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The Responsibilities of Stakeholders in Software Development

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ABSTRACT

The software development is the task to solve large and complex programs and in a cost effective manner. The development and maintenance of software product have become important criteria. In the early years, Software engineers faced many problems without having a better knowledge in this field, such as late delivery of software, development team exceeding the budget, poor quality, user requirements are not completely supported by the software, difficult maintenance and unreliable software and lack of systematic approach leads to the failure of the software. Now a day this problem is rectified with the help of advanced development process and standards. The activities and responsibilities of stakeholders are defined and quality standards are implemented. But still a lot of problems are faced by the software developers and some failures are faced by the software industries. In this paper the stakeholders is listed and the responsibilities of stakeholders are defined for developing the successful project.

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INTRODUCTION

Quality is perceived differently by different people. Yet, everyone understands what is meant by “quality.” In a manufactured product, the customer as a user recognizes the quality of fit, finish, appearance, function, and performance. The quality of service may be rated based on the degree of satisfaction by the customer receiving the service. The relevant dictionary meaning of quality is “the degree of excellence.” However, this definition is relative in nature.

The customer’s needs must be translated into measurable characteristics in a product or service. Once the specification is developed, ways to measure and monitor the characteristics need to be found. This provides the basis for continuous customer will be satisfied to pay for the product or service. This should result in a reasonable profit for the product or the service provider.

Software quality refers to software quality as “fitness for the needs” and this definition recognizes two features of a piece of quality software:

Conformance to its specification.Fitness for its intended purpose. The measure of quality must be specific to the project being evaluated and must assess the effectiveness of the entire development process, not just individual segments.

Software Quality Assurance (Sqa):

A systematic, planned set of actions necessary to provide adequate confidence that the software development process or the maintenance process of a software system product conforms to established functional, technical requirements as well as with the managerial requirements of keeping the schedule and operating within the budgetary confines.

The difference between the quality control and quality assurance should be recognized. Quality control activities are done to sort the products that do not qualify for the qualified products to not deliver the customer or to not sell in the market. A Software process is a set of activities and associated results which produces software products. These activities are mostly carried out by software engineers. There are four fundamental process activities which are common to all software process.

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These activities are
1. Software Specification:
The functionality of the software and constraints on its operation must be defined.
2. Software Development:
The software to meet the specification must be produced.
3. Software Validation
The Software must be validated to ensure that it does what the customer wants.
4. Software Evaluation
The software must evolve to meet changing customer needs.

The characters of Software quality have been classified in two ways
1. External Software quality
2. Internal software quality

External Characteristics Software Quality:

What a system's user is interested in, typical properties of any single particular system. ie., Correctness, Usability, Efficiency, Reliability, Integrity, Adaptability, Accuracy and Robustness.

Internal Characteristics Software Quality:

What programmer or management are interested in, properties of the development of a collection system. ie., Maintainability, Flexibility, Portability, Reusability, readability, Testability and Understandability.

Software Engineering:

Software Engineering is the establishment and use of sound engineering principles in order to obtain economically software that is reliable and works efficiently on real machines.

The software engineering is useful
- To acquire skills to develop large programs.
- Ability to solve complex programming problems
- Learn techniques of specification, design interface development, testing, and project management.
- To acquire skills to be a better programmer.The primary goal of software engineering is to improve the quality of software products and to increase the productivity and job satisfaction of software engineers.

Problem Formulation:

Software development is not the easiest task, the software should be error free and it would be completed within the time and budget. At the time of developing a software developer is in pressure to complete the task within the milestone. Because of the work pressure the software errors are made by programmers, it may be the grammatical errors or logical error, Some of the software errors can cause software faults, the improper functional activities of software has led to software failures.

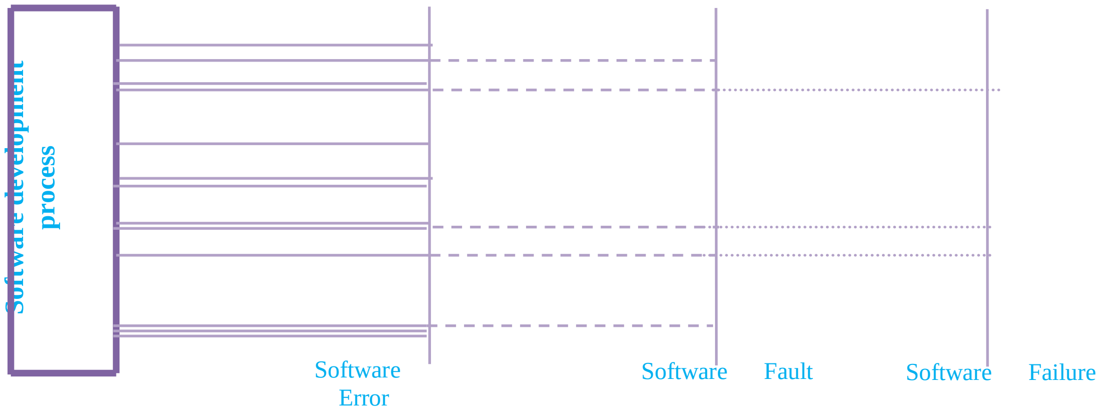

Fig. 1: Cause of Software failure

Major problems that were faced by the software engineers at the time of developing the software are listed here

1. Poor requirements - if requirements are unclear, incomplete, too general, or not testable, there will be problems.

2. Unrealistic schedule - if too much work is crammed in too little time, problems are inevitable.

3. Inadequate testing - no one will know whether or not the program is any good until the customer complaints or system crash.
4. Featuritis - requests to pile on new features after development is underway, extremely common.
5. Miscommunication - if developers don't know what's needed or customer's have erroneous expectations, problems are guaranteed. (Chikofsky, E.J., J.H. Cross II, 1990)

As per the NASSCOM review the top most software companies in India: listed below are also faced lot of problems in software development and software failures. (Brennecke, Andreas, Keil-Slawik, Reinhard, 1996).

Table 1: List of top most software companies in India

S.No	Company Name
1	Tata Consultancy Services Ltd
2	Infosys Ltd
3	Wipro Ltd
4	HCL Technologies Ltd
5	Tech Mahindra Ltd
6	iGate
7	Mphasis Ltd
8	L&T Infotech Ltd
9	Syntel Ltd
10	CSC, India

Galin finds the problems of software development and he lists the causes of errors, i.e. the Nine Causes of Software Errors

1. Faulty requirements definition
2. Client developer communication failures
3. Deliberate deviations from software requirements
4. Logical design errors
5. Coding errors
6. Noncompliance with documentation and coding instructions
7. Shortcomings of the testing process
8. User interface and procedure errors
9. Documentation errors (Galin, Daniel, 2004)

Stakeholder:

The stakeholders are the person who is directly or indirectly affecting or affect and gaining or gain from the particular project. The stakeholders are differentiating depends up to their responsibilities and their work with nature.

The people affected by a software system are not limited to those who use it. Software systems are not just used: They have to be built and tested, they have to be operated, they may have to be repaired, they are usually enhanced, and of course they have to be paid for. Each of these activities involves a number – possibly a significant number – of people in addition to the users. The stakeholders are categories depend up on their activities

- The persons who are all tried to get the project to our organization
- The persons who are all involved to gather the information from the user
- The persons who are all having the responsibilities to design the project.
- The persons who are all developing the project.
- The persons who are all test the project and make the error free
- The persons who are interested in financial activities and response to sell the project
- The persons who are all responsible introduction to the use and maintenance.
- The persons thus have an interest as use

The list of stakeholders that who are all involved in developing the success software is listed.

- Business Analyst
- Product Owner
- Architectural Designer
- Project Manager
- Quality Assurance team
- Project Leader
- Domain Expert

- Database Administrator
- System administrator
- Team Leader
- Programmers
- Testers

Responsibilities of Business Analyst:

The Business Analyst's analysis the active of the organizational situation, defining the requirements and recommending the solution for the critical situations.The analyst having the close working relationship with others to explain the structure, policies, operations of the organization and help to achieve the goal.

The responsibilities of Business Analyst are

- Investigation
- Analyzing
- Communicating
- Documenting
- Evaluating

Responsibilities of Product Owner:

The product owners are the persons who are awaiting the final release of the product and having the deep communication with the delivery team. The product owner having the rights to accepting and rejecting the resulting product. The product owner points the team to reach the correct target and having the responsibilities to help the team to build the right product and giving the constraints to build the project in budget.

Responsibilities of Architectural Designer:

The Architectural designer designs the architecture overview before starting lifecycle phases of software development. It helps to earlier decision making about the project and implement the working assumption on implementing the vision. This is the earliest stage activities of the software development, it extracts the information and designing activities in the existing projects to make the project as easy and comfortable.

Responsibilities of Project Manager:

The Project Manager is the responsible person for all the software lifecycle phases like Planning, Designing, Implementing, Testing and tracking the ways to finish the project on time and budget.

The responsibilities of Project manager are

- Planning
- Stuffing
- Implementing
- Controlling
- Evaluating

Responsibilities of Quality Assurance Team:

The software development is tasking to satisfy all the requirements of the use within time and cost effective manner. For developing the best software, the Quality assurance activities act the important role to complete the successful project. The responsibilities of the quality assurance team are

- Quality Planning
- Quality Assurance organizes
- Quality Assurance Education
- Quality Standards
- Quality settlement
- Quality Audit

Responsibilities of Project Leader:

The Project leaders have the responsibilities of maintaining the good relationship between the programmers and have the closest working relationship with them.

- The Project leader
- Selects the right person to do the project to successful completion of the project
- Defining the project management process
- Preparing the project plan
- Analyzing the risk
- Track the report

- Analyzing the performance

Responsibilities of Domain Expert:

The Domain Expert attended number meetings and demo sections with the analyst and the customer to having the well knowledge about the project.

The Domain expert responsibilities were to clear the dough's arrases at the time of development and check the outputs whether it accepts the requirements of the user

Responsibilities of Database Administrator:

The Database administrator is the responsible person to maintain the database. The administrator can identify the requirement user, design the database, implement and maintain the database.

The database administrator having the responsibilities of

- Securing the database
- Backup the data periodically
- Allotting Permission to access the database
- Maintaining the connection between Front-End and Back-End users
- Design the data model
- Testing new database management system
- Maintaining the data dictionary
- Maintain the data format and standards

Responsibilities of System Administrator:

The system administrator is used to upkeep, configuration and reliable operation of systems.

The responsibilities of the system administrator are

- Maintaining the Server systems and make links with the client systems.
- Group maintenance
- Security
- Scanning the disk usage
- Performance is maintained

Responsibilities of Team Leader

The Team Leader having the close relationship with the team members and try to boost the team member's performances.

- The responsibilities of team leader are
- Explain clearly about the project requirement
- Provide the vision and objectives of the project
- Motivating the team members
- Coach and develop the team members
- Arranging the proper training to the team members

Responsibilities of Programmers:

The programmer's duty is to solve the problem i.e. convert the problem by giving the instruction to the computer and get the proper solution for the problem. The programmer tests the solution and verifies whether it's working properly and makes the correction to the program.

The responsibilities of programmer are

- Analyzing and defining the problem
- Planning the solution for the problem
- The program code to solve the problem
- Compile the program
- Correct the errors
- Test the program
- Trial running the program
- Document the program

Responsibilities oTesters:

The testing is the independent process of finding the errors from the developmental programs and checking the output whether it satisfies the user's requirements.

- Different types of testing's are available to test the programs send by the developers.
- The responsibilities of testers are

- Debugging the errors
- Writing the test cases
- Implementing different types of testing methods to check the states of the program
- Entering positive and negative values as input and check the respective outputs
- Perform verification and validation

Conclusion:

In this paper the categories of stakeholders are discussed and their responsibilities are defined. With the clear idea about the work nature of stakeholders they can work with its responsibilities leads to a successful project. The international standards are used to make the error free software, but the stakeholders are not yet clearly known their responsibilities leads to project failure. In this paper the responsibilities of stakeholders clearly explained with that they may know their responsibilities and make the error free, successful software's.

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