

# QUALITY ASSURANCE AND IMPLEMENTATION

## PART 1: QUALITY MANAGEMENT APPROACH

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# INTRODUCTION



- ▶ The user of the information system is the single most important factor in establishing and evaluating its quality.
- ▶ It is far less costly to correct problems in their early stages than it is to wait until a problem is articulated through user complaints or crises.
- ▶ The three approaches to quality assurance through software engineering are
  - ▶ (1) securing total quality assurance by designing systems and software with a top-down, modular approach;
  - ▶ (2) documenting software with appropriate tools; and
  - ▶ (3) testing, maintaining, and auditing software.



# SYSTEM IMPLEMENTATION



- ▶ The process of ensuring that the information system is operational and then allowing users to take over its operation for use and evaluation is called implementation.
- ▶ Implementation concerns moving computer power to individual users by shifting computer power and responsibility to groups and individuals throughout the business with the help of
  - ▶ distributed computing,
  - ▶ cloud computing,
  - ▶ service-oriented architecture;
  - ▶ training users and making sure that each user understands any new roles they must take on because of the new information system;
  - ▶ choosing a conversion strategy;
  - ▶ providing proper security, privacy, and disaster plans; and
  - ▶ evaluating the new or modified information system.

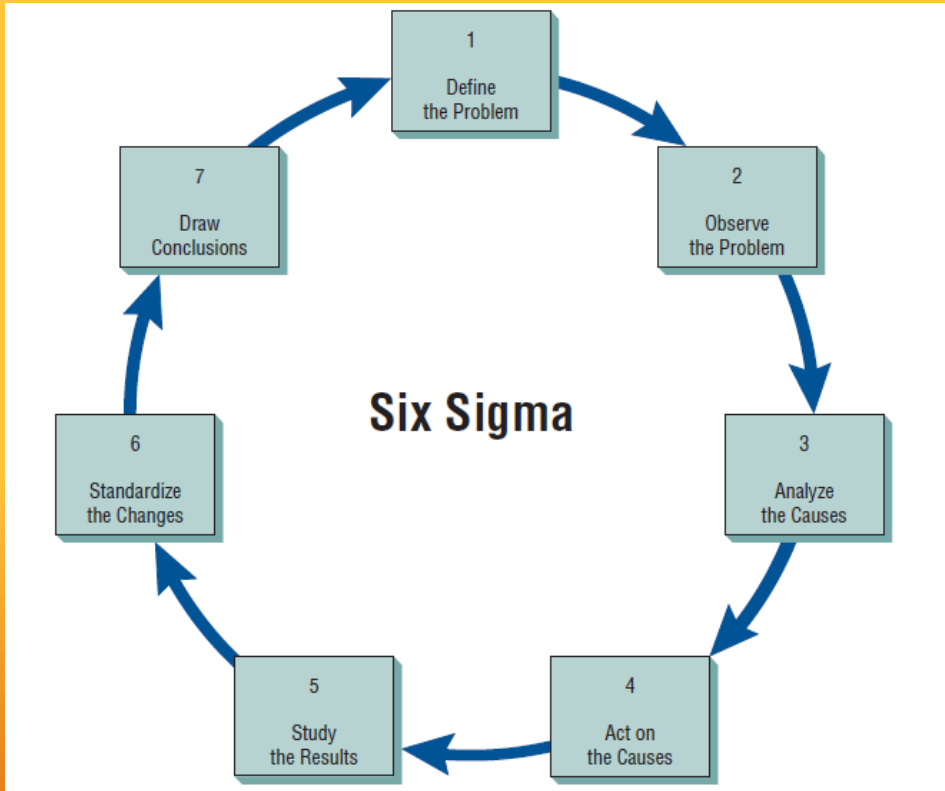
# THE TOTAL QUALITY MANAGEMENT APPROACH



- ▶ According to Evans and Lindsay (2004), the primary elements of TQM are meaningful only when occurring in an organizational context that supports a comprehensive quality effort.
- ▶ It is in this context that the elements of customer focus, strategic planning and leadership, continuous improvement, empowerment, and teamwork are united to change employees' behavior and, ultimately, the organization's course.
- ▶ Instead of conceiving of quality as controlling the number of defective products produced, quality is now thought of as an evolutionary process toward perfection that is referred to as total quality management.



# SIX SIGMA



- ▶ Originally developed by Motorola in the 1980s
- ▶ Six Sigma is more than a methodology; it is a culture built on quality.
- ▶ The goal of Six Sigma is to eliminate all defects. This applies to any product, service, or process.
- ▶ In operations management textbooks from the 1970s to the end of the century, quality control was expressed in terms of three standard deviations from the mean, or three sigma, which equals about 67,000 defects per million opportunities.
- ▶ Six Sigma implies a goal of no more than 3.4 defects per million opportunities.
- ▶ Six Sigma is a top-down approach.
- ▶ It requires a CEO to adopt the philosophy and an executive to serve as project champion. A Six Sigma project leader is called a Black Belt. (The metaphor of the Black Belt comes from the ranking system of capabilities in martial arts.) Black Belts are certified after they have successfully led projects. Other project members are called Green Belts. Master Black Belts are Black Belts who have worked on many projects and are available as a resource to project teams.



# RESPONSIBILITY FOR TOTAL QUALITY MANAGEMENT



- ▶ A large portion of the responsibility for the quality of information systems rests with systems users and management.
- ▶ Two things must happen for TQM to become a reality with systems projects.
- ▶ First, the full organizational support of management must exist, which is a departure from merely endorsing the newest management gimmick. Such support means establishing a context for management people to consider seriously how the quality of information systems and information itself affects their work.
- ▶ Early commitment to quality from the analyst and business users is necessary to achieve the goal of quality. This commitment results in exerting an evenly paced effort toward quality throughout the systems development life cycle, and it stands in stark contrast to ironing out problems at the end of the project.
- ▶ Organizational support for quality in management information systems can be achieved by providing on-the-job time for IS quality circles, which consist of six to eight organizational peers specifically charged with considering both how to improve information systems and how to implement improvements.
- ▶ Through work in IS quality circles or through other mechanisms already in place, management and users must develop guidelines for quality standards of information systems. Hammering out quality standards is not easy, but it is possible and has been done.
- ▶ Departmental quality standards must then be communicated through feedback to the systems analysis team.
- ▶ In addition, human issues that have been overlooked or underrated by the analyst team may be designated as extremely pressing in users' quality standards.
- ▶ Getting users involved in spelling out quality standards for information systems will help the analyst avoid expensive mistakes in unwanted or unnecessary systems development.

# STRUCTURED WALKTHROUGH

**Report to Management on Structured Walkthrough**

Date of Walkthrough: / /  
Time: / :

Project Name: \_\_\_\_\_ Project Number: \_\_\_\_\_

Portion (Description) of Work Examined: \_\_\_\_\_

Walkthrough Coordinator:  
List of Participants: \_\_\_\_\_

Comments:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature of Coordinator: \_\_\_\_\_  
Date Report is Filed: / /

Action Recommended (Check One):  
 ACCEPT WORK AS FOUND  
 REVISE WORK  
 REVISE WORK AND CONDUCT FOLLOW-UP WALKTHROUGH  
 REJECT WORK

A form to document structured walkthroughs

- ▶ Structured walkthroughs are a way of using peer reviewers to monitor the system's programming and overall development, point out problems, and allow the programmer or analyst responsible for that portion of the system to make suitable changes.
- ▶ Structured walkthroughs involve at least four people: the person responsible for the part of the system or subsystem being reviewed (a programmer or analyst), a walkthrough coordinator, a programmer or analyst peer, and a peer who takes notes about suggestions.
- ▶ The coordinator is there to ensure that the others adhere to any roles assigned to them and to ensure that any activities scheduled are accomplished.
- ▶ The programmer or analyst is there to listen, not to defend his or her thinking, rationalize a problem, or argue.
- ▶ The programmer or analyst peer is present to point out errors or potential problems, not to specify how the problems should be remedied.
- ▶ The notetaker records what is said so that the others present can interact without encumbrance.
- ▶ Because walkthroughs take time, do not overuse them.
- ▶ Use structured walkthroughs as a way to obtain (and then act on) valuable feedback from a perspective that you lack.
- ▶ As with all quality assurance measures, the point of walkthroughs is to evaluate the product systematically on an ongoing basis rather than wait until completion of the system.

