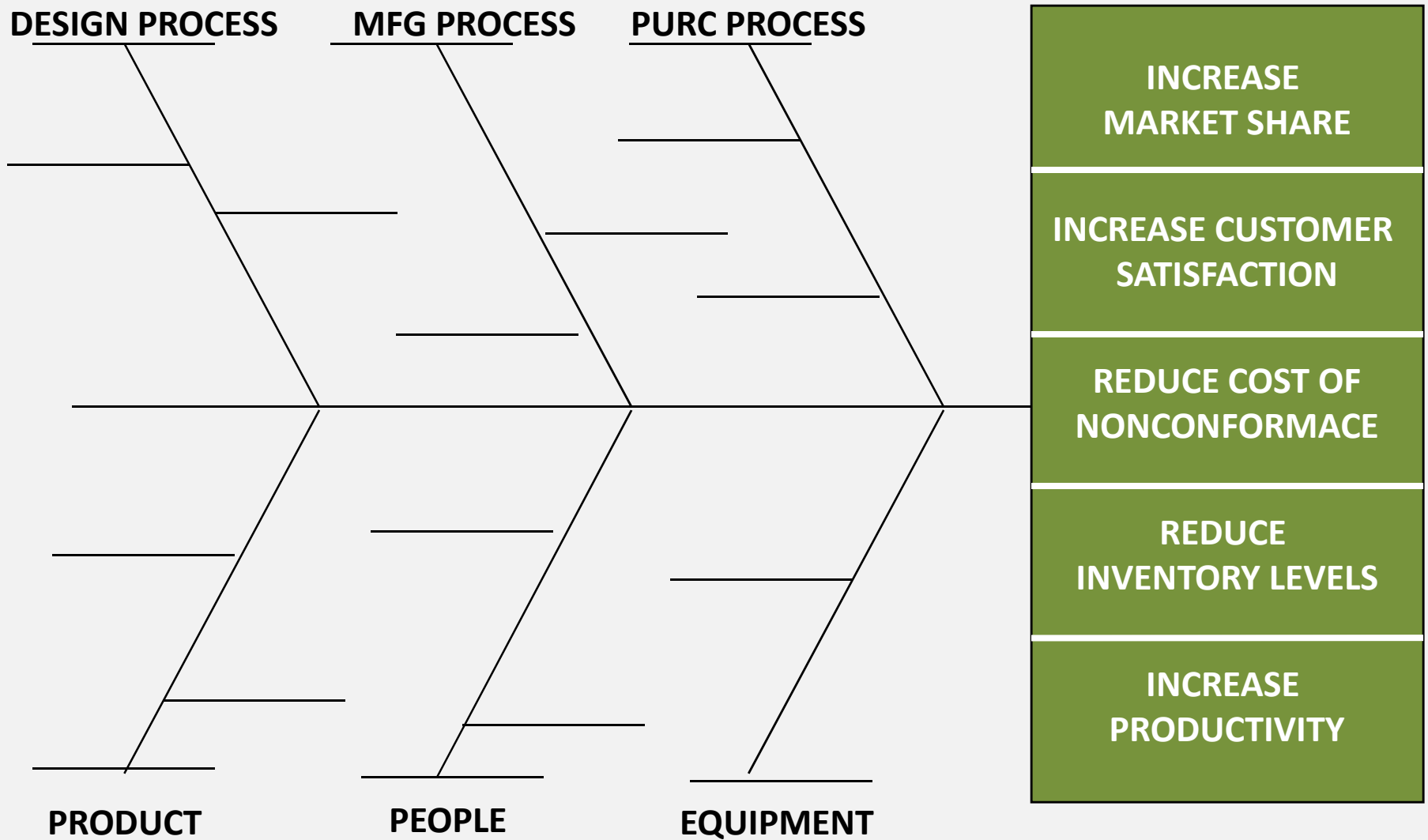
# Increase Profit on New Products

## Supplier Changes by Program



**INCREASE  
PROFIT ON  
NEW PRODUCTS**

# Cause and Effect Example



# Strategy & Culture of a Quality Management System

- Adoption must be a strategic decision *and driven by an understanding that it directly relates to corporate objectives*
- Design and implementation is influenced by:
  - Needs
  - Objectives
  - Products provided
  - Processes employed
  - Size and structure of the organization
- It is not the intent to imply uniformity in the structure or uniformity of documentation

# Process Approach

## Process Approach

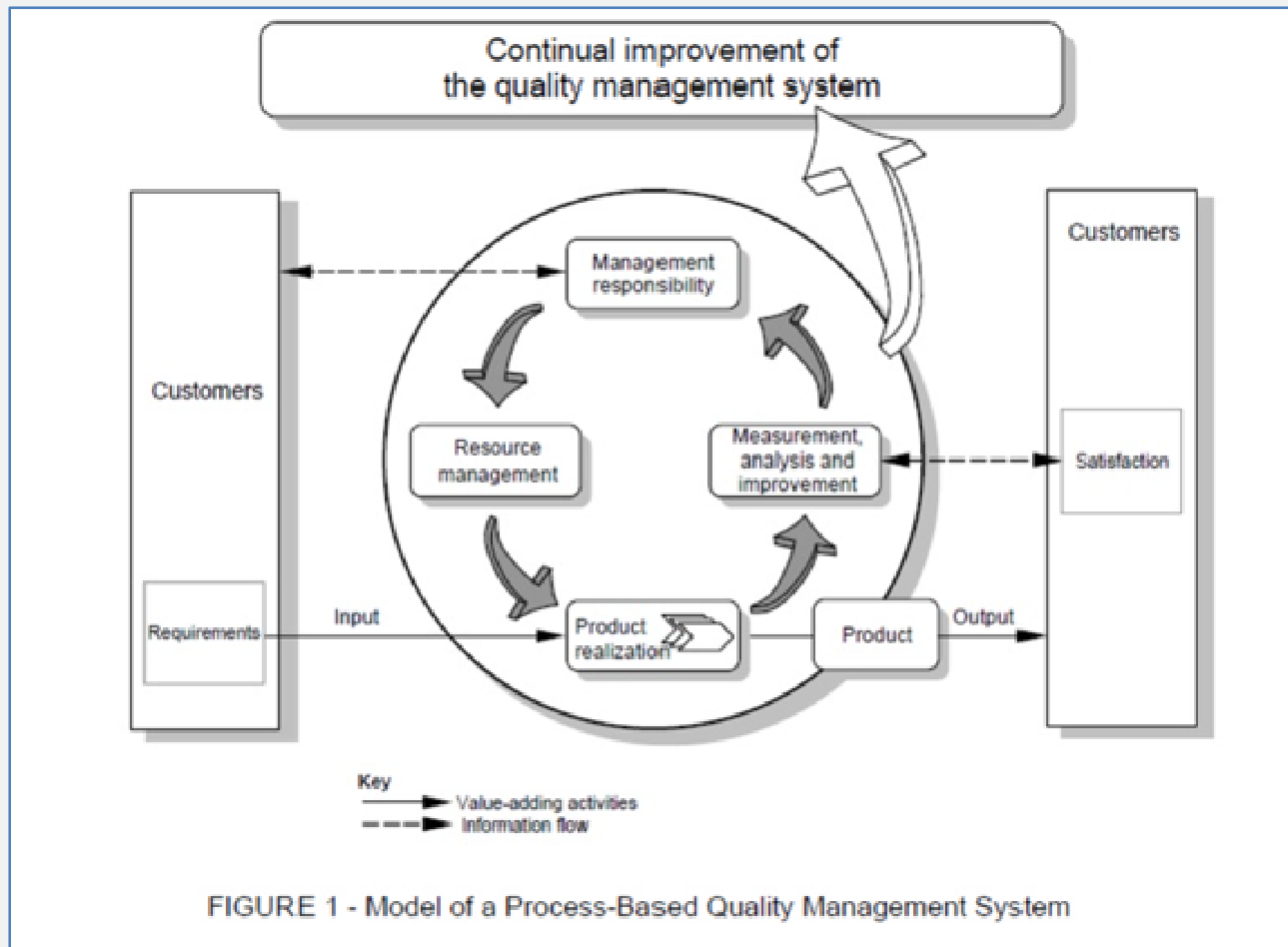
- The application of a system of processes within an organization, together with the identification and interactions of these processes and their management

## Advantage of Process Approach

- Provides ongoing control over the **linkage between the individual processes** within the system of processes, as well as **their combination and interaction.**

# Model of Process Approach

(How does you management react to a diagram like this?)

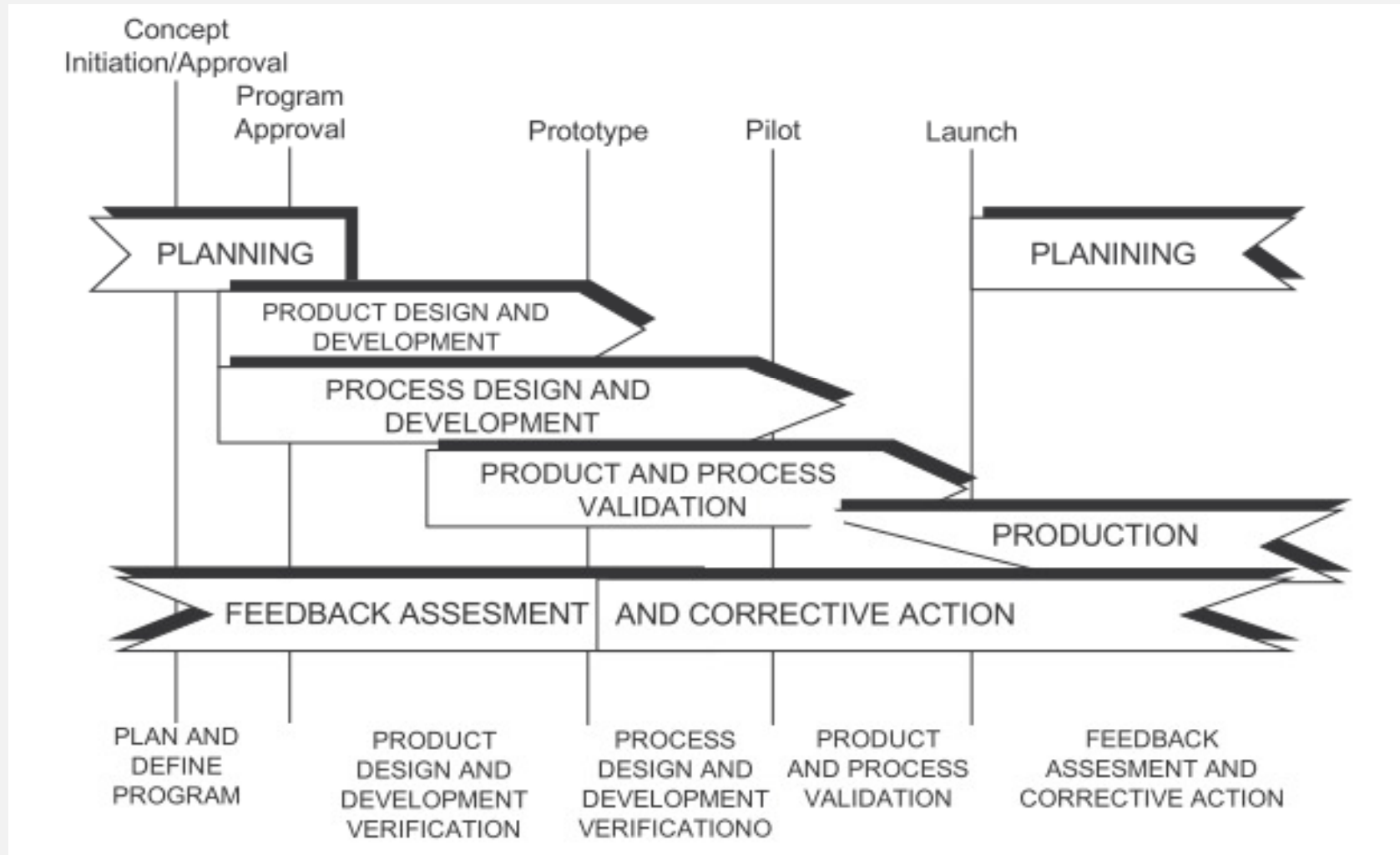


# Quality Management System

(Impacting every Department – from Quote to Cash)

PROJECT MANAGEMENT		
New Business	Product/Process Validation	Risk Management
PEOPLE		
Customers	Employees	Suppliers
DOCUMENTATION		
Process Flows/Procedures	Product Information	Records
EQUIPMENT		
Capital	Tooling	Inspection
MANUFACTURING		
Receiving	Work Orders, Routers, Inspection	Shipping
CONTINUOUS IMPROVEMENT		
NCM and CAPA	Project Teams	Audits

# Should We Use a Business Model?



# Business Model

(Next Level of Detail)

Plan and Define Program	Product Design and Development Verification	Process Design and Development Verification	Product & Process Validation
<ul style="list-style-type: none"> <li>▪ Design Goals</li> <li>▪ Reliability &amp; Quality Goals</li> <li>▪ Preliminary Bill of Materials</li> <li>▪ Preliminary Process Flow</li> <li>▪ Preliminary Listing of Special Product &amp; Process Characteristics</li> <li>▪ Product Assurance Plan</li> </ul>	<ul style="list-style-type: none"> <li>▪ Design FMEA</li> <li>▪ DFMA</li> <li>▪ Design Verification</li> <li>▪ Design Reviews</li> <li>▪ Prototype Build</li> <li>▪ Engineering Drawings</li> <li>▪ Engineering Specifications</li> <li>▪ Material Specifications</li> <li>▪ Drawing &amp; Specification Changes</li> <li>▪ New Equip., Tooling &amp; Facilities Reqmts.</li> <li>▪ Special Product &amp; Process Characteristics</li> <li>▪ Prototype Control Plan</li> <li>▪ Gages/Testing Equip. Requirements</li> </ul>	<ul style="list-style-type: none"> <li>▪ Packaging Standards</li> <li>▪ Product/Process Quality System Review</li> <li>▪ Process Flow Chart</li> <li>▪ Floor Plan Layout</li> <li>▪ Characteristics Matrix</li> <li>▪ Process FMEA</li> <li>▪ Pre-Launch Control Plan</li> <li>▪ Process Instructions</li> <li>▪ Measurement Systems Analysis Plan</li> <li>▪ Preliminary Process Capability Study Plan</li> <li>▪ Packaging Specifications</li> </ul>	<ul style="list-style-type: none"> <li>▪ Production Trial Run</li> <li>▪ Measurement Systems Evaluation</li> <li>▪ Preliminary Process Capability Study</li> <li>▪ Production Part Approval</li> <li>▪ Production Validation Testing</li> <li>▪ Packaging Evaluation</li> <li>▪ Production Control Plan</li> <li>▪ Quality Planning Sign-Off</li> </ul>

# My Quality Projects Never Get Funded!

- You are choosing between several projects
- You have limited money to invest
- How do you decide which project to fund?



# Too Expensive? Compared to What?

Your Company benefits	Year 1	Year 2	Year 3	Total
<b>Cost Reductions</b>				
Direct Material	\$688,800	\$1,505,045	\$2,427,831	<b>\$4,621,676</b>
Direct Labor	\$719,338	\$924,863	\$1,027,626	<b>\$2,671,828</b>
Indirect Labor	\$481,957	\$619,659	\$688,510	<b>\$1,790,126</b>
Overhead Labor	\$141,237	\$181,590	\$201,767	<b>\$524,593</b>
Warranty and Returns	\$420,000	\$550,800	\$624,240	<b>\$1,595,040</b>
Supplies and Indirect Material	\$84,000	\$108,000	\$120,000	<b>\$312,000</b>
Custom Cost Reducing Benefit	\$0	\$0	\$0	<b>\$0</b>
<b>Total Cost Reducing Benefits</b>	<b>\$2,535,332</b>	<b>\$3,889,957</b>	<b>\$5,089,974</b>	<b>\$11,515,263</b>

Benefit Dimension	Specific Benefit Area	Year 1	Year 2	Year 3	Total
Direct Material	Reduced purchase price of direct materials through better purchasing decisions	\$210,000	\$554,917	\$950,413	<b>\$1,715,330</b>
	Reduced direct material cost through supplier charge back for poor	\$82,800	\$42,650	\$17,575	<b>\$143,026</b>
	Reduced direct material cost through better engineering decisions	\$60,000	\$462,431	\$950,413	<b>\$1,472,844</b>

ROI Summary--Key Performance Metrics	
Return on Investment (ROI)	702%
Net Present Value (NPV)	\$8,439,336
Internal Rate of Return (IRR )	209%
Payback Period (Months)	7

# Finance Terms

- Return on Investment (ROI)
- Net Present Value (NPV)
- Internal Rate of Return (IRR )
- Payback Period

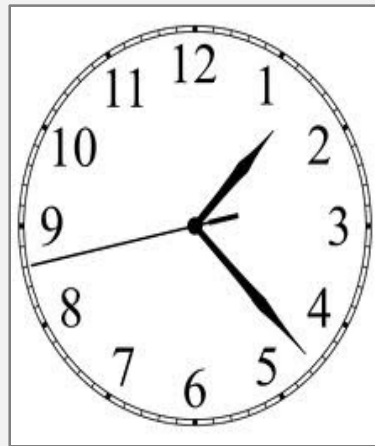


# Cost Justification

**Labor**



**Time**



**Material**

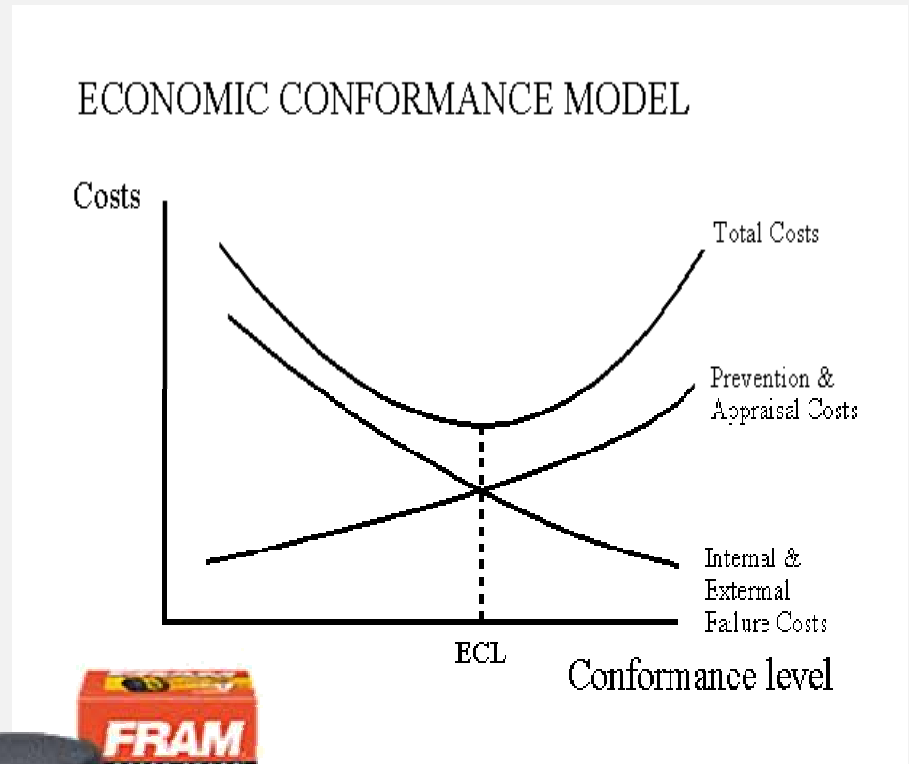


**Increase Revenue**



# Quality Costs Model

- **Prevention**—cost to prevent mistakes
- **Inspection**—cost to find mistakes
- **Failure**—cost of mistakes (internal & external)



# Cost Justification

## Labor



## Prevention

- People that design parts/processes
- People that work with suppliers
- People that define customer expectations

## Inspection

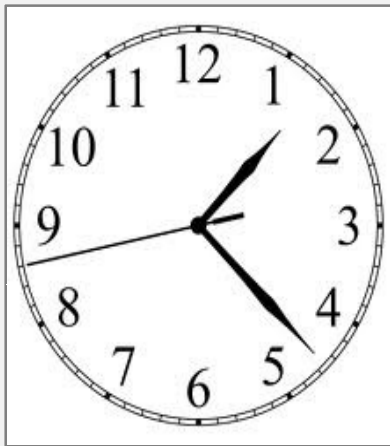
- People that check parts
- People that check paperwork

## Failure

- People that scrap, rework, repair parts
- People that scrap, rework, repair paperwork
- People that put out fires

# Cost Justification

Time



## Prevention

- Time to design new parts/processes
- Time to process ECRs
- Time to generate reports

## Inspection

- Delays in receiving inspection
- Manufacturing waiting on inspection
- Cannot ship until paperwork is done

## Failure

- Time to get MRB disposition
- Time to solve problems

# Cost Justification

## Material



## Failure (Scrap, Rework, Repair)

- Buying incorrect material
- Making to incorrect revision
- ECR makes inventory obsolete
- Downgrades
- MRB inventory sitting around

# Cost Justification

## Increase Revenue



I want to give you this \$10M order, but you are only a \$5M company.

I am concerned about the risk of rapid growth at your company.

# Q&A

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