An Introduction to Software Quality Assurance

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Abstract—Software Quality Assurance is the process of evaluating the quality of a product .Quality is an important factor in software industry. Software quality depends upon the customer satisfaction which can be achieved through applying standards. In this era achieving quality software is very important because of the high customer demands. Developed countries are excelling in software industry and improving day by day. Meanwhile developing countries are struggling with software quality and cannot maintain reputation in International Market. Software Quality lacks due to many reasons.

Keywords: Customer satisfaction, Reputation, Customer demands, Excelling

I. INTRODUCTION

Software Quality Assurance is the process of evaluating the quality of a product and enforcing adherence to software product standards and procedures .It is an umbrella activity that ensures conformance to standards and procedures throughout the Software Development Life Cycle (SDLC) of a software product.In this era quality is the most important factor in any kind of business. To achieve a respectable position in global market in IT industry [7], a company must have to produce very high quality products. Competition is very high and one cannot afford correcting errors after shipping the products to the customer. A correction after shipping is very costly and it affects the Company credibility and organizations cannot afford losing Customers due to these kinds of problems. To avoid these problems, organizations should follow a proper quality management plan to remove errors from the products [6].Maintaining Quality for product is very important for Business Organizations as every Business Company is running towards automation [6]. Failure in real time software systems can have serious consequences. The main role of SQA (software quality assurance) is to maintain the quality of the software products [9]. For that it is to make sure that the standards and procedures are properly followed. Software QualityAssurance [1] standards are developed to help organizations to achieve quality products [1]. Standards are the set of guidelines which help to achieve best results. The standards and procedures include CMMI and ISO but it is difficult and costly for small SoftwareDevelopment Organizations to follow the standards.These software quality issues [2] are more prominent in developing countries.

II. OVERVIEW

In this paper, many issues related to quality are identified and many responsibilities of management are identified. Management plays a huge role in the SQA [11]. So it is the prime responsibility of the team managers to facilitate the team members and provide them the good working environment. There are many ways to improve the knowledge like they can go for some formal training courses. They should also take advantage of the seminars arranged by the different experts to improve their knowledge [4].

Quality plan is the most important in any quality improvement activity, SQA team managers are responsible and accountable to develop quality plan and also implement the plan. They are also responsible for quality measurement, quality improvement and configuration management. Quality Plan includes the inspection of the problems. Inspection for finding the problems while maintaining the quality was explained by the Parnas [2]. The methodology used for inspection was dividing and conquer. It was time consuming task, but ensures problems detection. No training was required for the Testing Team or Software Engineers. Parnas[2] explained the role of inspection in reducing quality problems in SQA [10]. First of all he explained the need of inspection in SQA [9] to reduce the problems, how it helps to find errors in the software. The main methodologies behind the inspection activity are dividing and conquer. The research also shows that inspection is a time consuming process but it ensures to find errors in the process. The benefit of the inspection is to benefit errors in the code but it can also help to find many ambiguities in the development phase like it can easily reveal that proper guidelines are followed or not like commenting etc. it is not necessary to do inspection at the end of the project but it can be done at any phase of the project and reveal the errors from the code. Quality effecting factors were explained in the research of David [16].That model explained that the quality of the free software is higher than the other projects. To improve the quality [11] of the projects, PeerReviews plays very important role. This explains that user involvement is also very important for the feedback and on the basis of this feedback software quality can be improved very easily.

III. PREVIOUS DEVELOPED WORKING MODELS

Models relating to Software Quality Assurance are discussed below.

A. Parnas Model:

Parnas[2] explained the role of inspection in reducing quality problems in SQA. First of all he explained the need of inspection in SQA to reduce the problems, how it helps to find errors in the software. The main methodologies behind the inspection activity are dividing and conquer.The research also shows that inspection is a time consuming process but it ensures to find errors in the process.

Many benefits are the findings of this research; he explained that there is no formal need for the training of inspection. A software engineer does not necessarily need a certification for the inspectionThe key benefit of the inspection is to benefit errors in the code but it can also help to find many ambiguities in the development phase like it can easily reveal that proper guidelines are followed or not like commenting etc. it is not necessary to do inspection at

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the end of the project but it can be done at any phase of the project and reveal the errors from the code.

B. David Model:

David [16] explained in their research about the free software quality and factors affecting them. He explained that the quality of the free software is higher than the other projects. Many reasons behind the improved quality are explained in this research and some comparisons are done between free projects and other projects. The quality of this free software is high because of the open development models used in the development process.

C. Peer Reviews Model:

Peer reviews plays very important role to improve the quality [11] of these projects, user involvement is also very important for the feedback and on the basis of this feedback software quality can be improved very easily. User gives their feedback on the basis of their experience and this feedback can help to improve the quality of the software.

D. Quality Factors:

To find the quality factors and problem [14] areas for open source projects, in this research many interviews are conducted to find the answers. The interviews were unstructured and seven different open source developers gave the answers of these questionnaires. This research covers projects of very complex nature, questionnaires are distributed among all seven developers and then there answers were collected and findings were explained in the different categories. First category of the results is development and quality practices, here it is discussed that how infrastructure, processes and documentation problems can cause lack of software quality. All of the above mentioned areas are highly important factors for quality of the software.

IV. CONCLUSION:

In this research SQA problems are identified and solutions are suggested to cope with those problems and improve the software quality. Software organizations can only get a respectable position in Global Market if they concentrate on quality. SQA plays a very important role in business of Software Company because the only factor which results in getting consistent projects from permanent customers is customer satisfaction.

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