Software Quality Management

Quality Assurance

Lecturer: **Nguyễn Ngọc Tú**
Email: *Tu.NguyenNgoc@hoasen.edu.vn*
Web: *sites.google.com/site/QuanLyChatLuongPhanMem/*
Face Group: *www.facebook.com/groups/SoftwareQualityManagement/*
#AdTekDev #ICoTek #VNASQ #VNSQA #VNSoftwareTesting

Outline

- Approach to Quality
- Establishing a Function to Promote and Manage Quality
- Quality Tools
- Process Deployment
- Internal Auditing and Quality Assurance

Approach to Quality

- Dr. W. Edwards Deming's 14 points
- Philip Crosby
- Dr. Joseph Juran
- Gurus
  - Feigenbaum
  - Ishikawa
  - Garvin
  - Shingo
  - Taguchii

Deming's 14 points

1. Create Consistency of Purpose in the Company
2. Learn the New Philosophy
3. Require Statistical Evidence of Information Technology Quality
4. Reduce the Number of Vendors
5. Use Statistical Methods to Find Sources of Trouble
6. Institute Modern Aids to Training on the Job
7. Improve Supervision
8. Drive Out Fear

Deming's 14 points

9. Break Down Barriers Between Departments
10. Eliminate Numerical Goals, Slogans, Pictures, Posters Urging People to Increase Productivity, Sign Their Work as an Autograph, etc.
11. Look Carefully at Work Standards
12. Institute a Massive Training Program for Employees in Simple but Powerful Statistical Methods
13. Institute a Vigorous Program for Retraining People in New Skills
14. Create a Structure in Top Management that Will Push Every Day on the Above 13 Points

Philip Crosby's 14 steps

1. Management Commitment
2. The Quality Improvement Team
3. Quality Measurement
4. The Cost of Quality
5. Quality Awareness
6. Corrective Action
7. Zero Defects Planning
8. Supervisor Training

Philip Crosby's 14 steps

9. ZD Day
10. Goal Setting
11. Error-Cause Removal
12. Recognition
13. Quality Councils
14. Do it Over Again

Juran Trilogy

- To ensure that adequate attention was given, he developed a trilogy consisting of three interrelated, basic managerial phases/processes:
  - quality planning,
  - quality control
  - Quality improvement

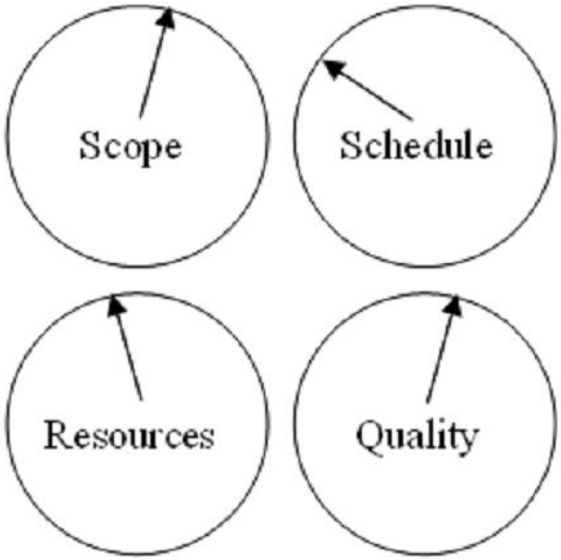
Juran – ideas

- Quality definition
- Breakthrough concept
- Internal customer
- Quality Trilogy
- Pareto analysis
- Cost of quality
- Quality council

Establishing a Function to Promote and Manage Quality

Quality Function

- Challenges
- How the Quality Function Matures Over Time
- Support in Corporate Quality Management Environment
- Implementing an IT Quality Function
- Actions



"Of all men's miseries, the bitterest is this: to know so much and have control over nothing."
Herodotus 484-424

Challenges

	Poor Salesman	Good Salesman
Organization Not Ready	Don't Bother	Challenge 1
Organization Ready	Challenge 2	No Problem

Challenges 1

To get ready, an organization needs the following

- The presence of a competent, trained staff that is capable of performing quality work when building and maintaining systems
- A good IT management team that is capable of setting up the quality function, monitoring it, and making it work
- The existence of good management tools, especially project management and systems development methodologies
- A limit on the number of internal improvement projects to be done at once.
- Good credibility.
- To be mentally prepared for the length of time

Challenges 2

Some items to consider include the following

- *To be an issue of real value to the total organization, the quality function must be heartfelt to the salesperson.*
- *When the proposition is taken to the management group, it is essential for the salesperson to speak the language of the listener.*
- *Management values their time*
- *It is essential to present a realistic picture*
- *There is an important principle of getting some things accepted*
- *Ideas are typically accepted only after the person presenting the ideas is accepted. !!!!!*
- *Using outsiders can sometimes help in getting the right decision.*

How the Quality Function Matures Over Time

- takes some years to mature a quality management system and/or move from SEI capability maturity Level 1 to Level 3
- changes from quality control to quality assurance to quality consulting

Three Phases of Quality Function Maturation

QFM – Initial Phase

- A quality control department performs quality control activities
- A standards committee or standards manager normally performs QA activities focused on process definition.
- The role of the quality consultant may not be performed at all.

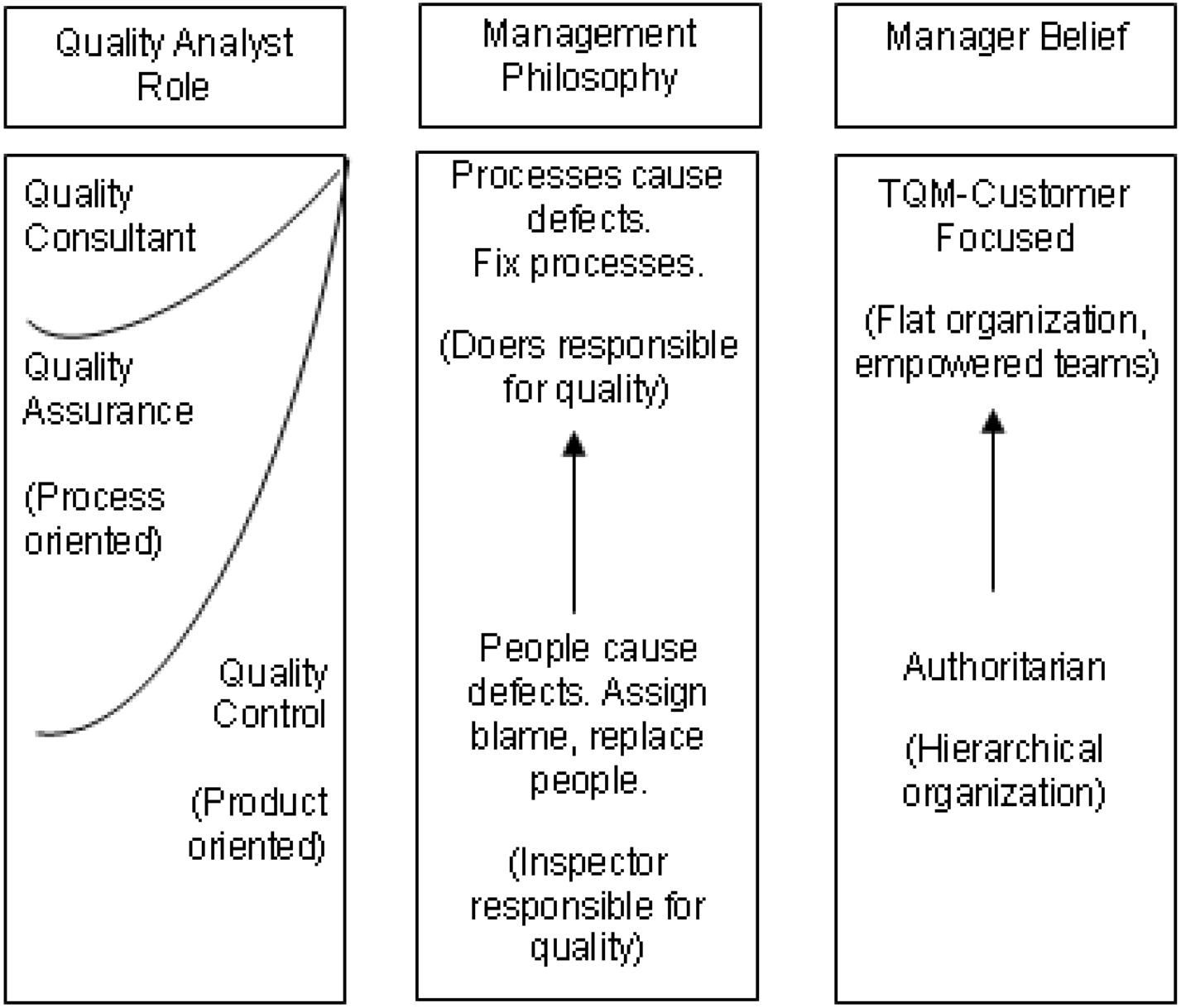
QFM – Intermediate Phase

- Quality control is a shared responsibility of the customer or user, worker, and the QA analyst.
- Process definition and improvement are emphasized, and are performed by the quality function, QA analyst, and consultants.
- The quality function or QA analyst also acts as quality consultant.

QFM – Final Phase

- The worker has processes to build and check work
- Workers (normally teams) are assigned responsibilities for process definition, measurement, and improvement
- The primary role of QA analysts is to perform quality consulting to management and employees in promoting and implementing quality initiatives.

QFM


Quality Analyst Role
Management Philosophy
Manager Belief
Quality Consultant
Quality Assurance
(Process oriented)
Quality Control
(Product oriented)
Processes cause defects.
Fix processes.
(Doers responsible for quality)
People cause defects. Assign blame, replace people.
(Inspector responsible for quality)
TQM-Customer Focused
(Flat organization, empowered teams)
Authoritarian
(Hierarchical organization)

Support

The responsibility of the IT quality function involves

- Developing the company's base of data and information used for planning and day-to-day management. Evaluation of how quality and data and information reliability, timeliness, and access are assured.
- Developing the company's approach to selecting quality-related competitive comparisons and world-class benchmarks to support quality planning, evaluation, and improvement.
- Determining how data and information are analyzed to support the company's overall quality objectives.

Support – *actions*

- Determine what new, changed, and continued quality responsibilities will be assigned to the IT group as a result of the corporate quality program.
- Evaluate the capability of the IT group to deploy quality initiatives within and outside the group. Define the skills, commitment, and quality approaches currently available to line management.
- Determine the value added by utilizing IT QA analysts to support corporate quality management initiatives.
- Develop a plan to assimilate and leverage the current function into the quality support activity needed to support both the corporate quality management program and IT quality responsibilities.

Implementing an IT Quality Function

1. Develop a charter.
   - Determine the responsibilities and activities of the quality function.
2. Identify the quality manager.
   - Select a quality "fanatic" to head the quality function.
3. Locate organizationally the IT quality function.
   - Determine to whom the quality leader reports.
4. Build support for quality.
   - Initiate programs that will encourage both management and staff to support quality processes.
5. Staff and train the quality function.
   - Determine what is needed to make quality happen, identify and select the people to do it, and provide them with the training they need.
6. Build and deploy the quality toolbox.
   - Select effective quality tools and implement them throughout the organization.
7. Drive the implementation of the quality management environment.
   - The quality manager will need to spend a significant amount of time maturing the quality management environment.

Actions

- Long-term
  - Building a quality management environment
  - Supporting the implementation of the IT function's quality policy
  - Assisting management and staff in closing the two quality gaps
- Short-term
  - Involve Management in Quality
  - Redefine a Problem Process
  - Find and Fix a Problem
  - Improve quality control

Quality Tools

Quality tools

- Defining a mission, vision, goals, and objectives
- Defining Do and Check processes
- Defining measures
- Collecting data
- Problem-solving
- Designing solutions
- Improving processes
- Measuring results

Quality tools

- Statistical Tools
- Management Tools
- Presentation Tools

Statistical Tools

- Check Sheet
- Histogram
- Pareto Chart
- Run Chart
- Control Chart
- Scatter Plot

Management Tools

- Brainstorming
- Affinity Diagram
- Nominal Group Technique
- Cause-and-Effect Diagram
- Force Field Analysis
- Flowchart and Process Map
- Benchmarking
- Matrix
- Quality Function Deployment
- Play-script

Presentation Tools

- Table
- Line Chart
- Bar Chart
- Pie Chart
- Stem-and-Leaf Chart

Process Deployment

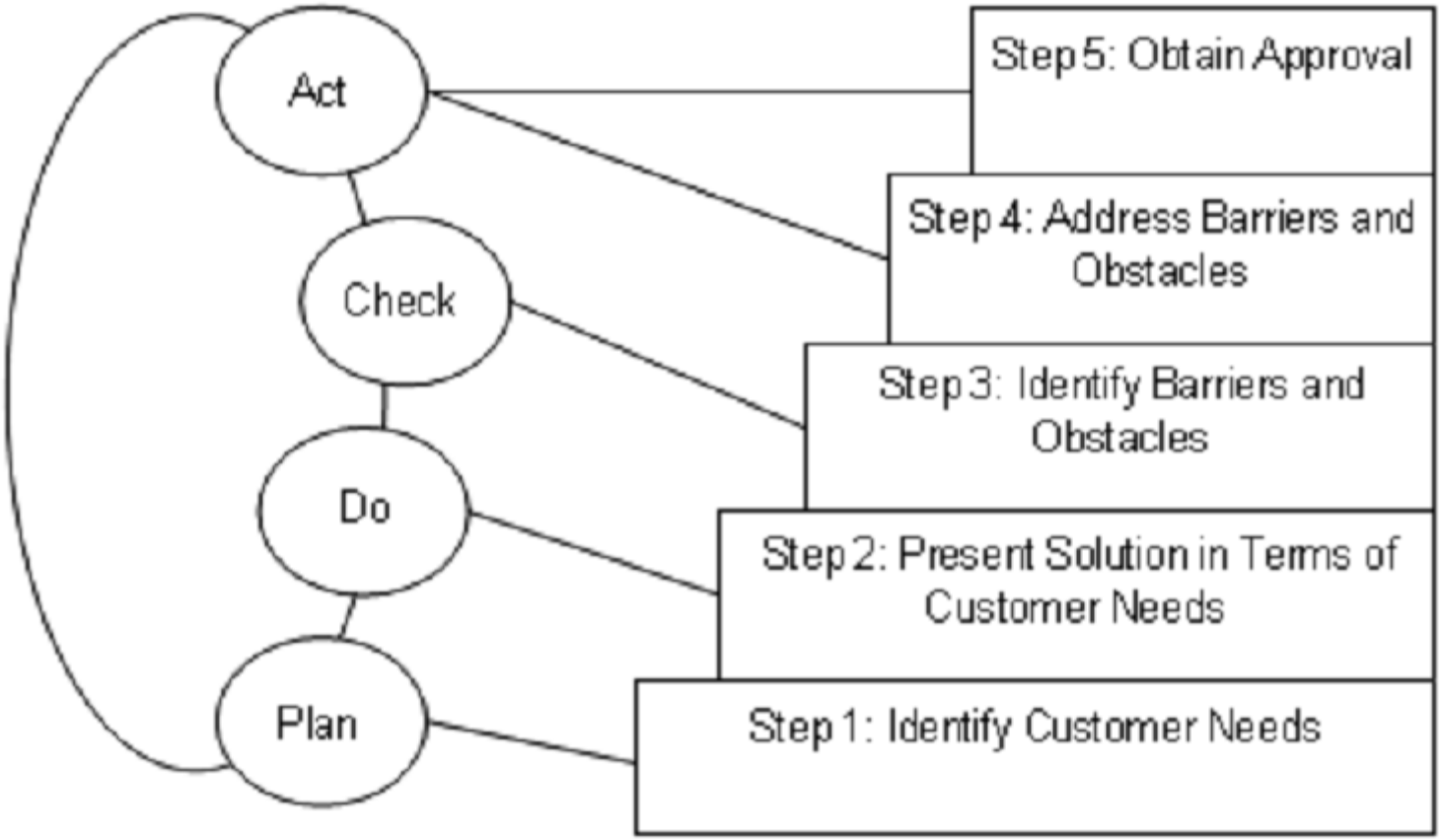
Process Deployment

- People resist change for the following reasons:
  - It is significantly more difficult to implement change than to develop the approach
  - People do not like change imposed on them.
  - Workers know they can be reasonably successful using the current process
  - When people spend time and effort to learn a new process, and then make routine mistakes while learning, it discourages them from wanting to try the changed process.
  - The person(s) who developed the current process may resent having that process changed.

Deployment

- Getting Buy-In for Change through Marketing
- The Formula for Effective Behavior Change
- The Deployment Process
- Critical Success Factors for Deployment

Getting Buy-In for Change through Marketing



The Formula for Effective Behavior Change

Behavior = Individual + Environment

The Deployment Process

- There are three deployment phases - assessment, strategic, and tactical.
  - Assessment
  - Strategic
  - Tactical

Critical Success Factors for Deployment

- Deployment is a series of integrated tasks, which together enable approaches to be effectively implemented
- Deployment champion(s) is in place.
- Deployment is a team effort.
- There is buy-in by the affected parties.
- Deployment responsibilities are effectively passed between individuals and between teams.

Internal Auditing and Quality Assurance

Types of Internal Audits

- Internal auditing is a management control directed at measuring and evaluating an activity to determine if it is performed in accordance with the policies and procedures of an organization
  - Financial Auditing
  - Operational Auditing
  - Program Auditing
- important characteristics
  - needs to be detached from the regular
  - cannot get involved in developing procedures, standards, or usurp
  - is to evaluate the interaction of all company groups

Differences in Responsibilities

- IAor
  - must be knowledgeable of the Standards
  - review the means of safeguarding assets and verify
  - verify compliance to corporate policies, plans, procedures,
  - normally coordinate their activities and work in conjunction
  - have direct lines of communication to senior corporate officers

Q/A ?!