Software Development Process

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Abstract

This article gives a brief about software development process. This article may help you realize the process of software development.

Introduction

The general process of software development process including the function of software design and implementation of algorithms and methods, software, the overall structure design and module design, programming and debugging, program debugging and testing and prepared and submitted to the procedures and so on a series of operations.

Software Project Estimation

Estimation is foundation for all project planning activities.

Estimation Steps

Description of product scope
Decomposition of problem into set of smaller problems
Each sub problem is estimated using historical data, software metrics and experience (from past projects) as guides.
Problem complexity and risks are considered before final estimate is made.

Estimation and Risk

Estimation carries inherent risk & risk leads to uncertainty Estimation risk is measured by the degree of uncertainty in the quantitative estimates established for resources, cost, and schedule. Availability of comprehensive historical information and software metrics (from past projects) helps establish better estimates and hence reduces risk factors

Project Planning Process

Software project planning provides a framework that enables the manager to make reasonable estimates Although there is inherent uncertainty, the team embarks on a project plan But, this plan must be adapted and updated as the project progresses

Options for cost and effort estimates

   Delay estimation until late in project
- Not a practical approach
   Base estimation on similar past projects
- Reasonable approach but not always successful
   Use simple decomposition techniques to generate estimates
- Divide and conquer approach. Divide project into major activities/functions and make estimates
   Use some empirical model for estimation
- Complements decomposition techniques

The step:

1. Choose the team
2. Kickoff Meeting
3. Individual Preparation
4. Estimation Session

5. Assemble Tasks
6. Review Results

Software Process Models

The development models are the various processes or methodologies that are being selected for the development of the project depending on the project's aims and goals. There are many development life cycle models that have been developed in order to achieve different required objectives. The models specify the various stages of the process and the order in which they are carried out.

The selection of model has very high impact on the testing that is carried out. It will define the what, where and when of our planned testing, influence regression testing and largely determines which test techniques to use.

There are various Software development models or methodologies. They are as follows:

1. Waterfall model
2. V model
3. Incremental model
4. RAD model
5. Agile model
6. Iterative model
7. Spiral model

Choosing right model for developing of the software product or application is very important. Based on the model the development and testing processes are carried out.

Different companies based on the software application or product, they select the type of development model whichever suits to their application. But these days in market the 'Agile Methodology' is the most used model. 'Waterfall Model' is the very old model. In 'Waterfall Model' testing starts only after the development is completed. Because of which there are many defects and failures which are reported at the end. So,the cost of fixing these issues are high. Hence, these days people are preferring 'Agile Model'. In 'Agile Model' after every sprint there is a demo-able feature to the customer. Hence customer can see the features whether they are satisfying their need or not.

Project Schedule

The project schedule is a calendar that links the tasks to be done with the resources that will do them. ωBefore a project schedule can be created, the project manager must have a work breakdown structure (WBS) and estimates. ωThe schedule is part of the project plan.

Project Management Key Stages

Building the project schedule

Allocate resources
ωFor each task in the WBS, one or more resources must be assigned ωChoose person or people for each task based on qualifications, familiarity and availability ωTake overhead into account when calculating the duration of each task

Identify dependencies
ωA task has a dependency if it involves an activity, resource or work product which is subsequently required by another task

ωTasks may have dependencies because they require the same resource

Every dependency has a predecessor, or a task that must be begun, in progress, or completed, for another task to begin ωIdentify the type of predecessor for each dependency.

Create the schedule
ωMost project schedules are represented using a Gantt chart
ωThe Gantt chart shows tasks, dependencies and milestones using different shapes
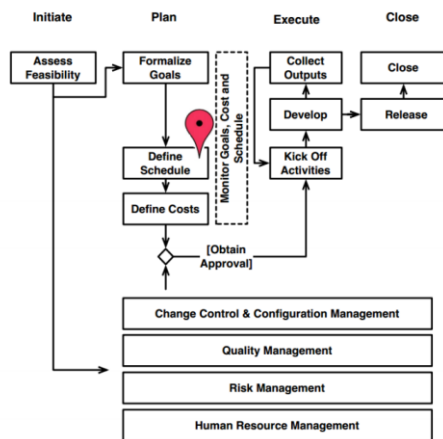
Optimize the schedule
ω The critical path is the sequence of tasks that represent the minimum time required to complete the project. • If a task is only on the critical path when delaying that task will delay the project.
• Allocating resources to tasks on the critical path will reduce the project schedule; allocating them to other tasks will have less effect.
ω A resource is over-allocated if more than 100% allocated to multiple tasks simultaneously • If any resource is over-allocated, it means that there is a dependency between two tasks which was not discovered. • When this happens, the schedule is guaranteed to be inaccurate. Find and fix over-allocated resources.

References

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