❖ 3Ps (people, product and process) Process and Project metrics Software

For properly building a product, there's a very important concept that we all should know in software project planning while developing a product. There are 3 critical components in software project planning which are known as the 3P's namely:

- Product
- Process
- People

These components play a very important role in your project that can help your team meet its goals and objectives.

People

The most important component of a product and its successful implementation is human resources.

In building a proper product, a well-managed team with clear-cut roles defined for each person/team will lead to the success of the product.

We need to have a good team in order to save our time, cost, and effort.

Some assigned roles in software project planning are project manager, team leaders, stakeholders, analysts, and other IT professionals.

Managing people successfully is a tricky process which a good project manager can do.

Product

As the name inferred, this is the deliverable or the result of the project.

The project manager should clearly define the product scope to ensure a successful result, control the team members, as well technical hurdles that he or she may encounter during the building of a product.

The product can consist of both tangible or intangible things such as shifting the company to a new place or getting a new software in a company.

Process

In every planning, a clearly defined process is the key to the success of any product.

It regulates how the team will go about its development in the respective time period.

The Process has several steps involved like, documentation phase, implementation phase, deployment phase, and interaction phase.

Process and Project metrics

a) Process Metrics

These are the metrics pertaining to the Process Quality. They measure efficiency and effectiveness of various processes.

b) Project Metrics

These are the metrics pertaining to Project Quality. They measure defects, cost, schedule, productivity and estimation of various project resources and deliverables.

Project Metrics

- Schedule Variance : Any difference between the scheduled completion of an activity and the actual completion is known as Schedule Variance. Schedule variance = ((Actual calendar days – Planned calendar days) + Start variance)/ Planned calendar days x 100.

  The Start Variance field contains the amount of time that represents the difference between a baseline start date of a task or assignment and its currently scheduled start date

- Effort Variance: Difference between the planned outlined effort and the effort required to actually undertake the task is called Effort variance. Effort variance = (Actual Effort – Planned Effort)/ Planned Effort x 100.

- Size Variance: Difference between the estimated size of the project and the actual size of the project (normally in KLOC or FP) Size variance = (Actual size – Estimated size)/ Estimated size x 100.

- Requirement Stability Index: Provides visibility and understanding into the magnitude and impact of requirements changes. RSI = 1- ((No of changed + No of deleted + No of added) / Total no of Initial requirements) x100

- Productivity (Project): It is a measure of output from a related process for a unit of input. Project Productivity = Actual Project Size / Actual Effort spent for the project

- Productivity (for test case preparation): Productivity in test case preparation = Actual no of test cases/ actual effort spent on test case preparation

- Productivity (for test case execution): Productivity in test case execution = actual number of test cases / actual effort spent on testing.
- Productivity (defect detection): Productivity in defect detection = Actual number of defects (review + testing) / actual effort spent on (review + testing)
- Productivity (defect fixation): Productivity in defect fixation = actual no of defects fixed/ actual effort spent on defect fixation
- Schedule variance for a phase: The deviation between planned and actual schedule for the phases within a project. Schedule variance for a phase = (Actual Calendar days for a phase – Planned calendar days for a phase + Start variance for a phase)/ (Planned calendar days for a phase) x 100
- Effort variance for a phase: The deviation between planned and actual effort for various phases within the project. Effort variance for a phase = (Actual effort for a phase – planned effort for a phase)/ (planned effort for a phase) x 100

Process Metrics

- Cost of Quality: It is a measure in terms of money for the quality performance within an organization. Cost of quality = (review + testing + verification review + verification testing + QA + configuration management + measurement + training + rework review + rework testing)/ total effort x 100
- Cost of poor Quality: It is the cost of implementing imperfect processes and products. Cost of poor quality = rework effort/ total effort x 100
- Defect Density: It is the number of defects detected in the software during the development divided by the size of the software (typically in KLOC or FP) Defect density for a project = Total number of defects/ project size in KLOC or FP

- Review Efficiency: defined as the efficiency in harnessing/ detecting review defects in the verification stage. Review efficiency = (number of defects caught in review)/ total number of defects caught) x 100
- Testing Efficiency: Testing efficiency = 1 – ((defects found in acceptance)/ total no of testing defects) x 100
- Defect removal efficiency: Gives the efficiency with which defects were detected and minimum defects were filtered down to the customer. Defect removal efficiency = (1 – (total defects caught by customer/ total no of defects)) x 100