Software Eng.

Quality of a S/W

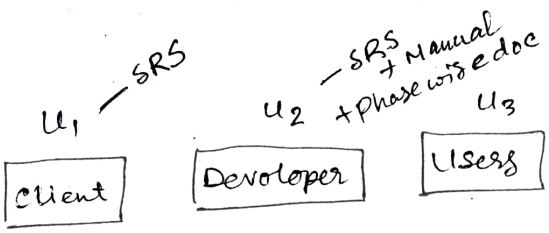
1) Functionality > working time
2) Reliability → S/W are reliable
3) Useability → Respective clients are using it
4) Portability → Both S/W of merged, are portable/comp
5) Efficiency
6) Maintainibility → Maintanence

ISO 9000
SEI CMM

ISO 9000 is an international standard of quality management and quality assurance. It certifies that the company or the organization are functioning and documenting the quality system elements which are required to execute a system efficiently with all the qualitative features.

This criteria focuses on the relationship b/w the client and the manufacturer/ supplier and reduces the risk from client's side.

This standard is ~~comm~~ most commonly used in manufacturing industry rather than S/W farms & is almost globally accepted having a time frame of 3 years.



Ex: SPENCER

u_1, u_2, u_3 are different {provided u_1 is the boss u_3 are are the executive working on floor}

Ex: MS WINDOWS

u_1, u_2 } developers, use all are u_3

SEI CMM :

SEI CMM are the standards that does not tell S/W developers how to analyze, design, code, test or document S/W product but assume that the engineers will effectively use the practises that is mentioned in the standard.

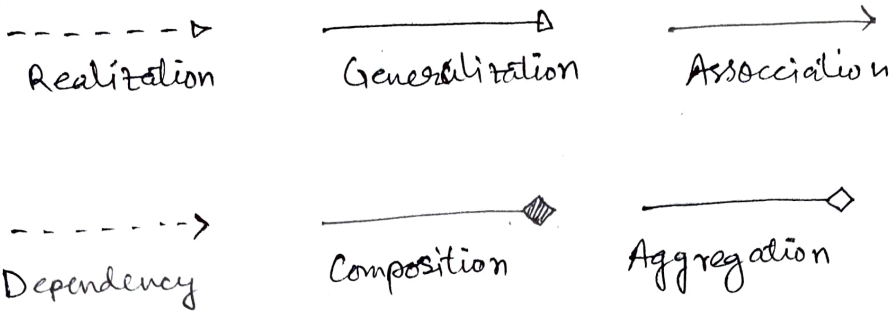
CMM stands for Capability Maturity Model. Which focuses on the quality standards that an organisation must maintain during the S/W development process.

SEI CMM, where 'SEI' stands for 'S/W engineering Institute' specifies 5 levels of classifying the organisation on the basis of quality standards that they maintain.

The 5 levels are -

1. Level 1 : Initial
2. Level 2 : Repeatable
3. Level 3 ; Defined
4. Level 4 ; Managed
5. Level 5 : Optimizing

S/W Eng. Lab



This symbol signifies about the relationship b/w the classes which are the basic building block of any object oriented designing concept as the Object Oriented concept has the property of describing relationship through inheritance, encapsulation & polymorphism. Hence, designing any system requires these symbols depending on the need of that particular class.

Association is the relationship b/w 2 objects and also defines the multiplicity b/w objects. The relationship can be one-one, one-many or many-many & such relationship can be defined under the association -ship of the objects.

Aggregation : This is a special case of association when a particular object has a relationship with another object & this relationship is ~~stud~~ established through the direction of the arrow.

Composition : It is ~~also~~ a special kind aggregation which is known as restricted aggregation when an object contains the other object. The contained object need to survive, it requires the container obj & such a situation is known as compotion.

Ex : A class contains students whereas a student cannot survive w/o a class. and such a relationship is known as composition.

[redacted]

Abstraction : It is a property to hide implementation details & to focus on the relationship b/w diff classes. The relationship can be established through either of the charectars -- which includes generin, Association etc. Hence, abstraction is known a framework for specifying relationship.

Generalisation : This is a relationship which focuses on a generalised class consist of common, structur & behavior. Through the property of inheritance, a class or more than one class can attached to a generalized class.

Realization is a relationship b/w a object and its class containing implementation details. The obj is said to be the realized the blueprint of that class. In other words, we can define this characteristics as the relationship b/w the interface and the implementing class.

Dependency: If changes in a structure or behavior of a class affects the other class, then there is a dependancy b/w these two classes.

[redacted]

Level - I :

Initial : In initial level the S/W is developed on activities and a very process are defined. Says, most of the process remaines undefined, S/W Eng. follow their own steps to develope the S/W. This situation leads to chaotic condition & hence this level is also known as chaotic level. The success of this level depends entirely on S/W eng. rather than the organization. Since, most of the part remains undefined, maintainance of such S/W is very difficult.

Level II

Repeatable : In this level, a partial documentation of the project is carried out which includes cost & time estimation. Various methods are used for calculating the estimated value (such as COCOMO). The more accurate the estimation values are the more successful will be the project. Previous experience related to estimation on similar types of projects are considered for calculating the estimated value

Level III :

Defind ; In this level management & developement activities are defined & documented. This level focuses on organisation based, interstanding of activities ro and responsibilities. This level does not focus on process and product qualities but rather very similar to ISO9000 standards.

Level IV

Managed : This level focuses on S/w metrices. 2 type of metrices are collected. Thay are product metrices and process metrices. The product metrice measures the charatinistics of the product such as size, time complexity, reliability etc. The process matrix reflects the effectiveness of the process such as productivity, avarage defects correction time, avg. no. of failure per LOC etc. Quantitative quality goals are saine for this product in this level & this level checks for the quakitative quality requirements that has been made defined in the SRS.

Level V:

Optimising: At this stage the process and the product metrices are collected & the result analysis is used for improving the product. This level also allows cont. process improvement through feedbacks and suggestions. This is the highest level of standard and the organisation that is following this level is expected to produce the S/w of high quality

S/W Eng

~~Among of many~~

⊙ Functional Requirement :

This discuss the functionalities req. by the system. where each function can be considered as a transformation of set of input data to the corresponding output data. In functional req., the users get some meaningful piece of work and information. which provides an abstract view of the software. This component is essential for calculating the estimation of the proposed s/w.

⊙ Non-functional Requirement :

This deals with the characteristics of the system which cannot be expressed as function. Non-fun req. includes features like maintainibity, portability etc.

⊙ Goals of implementation :

This feature verifies the availibity of functional & non-functional requirement of the proposed s/w. and revise the availibin those features during the later stage of developement of the s/w.

⊙ Decision Table :

A decision table is used to represent a complex processing logic in a tabular or a matrix form. The upper row of the table specify the variable or conditions that need to be evaluated. The lower rows specify the actions to be taken when the corresponding conditions are satisfied. A column in a table is called a 'RULE'. A rule implies that, if a condition is true, then the correspondi action is to be executed.

Ex: Considering the library management system, the following table represents the LMS in a decision table format. The table is divided into 2 parts The upper part shows the condition and the lower part shows the action that need to be taken. Each column of the table is a 'RULE', One can easily understand from the table, that if the valid selection condition is false, then the action taken for this condition is 'DISPLAY ERROR MASSEGE'. Similarly, the action taken for other condt. can be obtained from the table.