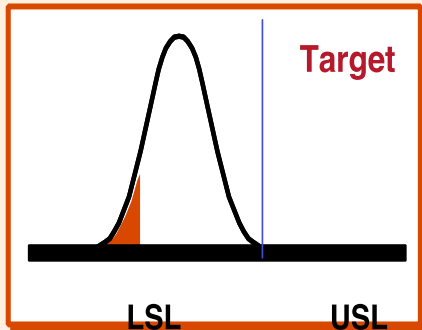




Project Quality Management

*Chapter 8 in the PMBOK® Guide
5th Edition*

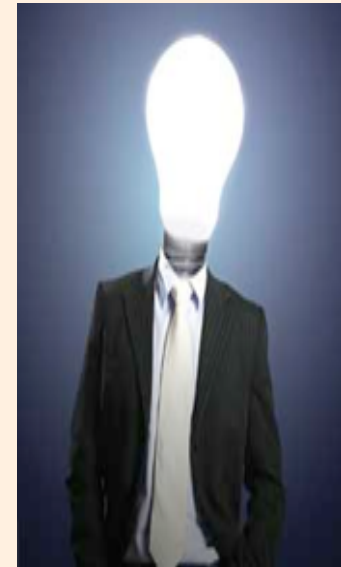


Quality endeavors are all about meeting stated & implied needs to:

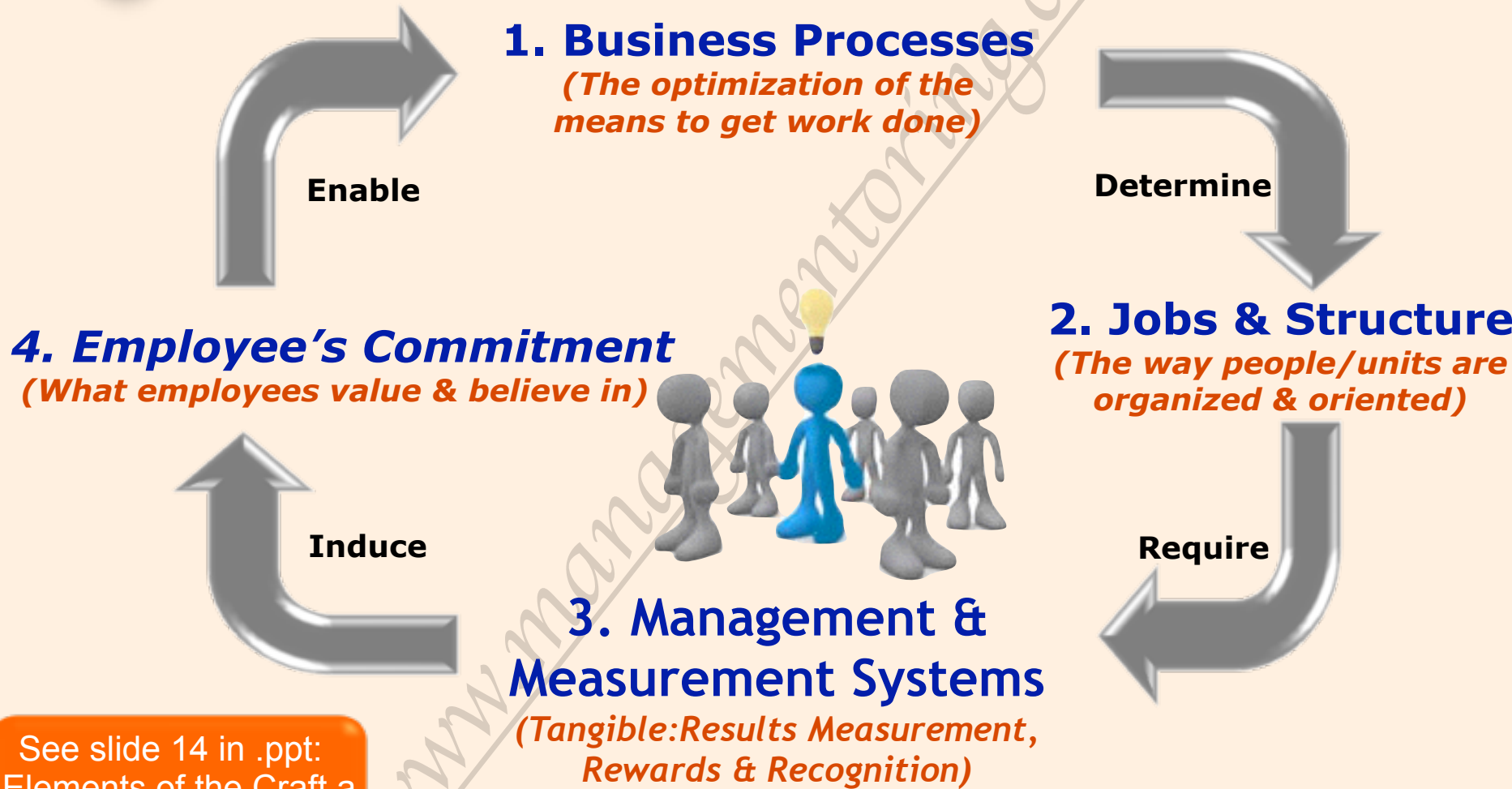
- 1. Retain existing customers (65% minimum)*
- 2. Recoup/regain lost customers*
- 3. Win/secure new customers*

A Comment About Quality Management

- Phil Crosby once said:
 - “The problem of quality management is not what people don't know about it. The problem is what they think they do know. In this regard, quality has much in common with sex”.
- Everybody is for it.
(Under certain conditions, of course.)
- Everyone feels they understand it.
(Even though they wouldn't want to explain it.)
- Everyone thinks execution is only a matter of following natural inclinations.
(After all, we do get along somehow.)
- And, of course, most people feel that problems in these areas are caused by other people.
(If only they would take the time to do things right.)



Achieving Operational Quality

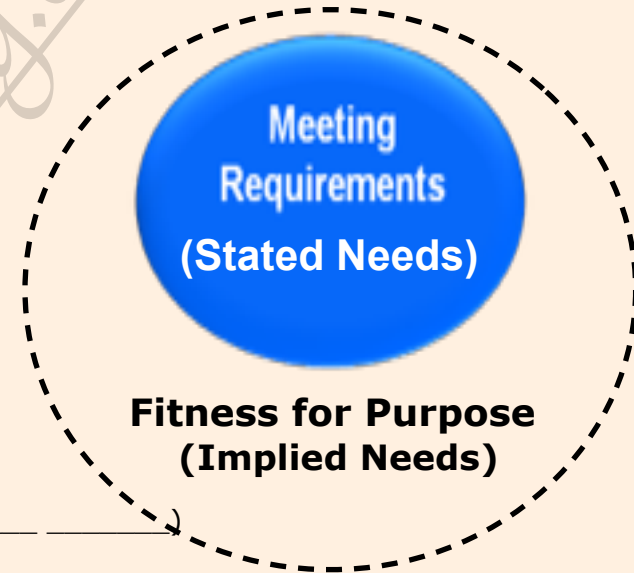


See slide 14 in .ppt:
Elements of the Craft a
PM must Understand

What is Quality?

Learn more @: <http://www.maxwideman.com/issacons1/iac1177/sld010.htm>

- The degree to which a system, component, or process meets/fulfills the set of inherent characteristics
 - Specified requirements, and
 - Customer or user needs or expectations
- Do remember that these requirement may be
 - **Stated, and**
 - **Implied**
- Notice it doesn't say that it's the absolute pinnacle, but the degree to which requirements are fulfilled
 - Requirements...sounds familiar, doesn't it?
- To manage the project's quality specification, the PM and Team need to consider the following:
 - ✓ _____ for the management of end-product quality
 - ✓ Do not confuse quality with grade (which is _____ but different requirements for quality)
 - ✓ Customer satisfaction – _____ to specifications (must produce _____ and _____ for use (must satisfy _____))
 - ✓ Prevention – it is prudent to _____ vs. _____
 - ✓ Management responsibility – quality requires participation of team; but it remains the responsibility of management to provide necessary resources and an environment where quality can happen!
 - ✓ Processes within phases – the **plan-do-check-act** cycle
 - Recognize that _____ quality may be borne by _____ since the project life-span may be shorter than the cycle time to reap the reward
- **Producer's View**
 - Meeting or conforming to requirements
means the project's processes & products meet written specifications
- **Customer's View**
 - Fitness for purpose/use
means a product can be used as it was intended



Where Do Quality-related Problems Come From?

- Most of the challenges (rework, added cost, & frustration) to project quality stem from:
 - Lack of well-defined _____
 - Failure to set clear deliverable _____
 - Unnecessary delays in _____

Needs	Customer Needs (typically not negotiable)
Desires	Customer Desires (may be negotiable)
Laws & Rules	Laws and Rules / Mandates (not negotiable)

The Cost of Quality (CoQ) includes all of the following except _____.

- A. The cost of conformance and nonconformance
- B. Ensuring conformance to requirements
- C. The costs associated with meeting and exceeding stakeholder requirements
- D. The cost of rectifying a failure discovered by the client

Justification :

The cost of quality includes _____. Quality is defined as meeting requirements, not _____ which is why option ___ is incorrect.

Reference:

PMBOK® Guide 5th Edition _____

Quality (Program) Planning

Quality planning is about identifying which quality standards apply to the project & documenting all that needs to be done to demonstrate compliance with relevant quality requirements. Ideally this process which will be based on the organization's QMS. The QMS describes how an organization structures its quality system, specifying, for the benefit of all projects



- Managing quality (via a plan) assists organizations to do the things that them from their competitors in the eyes of consumers
 - Projects must be managed in a
 - Their or must reflect in their
- Manage the
- Manage the
 - quality measures and are specific to the particular type of produced by the
- The cost of preventing mistakes is generally much less than the cost of correcting them, as revealed by inspection/assessment
 - "....." versus "....."
- Success requires the participation, but is responsible to provide the to succeed

Excellent: Handout - Info Project Quality Planning Concepts and Jargon

The Focus of the Project's Quality Plan

The quality management plan describes how the project team will its

- Must address three areas of the project that need to be controlled, measured, & implemented via:
 1. **Quality Control** - work results to see if they to relevant quality
 2. **Quality Assurance** - Establishing a quality for the project
 3. **Quality Improvement** - Identifying opportunities for & evolving best practices - a.k.a. continuous improvement

(Definition: Small improvements to reduce costs and ensure consistency)

- Ensuring corrective actions based on measurements and controls set up for the project
- Continuous improvement involves at least 3 specific actions:

The project team must have within itself and with customers, suppliers, and stakeholders
 Communication is the means of identifying problems & opportunities, resolving problems, & exploiting opportunities

- **Corrective action** is also essential - fixing problems is necessary, but not sufficient. Project managers and team members must also identify the causes for any problems and eliminate them or reduce them to the greatest extent possible. It is good to fix a problem; it is better to prevent it from occurring again

- **Identifying and acting on opportunities** completes the three
 The plan-do-check-act cycle provides a disciplined approach for continuous improvement based on either identified problems or opportunities

*Quality Assurance could be calibrating a machine or training the operator.
 Quality Control is inspecting or testing the products that are being made by the machine.*



The 7 Basic Quality Control Tools

(As identified by Kauro Ishikawa - one of the Quality Gurus)

#	Name	Where	Purpose
1	Cause & Effect Diagram (Ishikawa, Fishbone)	Diagram showing an outcome and a list of potential causes (appears like a fish skeleton)
2	Flowcharting	Diagram showing activities, decision point and sequence from beginning to end and interrelation of various elements
3	Check-sheets	Also known as tally sheets & may be used as a checklist when gathering data
4	Pareto Chart (80-20 chart) (Histogram)	Histogram order by frequency of occurrence, which shows how many defects regenerated by type or category of identified cause
5	Histogram (Bar chart)	Bar Chart where Distribution of variables & height of column represent relative frequency
6	Control Charts	Graphical representation mapping process variables within acceptable limits; upper and lower control limits contain normal/ expected variations; uses Rule of Seven to identify non random patterns
7	Scatter Diagram	Diagram showing the pattern of relationship between two variables

Quality Assurance (QA)

(Quality professionals often refer to QA as the managerial arm of quality management)

- QA is the collective term for proactive quality efforts toward:
 - **Documenting** formal activities & with confidence about the project
 - **Checking** that the project team has including valid Quality Standards & clear Operational Definitions and Descriptions
 - **Ensuring** that products and services all phases of the project's lifecycle
- QA helps to ensure that the project will meet & satisfy the project's quality standards that were defined during the quality planning process by
 performance
 - **QA aims to assure that quality work & quality deliverables will be built into work processes, done**
- The PM can have the greatest impact on the quality of the project & needs to:
 1. Establishto ensure and, often, prove that the scope statement conforms to the actual customer requirements
 2. Work with the team to that all stakeholders have that the quality activities will be performed
 3. Make certain that all relevant & requirements are met
 4. activities that do not add value & all avenues of waste in the
 5. Ensure/allow processes to operate at of efficiency & effectiveness

Characteristics for a Good QA System

- Perform Quality Assurance is an Executing process, and its main focus is on
 - It is mainly concerned with in order to achieve quality
 - if we improve the quality of and, then so should the quality assurance of/..... improve
 - and that in turn should drive down overall costs
- A good quality assurance system will:
 - Identify necessary and
 - Be multifunctional and
 - Plan for collection & use of in a cycle of
 - Plan for the establishment and maintenance of to:
 - Determine how the project is proceeding
 - Identifying opportunities for continual improvements
 - Eliminate waste/non-value adding entities from quality endeavors
 - In project management, the prevention & inspection aspects of quality assurance should have a demonstrable influence on the
 - Improve the quality of future organizational projects
 - Information gained from one project in terms of lessons learned are applied to the quality process of the next project via the QMS
 - The opportunities for continual improvements identified are rolled out in the project and the organization



Perform Quality Assurance - Outputs

1. Change Requests

- Are actions which should add benefit to the stakeholders of this and all other projects
- Taking actions to increase effectiveness and/or efficiency of the policies, processes and procedures of the performing organization
- Implementing (immediate remedy to fix a project / process anomaly resulting from QA activity, namely, audits or process analysis)
 - Improvement suggestions from audits
 - Corrective actions
 - Preventive action
 - Defect repair

2. Project Management Plan Updates

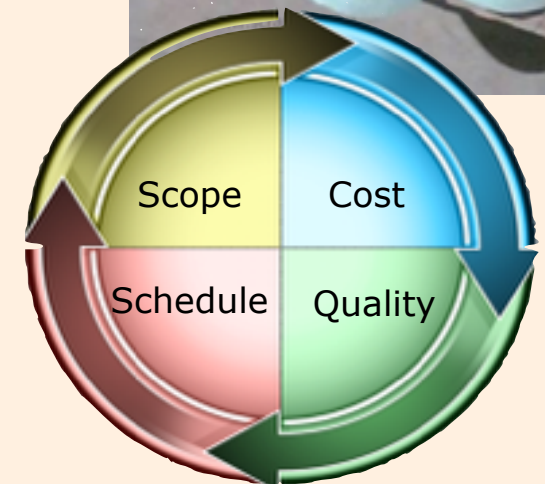
- Will result from any changes to the any of the subsidiary plans related to Quality Scope, Schedule, and Cost at a minimum

3. Other Project Documents that may undergo update include:

- Quality Audit Reports
- Training Plans
- Process documentation

4. Organizational Process Asset Updates

- Provide validation of the effectiveness and efficiency of the organization's QMS to meet project requirements



Control Quality (a.k.a. Quality Control (QC))

(Quality professionals often refer to QC as the technical arm of quality management)

- Unlike QA, (where a PM has to follow to "Assure Quality"), QC offer more creative latitude to and project outcomes
- QC is the process of monitoring and recording the results of executing the the quality activities to assess performance and recommend necessary changes
 - **QC aims to determine that quality work & quality deliverables**
 - Quality control is conducted by inspection and testing
- Project status collection and project deliverable data from,, and provide the information needed to detect between the and product
- QC is also concerned with process measures like performance, scheduling, and cost measures
- The field of statistics provides many techniques for detecting problems in deliverable quality and defects in development processes
Among them are:
 - Scatter diagrams
 - Histograms and sampling distributions
 - Trend and control limit analysis
 - Pareto charts
- These techniques can differentiate normal project execution from problem situations, such as:
 - Results that are outside
 - Results displaying
 - Results that change in
 - Results that display trends



Controlling Quality

- The quality control function utilizes a number of techniques to accomplish this
 - Many of these tools and techniques are rooted in the concepts of probability & statistics
- The *PMBOK*® Guide lists three more tools to the classic 7 QC Tools identified by Kauro Ishikawa
 1. Statistical Sampling
 2. Inspection
 3. Approved Change Request Review

*Refer to Handout folder:
Extra Slides on Quality Costs.ppt
for more details on the 7 QC Tools*

*Refer to pages to
in the *PMBOK*® Guide for
QC Tools &*

Control Quality - Outputs

(Refer to the *PMBOK*[®] Guide Section 8.3.3 pages 252 & 254)

- The main outputs of quality control are:

- 1..... decisions
- 2..... rework
- 3.Process

1. Quality Control Measurements

- Document the results of quality control activities in the format specified during quality planning
 - Results of project work are either accepted or rejected
 - Rejected items typically mean rework & retesting/inspection
 - Rework costs time and money and contributes to projects being late, over budget, or both
 - It is always more cost effective to do the work right the first time than to do it correct the second time

2. Validated Changes

- Any changed or repaired item will need to be inspected
 - Requires a notification of the result of the test executed
 - Rejected items will require another round of rework and reconfirmation.

3. Verified Deliverables

- Results of work that pass the correctness test will be accepted (These are an input to the Validate Scope process)

4. Work Performance Information

- Performance data collected from various controlling processes, would be analyzed in context and integrated based on relationships across areas
Examples include information about the project requirements fulfillment such as causes for rejections, rework required, or the need for process adjustments

**All defects must be
Logged & Tracked
to Closure**



Sigma Values / Interpretation

(You need to remember these values for this exam please!)

See: http://www.youtube.com/watch?v=_3HHSao-b20

Confidence Levels Based on Standard Deviation (Sigma) Values (Excellent youtube presentation)

Sigma results show the degree of correctness

The mean in a control chart represents the expected result, while the sigma values represent the expected spread of results based on the inspection

A true six sigma allows only three defects per million opportunities and the percentage to represent that value is **99.99987%**

Sigma Value	Percent Correct
+/- 1	68.27 %
+/- 2	95.46 %
+/- 3	99.73 %
+/- 6	99.99 %

