

Software Quality Part



Software Quality:

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McCall's Quality Factors :

It was introduced in 1977. This model is incorporated with many attributes, called as software factors, which influence a software.

This categorised all software requirements into 11 software quality factors. The 11 factors are organised into three product quality factors - product operation, product revision, and product transition factors.

Product operation:

It includes five software quality factors, which are related with the requirements that directly affect the operation of the software such as operational performance, convenience, ease of usage and its correctness. This help in providing user experience.

- **Correctness -**

The area to which a software meets its requirements specification.

- **Efficiency -**

The amount of hardware resources and code the software, needs to perform a function.

- **Integrity -**

The area to which the software can control an unauthorized person from the accessing the data or software.

- **Reliability -**

The area to which a software performs its intended functions without failure.

- **Usability -**

The extent of effort required to learn, operate and understand the functions of the software.

Product Revision :

It includes three software quality factors, which are required for testing and maintenance of the software. They provide maintenance, flexibility and testing effort to support the software to be functional according to the needs and requirements of the user in the future.

- **Maintainability -**

The effort required to detect and correct an error during maintenance phase.

- **Flexibility -**

The effort needed to improve an operational software program.

- **Testability -**

The effort required to verify a software to ensure that it meets the specified requirements.

Product Transition :

It includes three software quality factors, that allows the software to adapt to the change of environments in the new platform or technology from the previous.

- **Portability** -

It required to transfer a program from one platform to another.

- **Re-usability** -

The area to which the program's code can be reused in other applications.

- **Interoperability** -

The effort required to integrate two systems with one another.

ISO 9126 Quality Factors :

The ISO 9126 software is an international standard **software quality model** that helps in creating a solid framework for assessing software. This standard way of assessing software can be segregated in four different ways. These are used to address subjects of different nature.

Following ways by which software quality model can be calculated are as follows:

Functionality: Key aspect of any software that ensures the completion of tasks and purpose.

Reliability :It determines the capability of software to sustain its use when put under different circumstances.

Usability:It is highly dependent on the functional uses of software. For example: ATM machine is used to withdraw cash.

Efficiency: It is more concerned by resources of the system when used for providing a desired functionality. This type of feature is defined by amount of disk space, memory and network.

Maintainability: This property of maintainability of the software model is used to recognize and fix a defect accordingly. The model is inspected for the faults and these can be identified easily.

Portability: According to this , capable software should easily adopt to the environmental changes as possible. The designing of an object and the practices of its implementation are highly dependent on this feature.

Quality control: Software quality control is the set of procedures used by organizations to ensure that a software product will meet its quality goals at the best value to the customer, and to continually improve the organization's ability to produce software products in the future.

Quality Assurance: Software quality assurance (SQA) is a means and practice of monitoring the software engineering processes and methods used in a project to ensure proper quality of the software. It may include ensuring conformance to standards or models, such as ISO/IEC 9126 .

RMMM

R.M.M.M stands for risk mitigation, monitoring and management. There are basically three issues in strategy for handling the risk is that are as follows

- Risk Avoidance
- Risk monitoring
- Risk management

Risk Mitigation:

It means preventing the risk to occur (Risk Avoidance). Following are the steps to be taken for mitigating the risks.

Communicate with the concerned staff to find of probable risk.

Find out and eliminate all those causes that can create risk before the project starts.

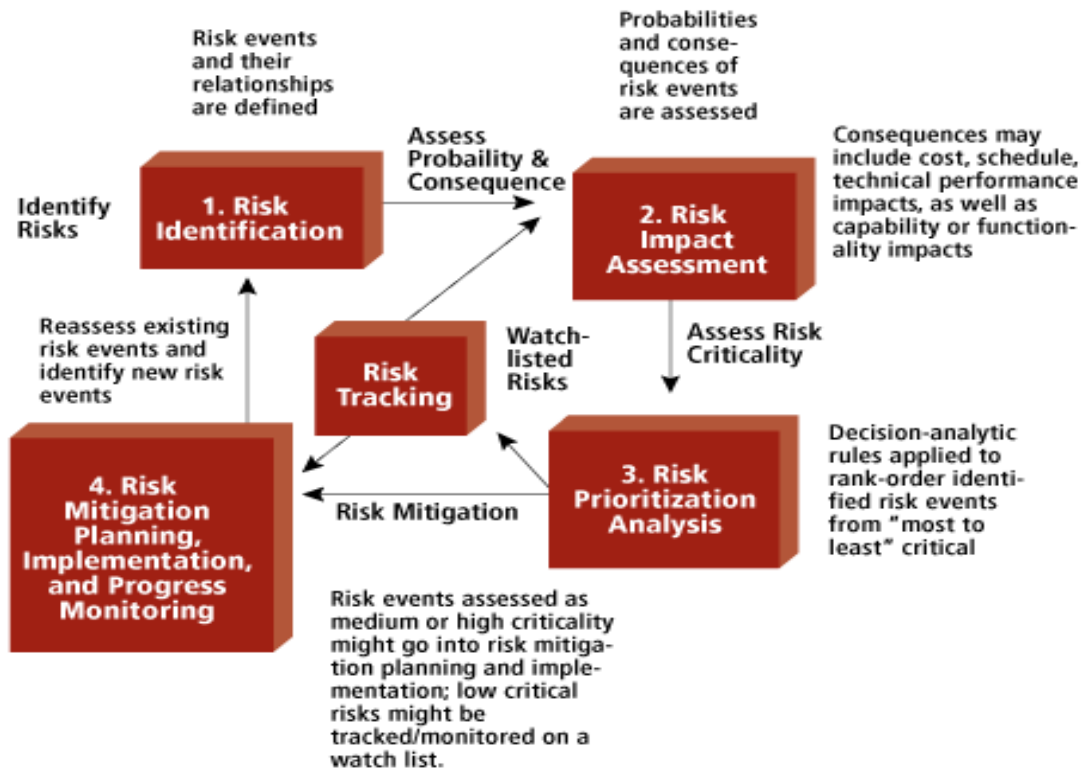
Develop a policy in an organization which will help to continue the project even though some staff leaves the organization.

Everybody in the project team should be acquainted with the current development activity.

Risk Monitoring:

- In this process following things must be monitored by the project manager.
- The approach of the team members as pressure of project varies.
- The degree in which the team performs with the spirit of "team-work".
- The type of co-operation among the team members. The types of problems that are occurring. Availability of jobs within and outside the organization

Risk management:



Risk identification : It is the process of determining risks that could potentially prevent the program, enterprise, or investment from achieving its objectives.

Risk impact assessment : It is the process of assessing the probabilities and consequences of risk events if they are realized. The results of this assessment are then used to prioritize risks to establish a most-to-least-critical importance ranking.

Risk Prioritization : The overall set of identified risk events, their impact assessments, and their probabilities of occurrences are "processed" to derive a most-to-least-critical rank-order of identified risks.

R.M.M.M Plan:

It is a document in which all the risk analysis activities are described. Project manager includes this document as a part of overall project plan. It is not



created, however each risk can be described individually using risk information sheet.

Software Reliability : It means **Operational reliability**. It is described as the ability of a system or component to perform its required functions under static conditions for a specific period. It is also defined as the probability that a software system fulfills its assigned task in a given environment for a predefined number of input cases, assuming that the hardware and the input are free of error.





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