

A New Generalised Model of Software Development Life Cycle.

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Abstract:Software Development Life cycle is the series of activities or stages to develop the software product within time period. There are different types model in SDLC. Each model have different characteristic for the development of software product. In this paper we give approach about new generalised model of Software development life Cycle. This generalised model is created by the combination of prototype model, spiral model and iterative waterfall model of SDLC. This model may be helpful for the software development team to develop any type of software.

Keywords: SDLC, Waterfall model, Prototypemodel, Spiralmodel, iterative Waterfall model.

Introduction:

Software Development Life Cycle: Software Development Life Cycle carries the different types of activities to develop the software product within period of time. There are different types of model in SDLC. Each and every model follows different types of activities to develop the software product. The basic models are Waterfall model, iterative model, prototypemodel, Evolutionary model, spiral model.[1]

Iterative Waterfall model:This model has six stages of activities for software development.

1. Feasibility Study: In this stage development team confirm that the software are economically or technically feasible or not. After that development start.

2. Requirement Analysis and Specification: In this stage customer requirement must be gathering first

then analysis all the requirements. The customer requirements are gathered by interviews. After gathering information remove all types of inconsistencies from requirement and document all the requirements in software Requirement Specification document. Three types of requirements are there, a) functional, b) non-functional c) goal of implementation.

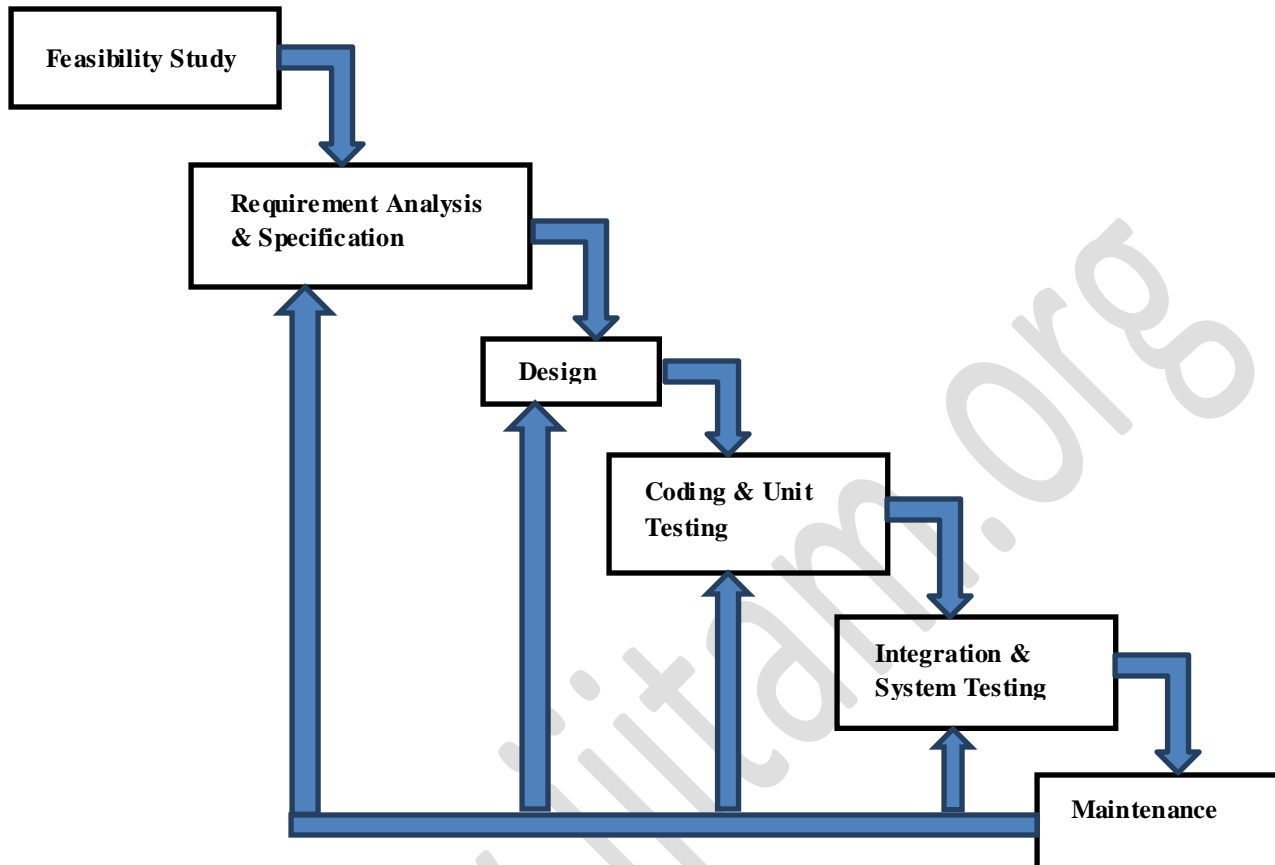
3. Design:In this stage created SRS documentation transform into complete Structure or architecture of the software .Algorithm, Flow charts, DFD all the design are implemented in this stage. Different design techniques are structure oriented, function oriented, object oriented.

4. Coding & Unit Testing: After designing the software, whole design is translated into code .Source code is writing programs. After writing programs each and every unit of programs are tested. This type of testing is called unit testing. So unit testing is the testing technique where all the modules or program of Software are individually tested. Black Box and White Box are the two types of unit testing.

5. Integration & System Testing: After coding and unit testing, all the individual modules are integrated to a single unit .Then test whole unit after integration. This type of testing is called system testing. There are three types of software testing a) Alpha testing, b) Beta testing, c) Acceptance testing.

6. **Maintenance:** After development and testing phase software must be maintain properly. Any types of modification, correction or up gradation required for software after development and

testing. There are three types of maintenance a) Corrective maintenance b) Perfective maintenance c) Adaptive maintenance



1 Fig: Iterative Water Fall Model

Prototype Model:

In this model a toy application of software is built before development of actual software. The prototype of software is build before development of actual software because customer requirement may be changed every time during development of software .So iterative waterfall model, water fall model are not able to tackle the customer requirement changes during development phases. So in this model any types of risk will be identified. In this model development team first collect all the initial requirements of software .After that prototype is built by development team. This

Prototype is delivered to customer after development. Then customer evaluates the prototype and gives feedback to development team. Development team refine all requirements from the customer suggestion and modify the prototype. This development process is continuing until the customer accepts the prototype. After customer acceptance the actual software built by iterative waterfall model.

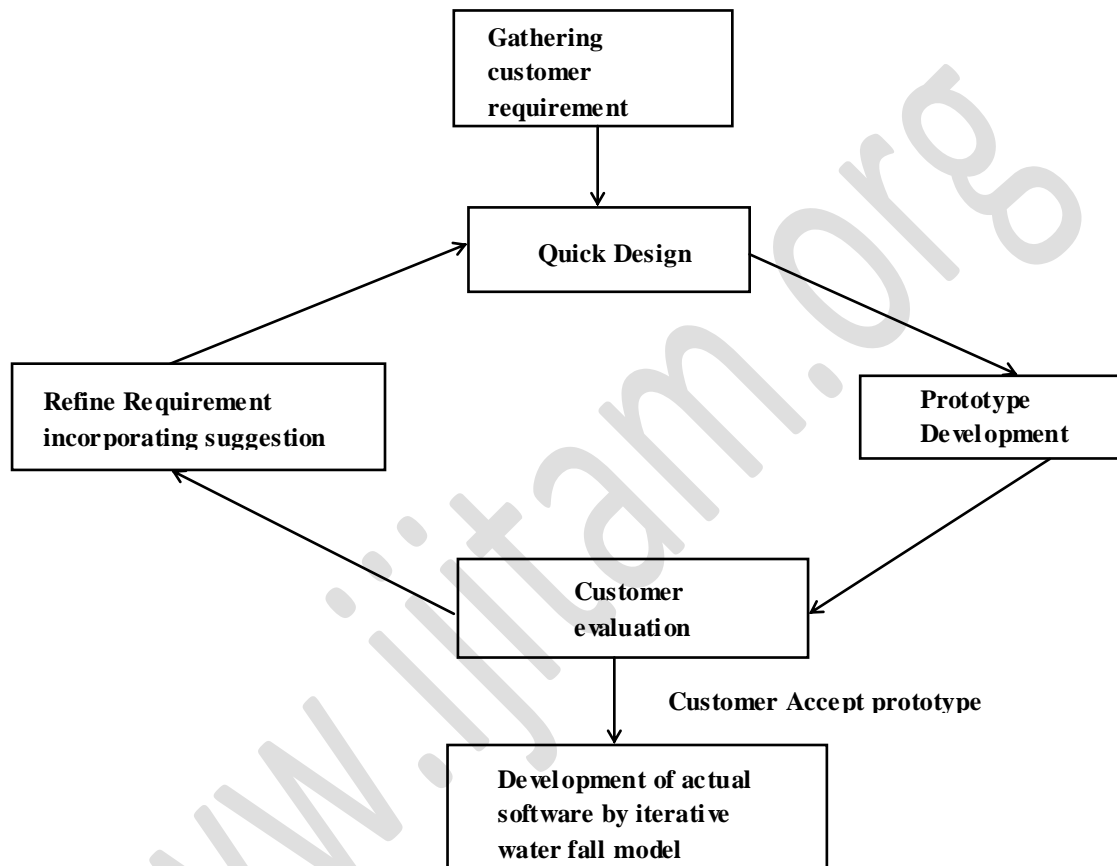


Fig 2: Prototype Model

Spiral Model: Spiral model is used to identify and resolve risk occur during development of software product. Spiral model have so many loops and limit of loops are not fixed. Each loop describes phases of software process. Each phases divided into four sectors. In the first sector, objectives of phase are investigated first then verify and analysed. After that alternative solution is identified .In second quadrant, all risk arise during development are

identified and resolve all the risk. This sector selects the best solution by evaluated alternative solution. Third sector include the development of product and also verify the next level of the product. Fourth sector perform review planning for the next phases. Diagram describes all the functionalities of spiral model.

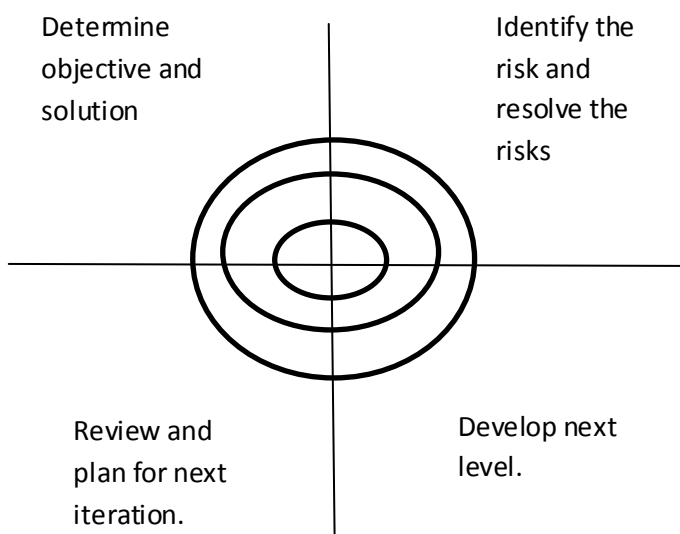


Fig 3: Spiral Model

Proposed Idea: There are three levels in this model. The purpose of first level is to build prototype of actual software by prototype model. The purpose of second level is to identify and resolve risk from development phases by spiral model. After that the actual software is developed by iterative waterfall model. So this proposed model is the combination of prototype model, spiral model and iterative waterfall model. Before development of actual software the prototype of software build first and verified by customer. The customer give feedback after verification. If customer accepts this prototype then resolve the risk arise in each development phase's. This risk identification process will continued until all the risk are identified or resolved. After that the actual software developed by iterative waterfall model.

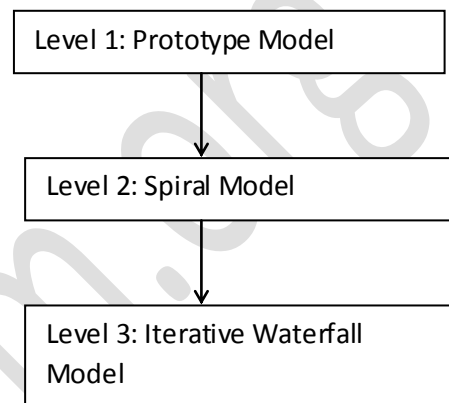


Fig 4: New generalised Model

Level 1: Customer feedback gathered in this level after verification of prototype of actual software. So the final requirements are perfect to develop the actual software. So go for next level.

Level 2: In this level all types of risk in the development phases are identified first then resolved all the risk. After removing all types of risk the actual software developed in the next level.

Level 3: The actual software is developed in this level after removing all types of risk.

Conclusion: This generalised model is the combination of iterative waterfall model, prototype model and spiral model. This generalised model helps to develop any type of software. Customer requirement identified easily by prototyping through this model. This model is easily identified any type of risk and remove all type of risk before the development of actual software.

References:

[1] An Approach of Software Engineering, Rajib Mal, Tata Macgraw Hill Publication, Version-2004.

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