

# Return on IT Quality Investment...



**How long does it take?**

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## State of today's "quality" in IT....

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- Most companies are still struggling with issues of poor quality
- IT management is still "instant gratification" oriented
- Must see a demonstrated ROI immediately
- Still can't "show me the money"



# Presentation Overview

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- **Reasons why we still don't have the quality we want**
- **A look at some strategic quality definitions**
- **Define "Cost of Quality" in detail**
- **Suggestions for demonstrating quantitative and qualitative measures**



## Reasons we still don't have it..

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- We are still defining “meets requirements”
- Software that only meets requirements is still often inadequate
- Many requirements are implicit or implied or not thought about at all until after implementation



## Reasons we still don't have it..

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- End users want quality, reliability, and outstanding performance
- Customers want dependability under unpredictable circumstances (E-Commerce)
- Can't improve any of IT until we know how our software is really being built!



## Reasons we still don't have it..

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- **Three main areas of organizational failure:**
  - **No common Sense**
  - **We say one thing and do another**
  - **Good processes can't survive poor management**



## Three areas of organizational failure:

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- 1. No Common Sense
  - Do whatever makes sense for your industry, project, organization, etc.
  - Process is critical but the process is not the goal, quality software is the goal!



## Three areas of organizational failure:

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- **2. Say one thing, do another**
  - **How many of your IT people have all the system “work-arounds” committed to memory?**
  - **What are you rewarding people for? (firefighting or good processes?)**



## Three areas of organizational failure:

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- 3. Good processes can't survive poor management
  - Think "Dilbert"
  - Enough said....



## What's the answer?

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- **Need to focus even harder.**
- **Quality software requires a process, and the process may be different for each particular organization.**
- **Quality software is the end; processes are the means.**



# Strategic quality definitions...

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- **QA versus QC**
- **Verification versus validation**
- **Cost of Quality**



# Strategic quality definitions...

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- QA versus QC
- **QA – Preventive / Staff Function**
- **QC - Detective / Line Function**



# Strategic quality definitions...

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- QA versus QC
- Verification versus validation
- Cost of Quality



# Software Testing

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## Two Important Concepts

### Validation

Determination of the correctness of the final program or software product from a development project with respect to the users need

### Verification

The demonstration of consistency and completeness at each stage and between each stage of the development life cycle



# Strategic quality definitions...

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- QA versus QC
- Verification versus validation
- Cost of Quality



# What drives the bottom line..

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- Increase income
- Reduce expenses:
  - **Fixed**
  - **Variable**





# So, what is Cost Of Quality?

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**Cost to build the software  
versus  
everything else!**



**Cost of Quality / Cost of Poor Quality**

**/ Cost related to Quality**

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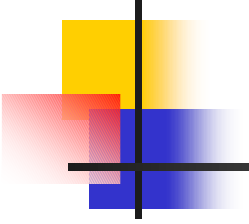
**Failure Costs**

**Appraisal Costs**

**Prevention Costs**

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**Production Costs**



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“Quality Costs represent the difference between the **actual costs** of a product or service and what the **reduced cost** would be if there were no possibility of substandard service, failure of products, or defects in their manufacture”.

Principles of Quality Costs, 3<sup>rd</sup> Edition, ACQ  
Quality Costs Committee



## The Result ?

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- High COQ means misallocated overhead.
- When a change is made to detective and/or preventive costs, failure costs will change.
- Preventive costs have a 10:1 payback.
- Detective costs have a 3:1 payback.
- Without new facts, and good metrics management will continue to make the wrong decisions.



## Let's dissect COQ...

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- **Prevention costs:**

- all activities specifically designed to prevent poor quality.

- **Appraisal costs:**

- Costs associated with measuring, evaluating, or auditing products to assure they conform to standards or requirements.



# Let's dissect COQ...

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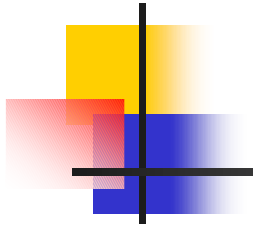
- **Failure Costs**

- **Costs resulting from products or services not conforming to requirements or standards.**

- **Internal**
- **External**

- **Total Quality Costs**

- **The sum of all of the above costs.**
  
- **See previous definition of Quality Costs**



**Failure Costs most often measured**

**Scrap**  
**Rework**

**Engineering Time**  
**Management Time**  
**Field Downtime**  
**Delivery problems**  
**Customer Dissatisfaction**

**Hidden Failure Costs**

# Six views about “Show Me the Money”

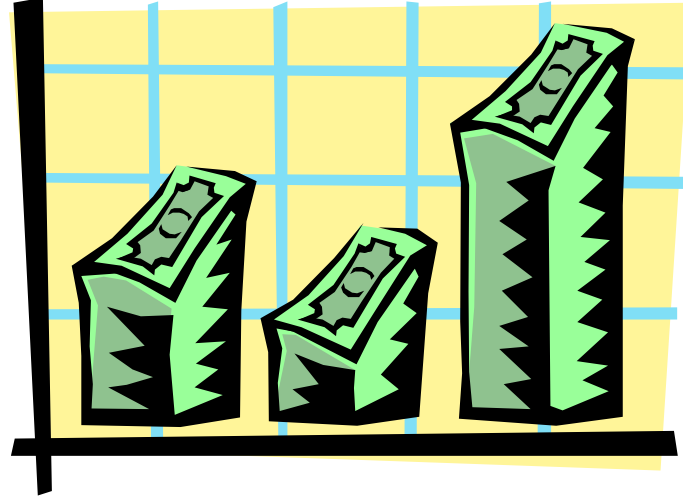


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Money is a good excuse for inaction.

Money is always available for high priority items.

“Don’t worry about anything that can be cured with money”.



Lack of money is usually not the reason that ideas are rejected.

Money is the root of all evil. Quantitative goals cause people to lie.

Controlling money is controlling power.

# Demonstrating COQ to management....

- Use an approach:
  - Quality-Costing
  - Quality-Loss Approach
  - Process-Cost Approach





# Quality-Costing

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- The conventional approach of categorizing costs of quality as prevention, appraisal, and failure.
- Prevention and appraisal costs are considered investments.
- Failure costs are considered losses.
- Quality costs are generally reported as a percent of a comparative base, like sales, production, labor, or unit costs. The “gold in the mine” approach (Juran).



# Quality-Loss Approach

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- Captures the intangible as well as the tangible costs, or losses, due to poor quality products.
- Tangible costs are rework, scrap, and are shown as the costs at the “tip of the iceberg”.
- Intangible losses are the “hidden failures costs” like lost sales due to customer dissatisfaction (the submerged part of the iceberg).

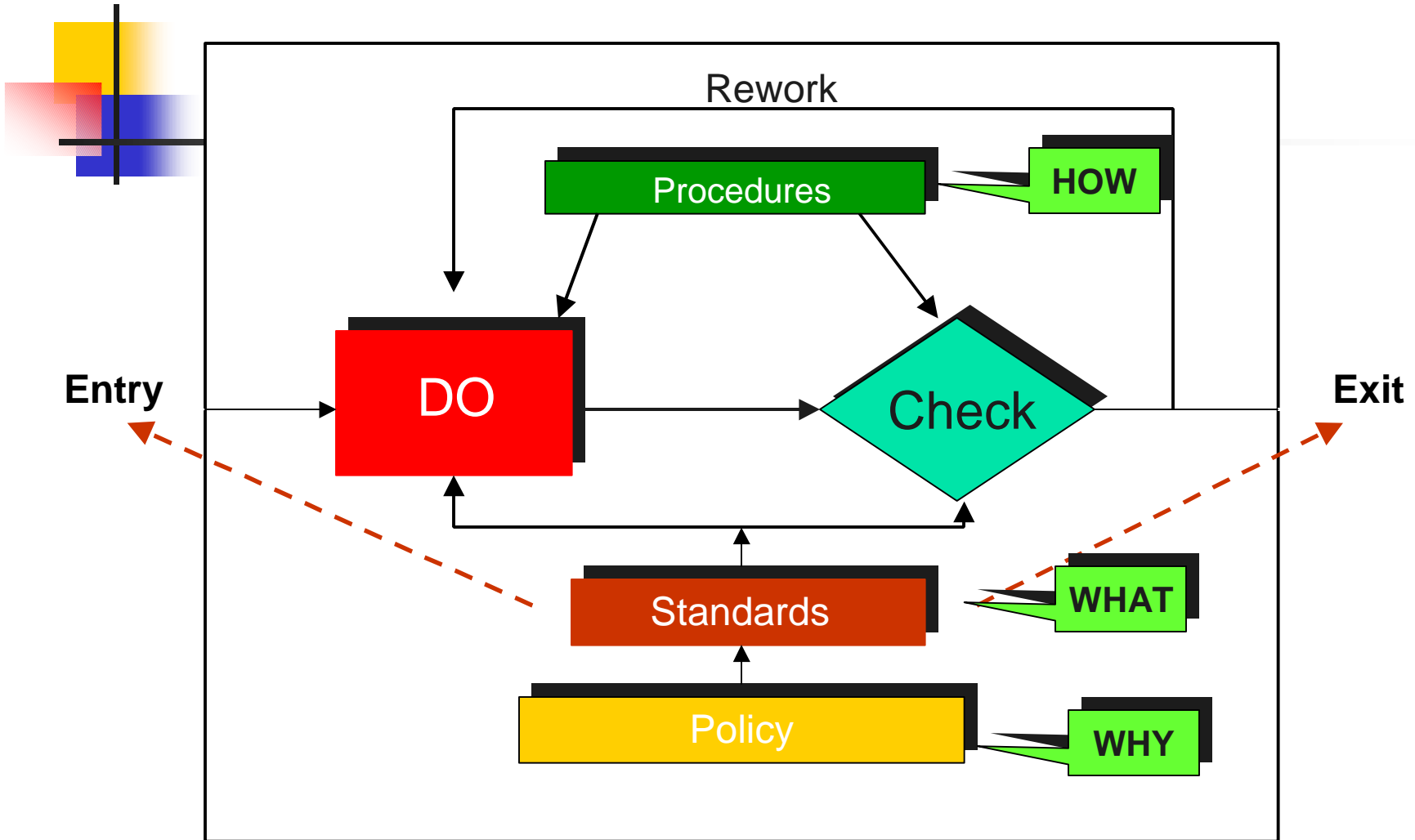


# Process-Cost Approach

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- Looks at costs for the process instead of the product.
- Assumes you understand what a “process” is.

# Process Engineering





# Process-Cost Approach

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- Significantly changes the definition of cost of conformance and the way that quality costs are viewed:
  - **Cost of conformance** – costs incurred to fulfill all the stated and implied needs of customers in the absence of failure.
  - **Cost of nonconformance** – costs incurred due to failure of the existing process.



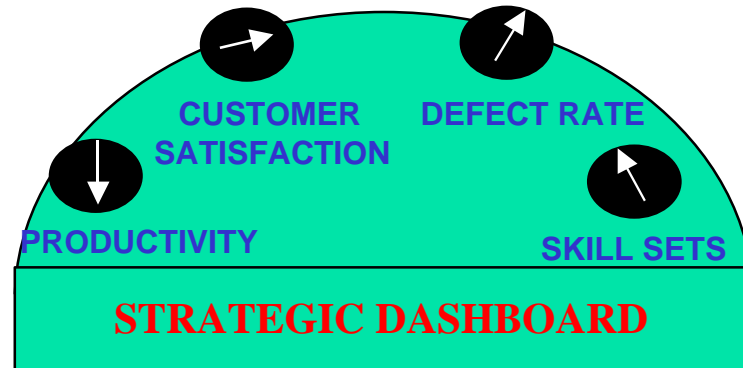
# Getting management attention!

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Create a management  
**Strategic** "dashboard"

(Tells what results management really wants)

# A Dashboard Example



## COMMON STRATEGIC INDICATORS:

- SCHEDULE
- BUDGET
- PROCESS MATURITY
- CUSTOMER SATISFACTION
- PRODUCTIVITY
- DEFECT RATES
- MOTIVATION
- CAPABILITY OF STAFF
- TEAM EFFECTIVENESS



# Getting management attention!

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**Demonstrate what “value” is  
obtained if results are achieved  
(increased income, reduced  
expense)**



# Getting management attention!

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Create a **tactical** “dashboard”  
(what causes the result to  
happen).



# Getting management attention!

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**Determine the costs to  
make it happen  
(one-time costs/continuous costs)**



# Getting management attention!

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**Present the data, make a decision,  
pilot, and evaluate the results.**



## Conclusion:

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**Discussed**

- 1. Why we don't have good quality**
- 2. Strategic COQ definitions**
- 3. COQ components**
- 4. Approaches on "How-To" show COQ to management**



## References:

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- **ANSI/ASQC Q9004-1-1994, Quality Management and Quality System Elements-Guidelines (Milwaukee: ASQC Quality Press, 1994)**
- **Capability Maturity Model for Software, Version 1.1**; Mark Paulk, Bill Curtis, Mary Beth Chrissis, Charles V. Weber; SEI, 1993

Thank You

For Your participation



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