Dr. SNS RAJALAKSHMI

COLLEGE OF ARTS AND SCIENCE

(AUTONOMOUS)

Accredited by NAAC (Cycle-III) with 'A+' Grade

DEPARTMENT OF COMPUTER APPLICATIONS (PG)

Course Name   : SOFTWARE PROJECT MANAGEMENT

Class   : I MCA

Semester   : I

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UNIT-III

Software Project Management

Topic: **Software effort estimation**

Software effort estimation

- Effort estimation is the process of forecasting how much effort is required to develop or maintain a software application. This effort is traditionally measured in the hours worked by a person, or the money needed to pay for this work.

- Effort estimation is used to help draft project plans and budgets in the early stages of the software development life cycle. This practice enables a project manager or product owner to accurately predict costs and allocate resources accordingly.

- **Estimation** is the process of finding an estimate, or approximation, which is a value that can be used for some purpose even if input data may be incomplete, uncertain, or unstable.

- Estimation determines how much money, effort, resources, and time it will take to build a specific system or product. Estimation is based on −

- Past Data/Past Experience

- Available Documents/Knowledge

- Assumptions

- Identified Risks

- The four basic steps in Software Project Estimation are –

- Estimate the size of the development product.

- Estimate the effort in person-months or person-hours.

- Estimate the schedule in calendar months.

- Estimate the project cost in agreed currency.

The Project Estimation Approach that is widely used is **Decomposition Technique**. Decomposition techniques take a divide and conquer approach. Size, Effort and Cost estimation are performed in a stepwise manner by breaking down a Project into major Functions or related Software Engineering Activities.

- **Step 1** − Understand the scope of the software to be built.

- **Step 2** − Generate an estimate of the software size.

Start with the statement of scope.

Decompose the software into functions that can each be estimated individually.

Calculate the size of each function.

Derive effort and cost estimates by applying the size values to your baseline productivity metrics.

Combine function estimates to produce an overall estimate for the entire project.

Dr.SNSRCAS/I MCA/I SEM/Dr.A.DEVI

- **Step 3** − Generate an estimate of the effort and cost. You can arrive at the effort and cost estimates by breaking down a project into related software engineering activities.

  Identify the sequence of activities that need to be performed for the project to be completed.

  Divide activities into tasks that can be measured.

  Estimate the effort (in person hours/days) required to complete each task.

  Combine effort estimates of tasks of activity to produce an estimate for the activity.

  Obtain cost units (i.e., cost/unit effort) for each activity from the database.

  Compute the total effort and cost for each activity.

  Combine effort and cost estimates for each activity to produce an overall effort and cost estimate for the entire project.

- **Step 4** − Reconcile estimates: Compare the resulting values from Step 3 to those obtained from Step 2. If both sets of estimates agree, then your numbers are highly reliable. Otherwise, if widely divergent estimates occur conduct further investigation concerning whether −

- The scope of the project is not adequately understood or has been misinterpreted.

- The function and/or activity breakdown is not accurate.

- Historical data used for the estimation techniques is inappropriate for the application, or obsolete, or has been misapplied.

- **Step 5** − Determine the cause of divergence and then reconcile the estimates.