BUS 401 Business and Entrepreneurship

Project Management &

Managerial Skills in Software Industries.

Dr Muhammad Towfiqur Rahman
Assistant Professor
Department of CSE
University of Asia Pacific Bangladesh

Project Management

Quality Management

Inputs :

- Project Management Plan
- Risk Register
- Organizational Process Assets
- Stakeholder Register
- Requirements Documentation
- Enterprise Environmental Factors

Tools and Techniques :

- Cost-Benefit Analysis
- Seven Basic Quality Tools
- Design of Experiments
- Additional Quality Planning Tools
- Cost of Quality
- Benchmarking
- Statistical sampling
- Meetings

Outputs :

- Quality Management Plan
- Quality Metrics
- Project Documents Update
- Process Improvement Plan
- Quality Checklists

Project Quality Management

Cost Benefit Analysis:

- Compares the cost of the quality step to the expected benefit.
- Examples of benefits: less rework, higher productivity, lower costs, increased stakeholder satisfaction, and increased profitability.

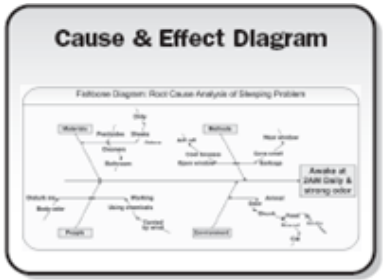
Cost of Quality:

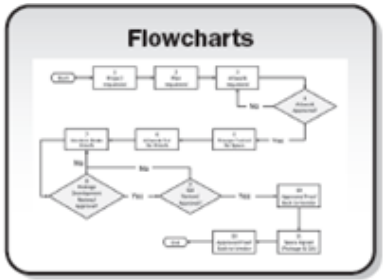
Cost of Conformance Money spent during the project to avoid failure		**Cost of Nonconformance** Money spent during and after the project because of failures	
Prevention	•Training •Equipment •Document processes •Time to do it right	Internal Failure (Found by the project)	•Rework •Scrap
Evaluations	•Testing •Destructive testing loss •Inspections	External Failure (Found by the customer)	•Liabilities •Warranty work •Lost business

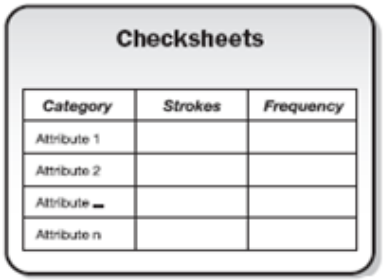
Project Quality Management

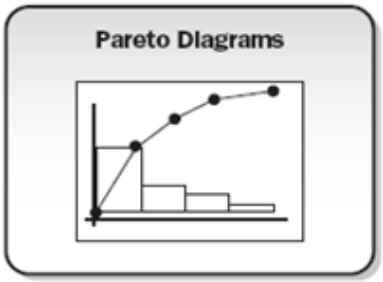
Seven Basic Quality Tools (7QC Tools):

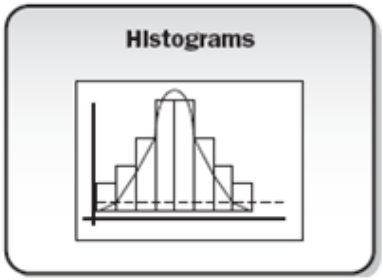
1. Cause & Effect Diagram
   - Also known as Fishbone or Ishikawa
2. Flowcharts
   - Also known as Process Maps
3. Checksheets
   - Also known as Tally Sheets
   - May be used as a checklist
4. Pareto Diagrams
   - Used to identify the vital few sources (80/20)
5. Histogram
   - Describe the statistical distribution shape
6. Control Charts
   - Will be illustrated later
7. Scatter Diagrams
   - Also known as Correlation Charts
   - Used to trace the relation between two variables (X,Y)

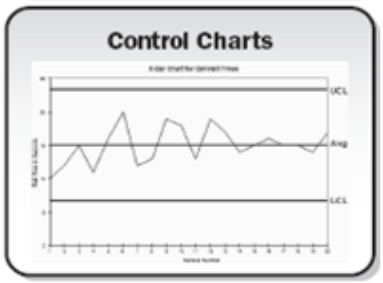


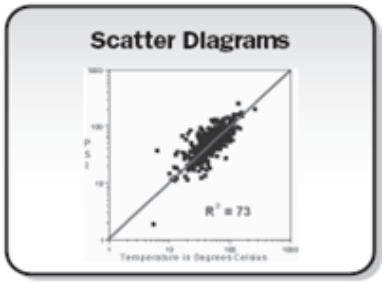












Project Quality Management

Additional Tools :

This includes meetings, brainstorming, nominal group, affinity diagrams, PDPC, matrices, diagrams, .., etc. (will be illustrated later in QA process)

Quality Management Plan :

Part of PM plan that describes how organization's quality policies will be implemented. It may includes the following:

- Quality standards
- Meetings to be held addressing quality
- Who will manage quality, when, what their duties will be
- Metrics will be used
- Quality reports
- What deliverables will be measured and when

Stakeholder Management

Stakeholder : Persons or organizations who are actively involved in the project or whose interests may be positively or negatively affected by the performance or completion of the project.

Examples for Stakeholders :

- Customer / User
- Sponsor
- Project Management Office
- Program Manager / Portfolio Manager
- Project Manager / Project Team
- Functional Manager / Operational Manager
- Sellers / Vendors / contractors / Business Partners

5 essential project management skills for software developers

If developers can have these five project management skills, they are most-likely hired by the employers sooner than anyone else.

1. Estimation and scheduling

In every business sector, project management has its key skills. The most significant areas of focus for project managers is scheduling and estimation. If you have to assign tasks and accurately manage the workloads within teams, these skills are necessary. Estimation is important to get right for product development teams.

2. Communication

It is essential to keep all the lines of communication open. Giving clear and critical updates that may affect the overall project is an important skill to have. You need to ensure that all team members maintain a clear line of communication and collaborate effectively.

3. Problem-solving

You can tell a lot about a project team based on how the team members solve the minor and major tech and business problems. But these teams need to treat problem-solving as a skill that needs to be consistently strengthened.

4. Documentation

Most tech companies across the world demand the developers document the progress. Documentation is not a part of the team's workflow but it should be well-maintained.

5. Risk management

Risk management is one of the skills that is the most effective when distributed among team members. This is important with teams that work on cross-functional areas. The key to getting it right is by making team members accountable and explain to them the potential risks in their assigned tasks.

Management skills for Software Engineers and IT professional

- Your should know your customer's representative
- You should know about your customer's customer better than your customer

- Management skills: active listening, mentoring, leadership, negotiation, people management, assertiveness, deadline and result orientation, coaching and counselling etc.

- proficiency in data structures and algorithms

- Be proficient in at least one or two major programming languages for employers to consider them professionals
-

- You need to know the basics of operating systems including Windows, Mac, and Linux
- A good understanding of databases is also essential for software engineers
- Git is a popular source control tool that allows software engineers to collaborate and share different versions of their code with other people, who can then modify, update, and insert their own code (Git and Github).
- A successful software engineer must be conversant with the different testing frameworks.
- As a software engineer, it is vital to have a good understanding of networking basics because about 80 percent of your projects will have a network component

- **Encryption and cryptography**

As a software engineer, you must be able to provide the most sophisticated security systems to safeguard the information of the people who use your software. Cryptography is used to secure databases and protect data transmission over a network.

Cross-platform software development is the process of designing software products to function across different operating systems.

Software engineers must be knowledgeable about the software development life cycle (SDLC). SDLC involves the process of conceptualizing a software to its deployment and maintenance.

- Project requirements and analysis
- Feasibility studies
- Project design
- Project implementation and coding
- Testing
- Deployment
- Maintenance and improvement

- **Integrated development environment (IDE)**
- Python developers use Jupyter, Spyder, or PyCharm while Java programmers use NetBeans and IntelliJ IDEA to make their work faster.

- **Soft skills :**

- **Communication** is one of the most important software engineer skills
- **Team work**: You must be able to use the strength of the collective to achieve common goals.
- **Multitasking:** Software engineers usually have to work simultaneously on multiple projects, which makes it important to be good at multitasking. Being able to multitask will allow you to handle several projects at the same time, manage your time effectively, and work under tight deadlines without compromising quality.
- **Solving problems** requires being a good questioner, having a critical mind, being creative, innovative, and patient. You must be able to diagnose and troubleshoot issues with your code, resolve the problem, and document the steps you took to find a solution.

THANK YOU