Activities of Stakeholders in Development Phases a Review

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Abstract **Software development and maintenance is the activity that is used to make the error-free Software and also concentrates on time-consuming and complex activity. The software quality management is used to evaluate the quality of a software product and to keep its level high is much more difficult than to do them for the other industrial products. In software development the stakeholders play a most important role in developing a error free software. This paper focuses about the stakeholders, the activity of stakeholders and discussed about the success rate of stakeholders.**

Key words: Software Quality management, Software development, stakeholders.

I. INTRODUCTION

The Software has been used for commercial purpose. With every aspect of software development, Software engineers have been tasked to solve the large and complex programs and in a cost effective and efficient manner. Also the development and maintenance of the software product has become an important criterion. The Software quality assurance is implemented in the early stages of software development life phases, this is used to make the error free software and reduce the rework of development.

In the early years, engineers faced many problems without having a better knowledge in the software fields, such as "Late delivery of software, Development team exceeding the budget, poor quality, user requirement are not completely supported by the software, difficult maintenance and unreliable software and lack of systematic approach, this problem are overcome by the implementation of software quality activities.[3]

A stakeholder in an organization is any group or individual who can affect or is affected by the achievement of the organization's objectives.[10]

The main purpose of stakeholders' analysis, requirements engineering, testing, verification and validation approaches, is to check the overall quality of the software system or a component. In order to obtain a complete, consistent, conflict free and important set of requirements, there is the need to select a right set of stakeholders. Stakeholders have a direct impact on the overall quality, and it means that stakeholders and software quality system are directly proportional to each other. Stakeholders are considered as the primary source of information or needs which must be included in the functional aspects of a software project, which is under the process of development [11].

Software Engineering

Software engineering is the establishment and use of sound engineering principles in order to obtain economically software that is reliable and work efficiently on real machines. It is the application of a systematic, disciplined and quantifiable approach to the development, operation, and maintenance of software.

   The software engineering is useful
- To acquire skills to develop large programs
- Ability to solve complex programming problems
- Learn the techniques

- 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.[2]

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.

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.

Common Process Framework
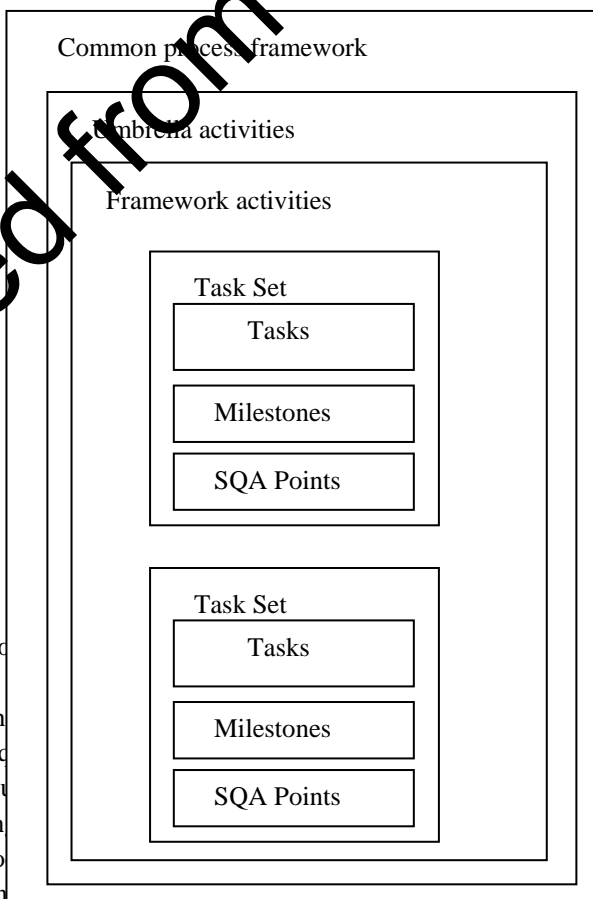
Task Sets: A number of work tasks, project milestone, software work products

Framework Activities: The framework activities related to the characteristics of the software project and the requirement framework activities are

1. Communication: The communication.

2. Planning: The planning technical risks, list resource requirements, work pro

3. Modeling: The modeling

4. Construction: The construction activity implements the corresponding coding and testing.

5. Deployment: The software delivered for customer evaluation and feedback is obtained. [3]

II. SOFTWARE PROBLEM FORMULATION

Software Errors: The error resulting from bad code in some program involved in producing the erroneous result.

Software faults: Due to the Software errors the Software fault occurs.

Software failures: Due to Bug/defect/fault consequence of a human error.

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 [1]

III. STAKEHOLDERS

Stakeholders are individuals and organizations that are actively involved in the project, or whose interests may be affected as a result of project execution or project completion. They may also exert influence over the project's objectives and outcomes. The project management team must identify the stakeholders, determine their requirements and expectations, and, to the extent possible, manage their influence in relation to the requirements to ensure a successful project.

The following are examples of project stakeholders:

- ➢ Project leader
- ➢ Project team members
- ➢ Upper management
- ➢ Project customer
- ➢ Resource Managers
- ➢ Line Managers
- ➢ Product user group
- ➢ Project testers
- ➢ Any group impacted by the project as it progresses
- ➢ Any group impacted by the project when it is completed
- ➢ Subcontractors to the project
- ➢ Consultants to the project [4]

IV. STAKEHOLDER ANALYSIS

Stakeholder analysis as 'a holistic approach or procedure for gaining an understanding of a system, and assessing the impact of changes to that system, by means of identifying the key actors or stakeholders and assessing their respective interests in the system'. They identify characteristics of natural resources management that are relevant to the application of stakeholder analysis as including:

1. Conflicting views from different stakeholder groups;
2. Multiple interests and objectives; and
3. Trade-offs. [5] [8].

V.   THE CLASSIFICATION OF STAKEHOLDERS

Active stakeholders who make decisions and passive stakeholders who are affected by the decisions.

- ➢ Primary stakeholders who are the heart of interest and the intended beneficiaries, and secondary stakeholders who are of less interest.
- ➢ Important stakeholders, being those whose needs and interests are the priorities, and
- ➢ Influencing stakeholders who have some power over the success of the project. [5] [8].

VI.   THE STAKEHOLDER CATEGORIZATION

We classify stakeholders according to their roles and concerns as in the following table.

Acquirers	Oversee the procurement of the system or product
Assessors	Oversee the system's conformance to standards and legal regulation
Communicators	Explain the system to other stakeholders via its documentation and training materials
Developers	Construct and deploy the system from specifications (or lead the teams that do this)
Maintainers	Manage the evolution of the system once it is operational
Production Engineers	Design, deploy, and manage the hardware and software environments in which the system will be built, tested, and run
Suppliers	Build and/or supply the hardware, software, or infrastructure on which the system will run
Support Staff	Provide support to users for the product or system when it is running
System Administrators	Run the system once it has been deployed
Testers	Test the system to ensure that it is suitable for use
Users	Define the system's functionality and ultimately make use of it [9]

Table-1 The Stakeholder Categorization

VII. THE IMPORTANCE OF STAKEHOLDER PARTICIPATION

People are not very good at defining, particularly in detail, what they want. However, people are fairly good at indicating what they think they want and then when an option is presented to them what they like and don't like about it. In other words, we need to work with our stakeholders to identify what they think they want, produce something which reflects that understanding, get feedback from our stakeholders, and then update our solution to reflect our improved understanding. The implication is we need to work in a more evolutionary and collaborative manner if we're to provide solutions which reflect our stakeholders actual needs, and to do that we must work closely and regularly with stakeholders [6]

VIII.   RIGHTS AND RESPONSIBILITIES OF STAKEHOLDERS

The rights of everyone:

1. To be treated with respect.
2. To produce and receive quality work at all times based on agreed to project standards and principles.
3. To estimate the activities you are actively involved with, and to have those estimates respected by others.
4. To be provided adequate resources (time, money, and so on) to do the job that's been asked of you.
5. To determine how your resources will be invested. For people, funding the project how the funds will be spent and for people working on the project (e.g. Investing time) what tasks they choose to work on.
6. To be given the opportunity to gain the knowledge pertinent to making the project a success. Business people will likely need to learn about the underlying technologies/techniques and technical staff to learn about the business.
7. To have decisions made in a timely manner.
8. To be provided good-faith information in a timely manner. Sometimes this is just the "best guess" at the time, and that's perfectly all right. This includes, but is not limited to, business information such as prioritized requirements and detailed domain concepts as well as technical information such as designs and detailed technical concepts.
9. To own your organization's software processes, following and actively improving these processes when needed.

The responsibilities of everyone:

1. To produce a system that best meets your needs within the resources that you are willing to invest in it.
2. To be willing to work with others, particularly those outside your chosen specialties.
3. To share all information, including "work in progress".
4. To actively expand your knowledge and skill set. [6]

IX.   SUCCESS RATE OF SOFTWARE PROJECTS

The success rate of software projects is mainly dependent upon critical stakeholders, critical requirements and testing. Too much work is performed on requirements elicitation and analysis, but the stakeholder analysis process is still immature.

System Success = Stakeholders + Requirements + Testing

Instead of all the efforts in Requirement Engineering the reports show a strange figure of the success rate of software projects i.e.

Year	Success rate of Project
2004	34%
2006	35%
2009	32%
2010	32%
2011	34%

[12]

Table-2 The year wise success rate of project

CONCLUSION

This paper focuses the activities of stakeholders and gives the knowledge about the stakeholders and their categories. The rights and responsibilities of stakeholders are mentioned. This paper shows the activities and importance of stakeholder in developing the small or value based software's.

REFERENCES

[1] Galin, Daniel (2004), Software Quality Assurance – From theory to implementation, Pearson –Addison Wesley, England.

[2] Chandramouli, pradiba, Software Quality Assurance

[3] R.Shankar, Software Engineering and Quality Asurance.

[4] http://en.wikipedia.org/wiki/Project_stakeholder

[5] Grimble, R., and K. Wellard, Stakeholder methodologies in natural resource management: a review of principles, contexts experiences and opportunities, Agricultural Systems, 55, 173–193, 1997.

[6]http://agilemodeling.com/essays/activeStakeholder Participation.htm

[7] Muhammad Imran Babar, Masitah Ghazali, Dayang N.A. Jawawi - Software Quality Enhancement For Value Based Systems Through Stakeholders Quantification

[8] Engaging stakeholders for a software development project: River Manager model Wendy D. Welshab, Dugald Blackab

[9]http://agilemodeling.com/essays/activeStakeholderParticipation.htm

[10] Freeman, R.E. (1984) Strategic Management: A stakeholder approach, Pitman, Boston.

[11]. K. Bittner and I. Spence, "Establishing the Vision for Use Case Modeling, Use Case Modeling," ed: Addison Wesley Professional, Reading, 2003.

[12] S. Group. (2012, July 2012). The CHAOS Report. Available: http://www.standishgroup.com/

[13] Warden, R. (1992), Software Reuse and Reverse Engineering in Practice. London, England: Chapman & Hall, 283–305.

[14] Zave, P. (1997), Classification of Research Efforts in Requirements Engineering, ACM Computing Surveys, 29 (4): 315-321

[15] Padberg, Frank (1999), A Probabilistic Model for Software Projects, Proceedings ESEC/FSE 7 109-126, Lecture Notes in Computer Science 1687, Springer 1999.

[16] Padberg, Frank (2000), Estimating the Impact of the Programming Language on the Development Time of a Software Project, Proceedings International Software Development and Management Conference ISDM/AP-SEPG 287-2

[17] N. Gross; M. Stepanek, O. Port; J. Carey (December, 1999), Software Hell: Glitches cost billions of dollars and jeopardize human lives. How can we kill the bugs? Business Week Online –International,

[18] NITS (2006), NIST/SEMATECH e-Handbook of Statistical Methods,

[19] Ntourntoufis, Panos (2002), From Software Quality Control to Quality Assurance, UPSPRING Software, UK

[20] Nuseibeh, Bashar; Easterbrook, Steve (2000), Requirements Engineering: A Roadmap, Future of Software Engineering, Limerick Ireland ACM 2000 1-58113-253-0/00/6

[21] All software code will have bugs- Microsoft (Source:http://www.ciol.com/content/news/scpts/102100302.asp)

[22] The Software Crisis (Source: http://www.unt.edu/benchmarks/archives/1999/july99 /crisis.htm)