UNIT-2B

Risk Planning

1. **Risk Acceptance** - Do nothing except for Risk Prioritization focuses on higher priority risk & risk with less priority are likely to be ignored. The costs of action involved in reducing the probability of risk happening is greater than the damage inflicted by some risks.

2. **Risk Avoidance** - Retain existing clerical m/d, or purcha an off-the-shelf solutions might be the choice of som managers rather than to develop from scratch.

3. **Risk Reduction** - The course of action is carried out as planned but precautions are taken that reduces the probability of risk.
   - It attempts to reduce the likelihood of risk occuri
   Risk mitigation is action taken to ensure that the impact of the risk is lessened than it occurs.
   Ex: Taking regular back-ups of data storage would reduce the impact of data corruption but not its likelihood.

4. **Risk Transfer** - Risk is transferred to another person/e
   Ex: S/w development task is outsourced to an outside agency for a fixed fee.

RISK MANAGEMENT

1. **Contingency** - A planned action to be carried out if the particular risk materializes. The cost of a contingenc measure will only be incurred if the risk actually materializes.

Ex: Staff absence through illness.

1. Employers encourage employees to adopt a healthy lifestyle – avoids minor illness like flu.
2. If a team member involved in urgent work were then PM might put in another member staff to cover that work.

2. Deciding on the risk actions – The list of risks identify is potentially endless – a way to distinguish damage & likely risks can be done by estimating RISK EXPOSURE for each risk using the formula in terms of financial

Risk exposure = (potential damage) x (probability of occurence)

- The cost-effectiveness of a risk reduction action can be assessed by calculating the risk reduction leverage (RRL).

$$\text{risk reduction leverage} = \frac{(RE_{before} - RE_{after})}{(\text{cost of risk reduction})}$$

- RE_{before} is the risk exposure, before risk reduction actions have been taken. REafter is the risk exposure after taking the risk reduction action.
- An RRL > 1.00 indicates that the reduction in risk exposure achieved by a measure is > its cost.

Ex: 2,00,000 Rs to replace a h/w configuration used to develop a s/w application. There is a 1% chance of fire The risk exposure would be 1% of 2,00,000 Rs that is 2,000 Rs.

Installing fire alarms at a cost of Rs. 500 would reduce the chance of fire to 0.5%. The new risk exposure wa be Rs. 1,000, a reduction of Rs. 1000 on previous exposure So action is worthwile.

∴ RRL = (2000 – 1000)/500 = 2.0

Creating and Maintaining the risk register – when the project planners have picked out & examined what appear to be the most threatening risks to the project, they need to record their findings in a Risk Register.

RISK RECORD				
Risk Id		Risk Title		
Owner		Date Raised	Status	
Risk Description				
Impact Description				
Recommended risk mitigation				
Probability/Impact Values				
	Probability	Impact		
		Cost	Duration	Quality
Pre-mitigation				
Post-mitigation				
Incident/action history				
Date	Incident/Action	Actor	Outcome/comment	

4 framework dealing with Risk

Planning for risks includes:

1. Risk identification
2. Risk Analysis & prioritization
3. Risk Planning
4. Risk Monitoring

Steps 1 to 3 are repeated when risks that could prevent a project success are identified, plans can be made to reduce / remove their threat.

Risk Identification

RISK	RISK REDUCTION TECHNIQUES
Personnel Shortfalls	- Staffing with top talent, job matching, team building, training & career development, early scheduling of key personnel.
Unrealistic time & cost estimates	- Multiple estimation techniques, design to cost, incremental development, recording & analysis of past projects, standardization of projects.
Developing wrong software functions	- Improved s/w evaluation, formal specification, methods, user surveys, prototyping, early user manuals.
Developing the wrong user interface	- Prototyping, task analysis, user involvement.
Gold plating	- Requirements scrubbing, prototyping, Cost-benefit analysis, Design to cost.

6. Late changes to requirements - Stringent change control procedures, high change threshold, incremental development.

7. Shortfalls in externally supplied components - Benchmarking, inspections, formal specifications, contractual agreements, quality assurance procedures & certification.

8. Shortfalls in externally performed tasks - Quality assurance procedures, competitive design / prototyping, contract incentives.

9. Real-time performance shortfalls - Simulation, Benchmarking, Prototyping, Tuning, Technical analysis.

10. Development technically too difficult - Technical analysis, prototyping, cost-benefit analysis, Staff training & development.

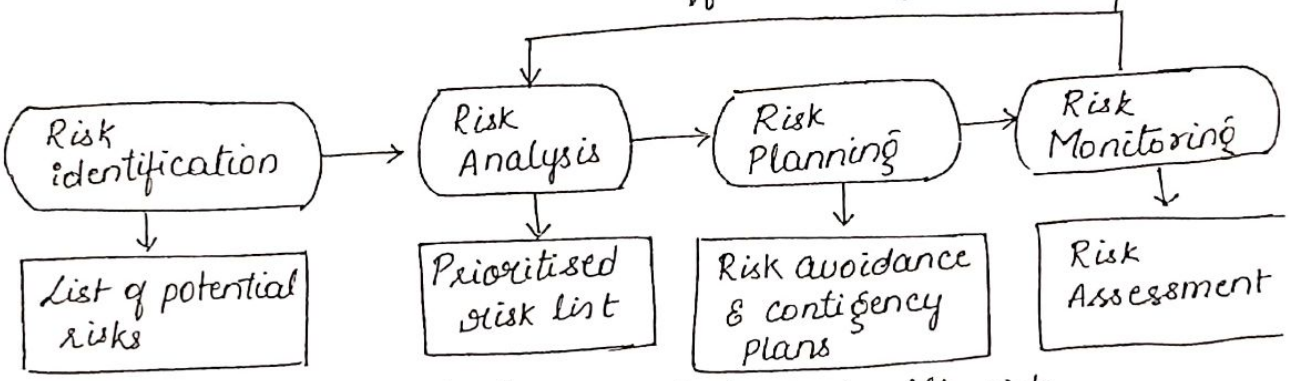


FIG: Risk management framework to deal with risk.

MONITORING AND CONTROL

Creating the Framework

- Regular monitoring & control is finding out what is happening & comparing it with targets.
- If any mismatch is found b/w planned outcomes & actua ones, Replanning is needed to bring project back on targ

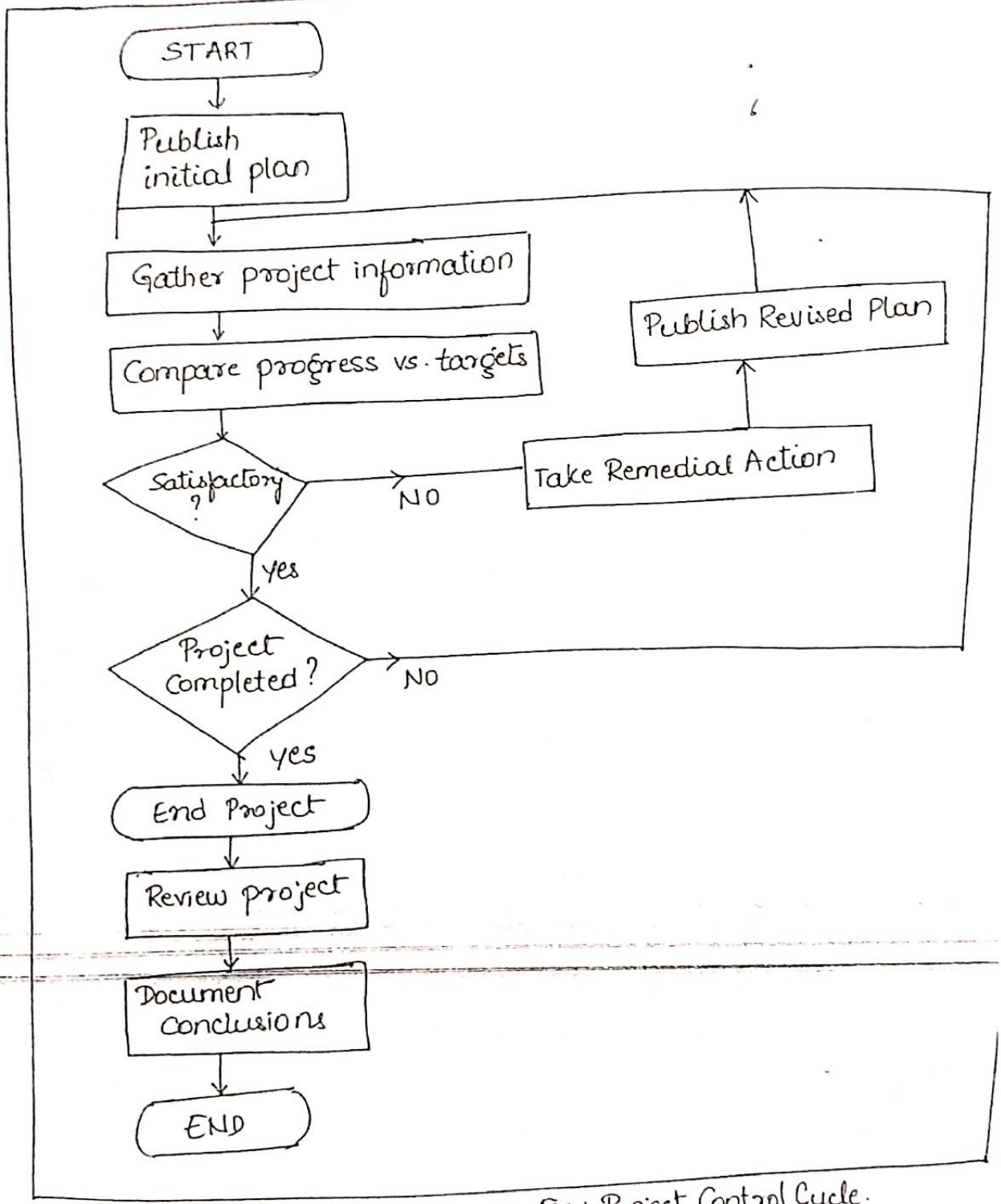


Fig: Project Control Cycle.

- Fig. shows a model of the project control cycle & once the initial project plan has been published, project contrc is a continual process of monitoring progress against the plan &, where necessary, revising the plan to take account of deviations.
- The imp. steps that is carried out after completion of pr so that the experience gained in any one project can fe into the planning stages of future projects.

1) RESPONSIBILITY

- The overall responsibility for ensuring satisfactory prog on a project belongs to PROJECT STEERING COMMITTEE; PROJECT MGMT BOARD / PROJECT BOARD.

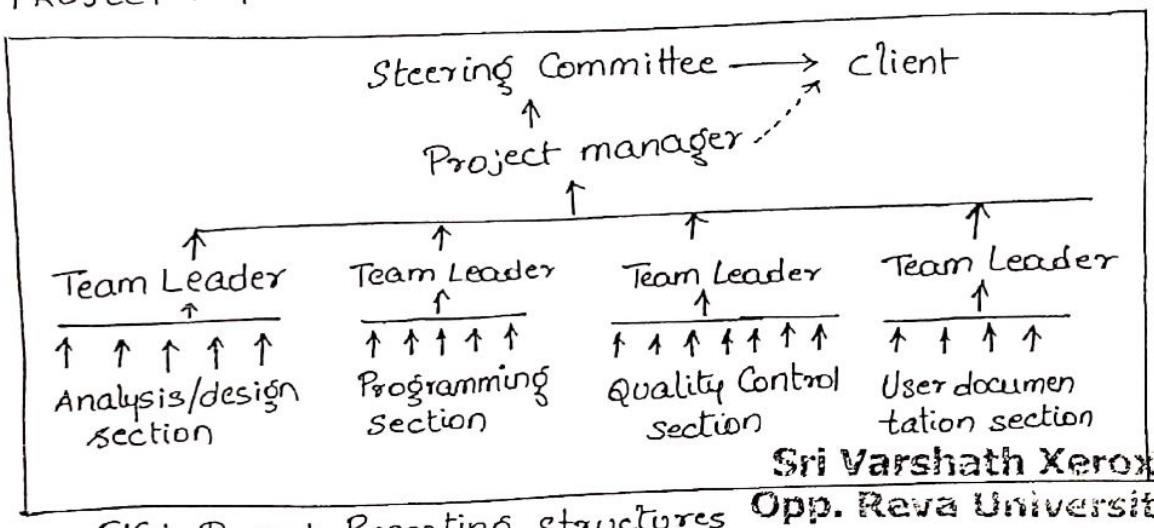


FIG: Project Reporting structures

- With small projects, individual team members usually report directly to the project manager, ~~then~~ ~~to~~ but in others projects, team members report to team leader, & in turn TL forwards summaries to PM.
- These will be incorporated into project level reports fo ~~the steering committee & then progress reports for clien~~
- Reporting may be oral/written, formal/informal, regul ad hoc. Informal comm is necessary & important but such reports should be complemented by formal reporting procedures.

REPORT TYPE	EXAMPLES	COMMENT
1. Oral formal regular	Weekly/monthly progress meetings	While reports may be oral, formal written minutes should be kep
2. Oral formal ad-hoc	End-of-stage review meetings	While largely oral, like to receive & generate written reports.
3. Written formal regular	Job sheets, progress reports	Normally weekly using forms.
4. Written formal ad hoc	Exception reports, change reports	
5. Oral information ad hoc	Canteen discussion, social interaction	Often provides early warning, must be backe up by formal reporting

2. ASSESSING PROGRESS

- Assessment depends on estimates of proportion of the current activity that has been completed.
- Information used to assess project progress is collected routinely & on specific situations.

3. SETTING CHECKPOINTS

- Checkpoints may be:
  1. Regular (weekly/monthly .. etc)
  2. Tied to specific events such as production of report or other deliverable.

4. TAKING SNAPSHOTS

- The frequency of ~~snapshots progress reports will depend o~~ the size & degree of risk of the project.

Ex: Team leaders assess progress daily, proj. managers on weekly/monthly basis.

- The higher the level, the less frequent & less detailed the reporting needs to be.
- In major projects, progress reviews are carried out at particular points during project life cycle called as - review points or control points.
- At the end of each project stage - End Stage Assessment assessment & consideration of its future are considered.

COLLECTING THE DATA

- Managers will break down long activities into controllable a two ~~activities~~ duration of weeks.
- Information is gathered of partially completed activities forecast about how much work is left behind to comple
- Accurate decisions on forecasting is difficult.
- When there is a series of products, estimation of partial completed activities are easy. Progress can be measured by counting no. of record specifications or screen layouts.

1. PARTIAL COMPLETION REPORTING

- Weekly timesheets are used in organizations as a std account s/m to charge staff time to individual jobs.
- Weekly timesheets are a valuable source of information abou resources used.
- The staff time booked to a project indicate the work carri out & the charges to the project.
- The report form, requesting inform about likely slippage completion dates & estimation of completeness.

TIME SHEET

Staff John Smith

Week ending 30/3/07

Rechargeable Hours

Project	Activity Code	Description	Hours this week	% Complete	Scheduled completion	Estimated Completion
P21	A243	Code mod A3	12	30	24/4/07	24/4/07
P34	B771	Document Take on	20	90	6/4/07	4/4/07

Total recharged hours	32

Non-rechargeable hours

Code	Description	Hours this week	Comment & Authorization
Z99	Day in lieu	8	Authorized by RB

Total non-rechargeable hours	8

FIG: A weekly timesheet & progress review form

2. RED/AMBER/GREEN (RAG) REPORTING

- The objections of partial completion reporting can be overcome by collecting team members' estimate of probability of meeting the planned target date instead of estimated completion dates.
- ~~Complete Syndrome - tasks are reported as on time till 99% complete, & then stay at 99% complete until finished.~~
- One approach is TRAFFIC-LIGHT method:

1. Identify the key (first level) elements for assessment in a piece of work.

2. Break these key elements into constituent elements (second level).

3. Assess each of second-level elements on the scale "green" for "on target", "amber" for "not on target but recoverable", and "red" for "not on target and recoverable only with difficulty".

4. Review all the second level assessments to arrive at first level ~~assignme~~ assessments.

5. Review first & second-level assessments to produce an overall assessment.

ACTIVITY ASSESSMENT SHEET

Staff Justin

Ref: IoE/P/13 Activity: Code & test module c

Week number	13	14	15	16	17	18	
Activity Summary	G	A	A	R			
Component							Comments
Screen handling procedures	G	A	A	G			
File Update Procedures	G	G	R	A			
Housekeeping Procedures	G	G	G	A			
Compilation	G	G	G	R			
Test Data Runs	G	G	G	A			
Program Documentation	G	G	A	R			

FIG: A traffic-light assessment of IoE/P/13

- This approach highlights only risk of non-achievement
It does not attempt to estimate work done or to quantify expected delays.

EARNED VALUE ANALYSIS (Budgeted cost of work performed).

- It is based on assigning a 'value' to each task or work package based on the original expenditure forecasts.
- The assigned value is the original budgeted cost for the item & is known as the PLANNED VALUE (PV) or budgeted cost of work scheduled (BCWS).
- A task that has not started is assigned an earned value of zero & when it has been completed & hence the project, is credited with the original planned value of the task.
- The total value credited to a project at any point is known as the Earned Value (EV) or budgeted cost of work performed (BCWP) & this can be represented as a money value, an amount of staff time or as a % of PV.
- Where tasks have been started but are not yet complete, some consisted method of assigning an earned value are applied. Some techniques are:

1. The 0/100 technique: where a task is assigned a value of zero until such time that it is completed when it is given a value of 100% of budgeted value. Ex: s/w development.
2. The 50/50 technique: where a task is assigned a value of 50% of its value as soon as it is started & then given a value of 100% once it is complete.
   Ex: Contract Agreements - contractor is paid 50% of agreed price when starting the work to purchase raw materials & remaining 50% on successful completion.
3. The 75/25 technique: where the task is assigned 75% on starting & 25% on completion.
   Ex: when a large item equipment is being bought 75% is paid when equipment is delivered & remainder is paid after installation & testing.

4. The milestone technique : where a task is given a value based on the achievement of milestones that have been assigned values as part of the original budget plan.

5. Percentage Complete : For objectively measuring the amount of work completed.

Ex : In implementation of information system, a no. of records have to be manually typed into a database. The no. of records completed can be objectively counted.

1. THE BASELINE BUDGET

- The I step in setting up an earned value analysis is to create the baseline budget, based on project plan & shows the forecast growth in earned value through time. EV is measured in monetary values.
- In case of staff-intensive projects such as s/w development, EV is measured in person-hours or workdays.

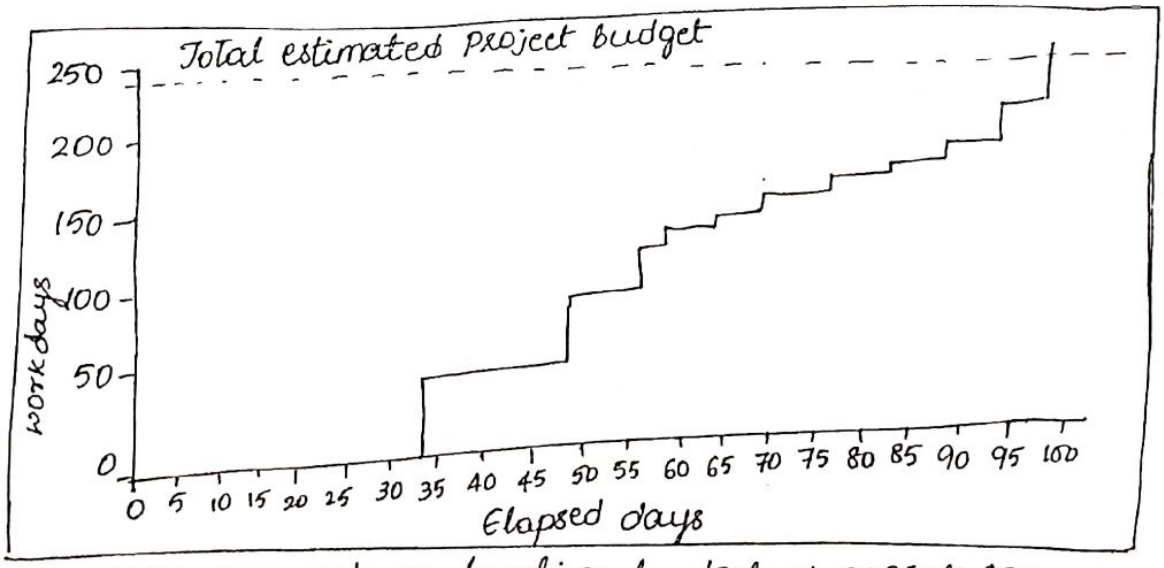


FIG: Example of baseline budget of project 10E

JOE Baseline budget calculation

TASK	BUDGETED WORKDAYS	SCHEDULED COMPLETION	CUMULATIVE WORKDAYS	% CUMULATIVE EARNED VALU
Specify overall s/m	34	34	34	14.35
Specify module B	15	49	64	27.00
Specify module D	15	49		
Specify module A	20	54	84	35.44
check specifications	2	56	86	36.28
Design module D	4	60	90	37.97
Design module A	7	63	97	40.93
Design module B	6	66	103	43.46
Specify module C	25	74	128	54.01
check mod c specifi	1	75	129	54.43
Design module C	4	79	133	56.12
Code & test mod D	25	85	158	66.67
Code & Test mod A	30	93	188	79.32
Code & Test mod B	28	94	231	97.47
Code & Test mod C	15	94		
System Integration	6	100	237	100.00

2. MONITORING EARNED VALUE

- Monitoring of EV as the project progresses is done by monitoring the completion of tasks.
- The actual cost of each task can be collected as ACTUAL COST (AC) = Actual cost of work performed (ACWP)

3) SCHEDULE VARIANCE (SV):

- It is measured in terms of cost as EV - PV & indicates the degree to which the value of completed work differs from planned.

Ex: PV = 40,000/- completed by now, but due to some reasons is not completed so EV = 35,000/-

∴ SV = 40,000 − 35,000 = −5,000/-

Negetive SV means project is behind schedule.

4) TIME VARIANCE (TV):

- Difference b/w the time when the achievement of the current EV was planned to occur & the time now.

Ex: EV should have achieved in month 9 & now is end of month 11, TV = −1.75 months.

5) COST VARIANCE (CV):

- Calculated as EV − AC & indicates the difference b/w earned value or budgeted cost & the actual cost of completed work.
- Indicator of the accuracy of original cost estimates.
- Negetive CV means project is over cost.

Ex: SV = −5,000/- EV = 55,000/- CV = 35,000 − 55,000 = −20,000

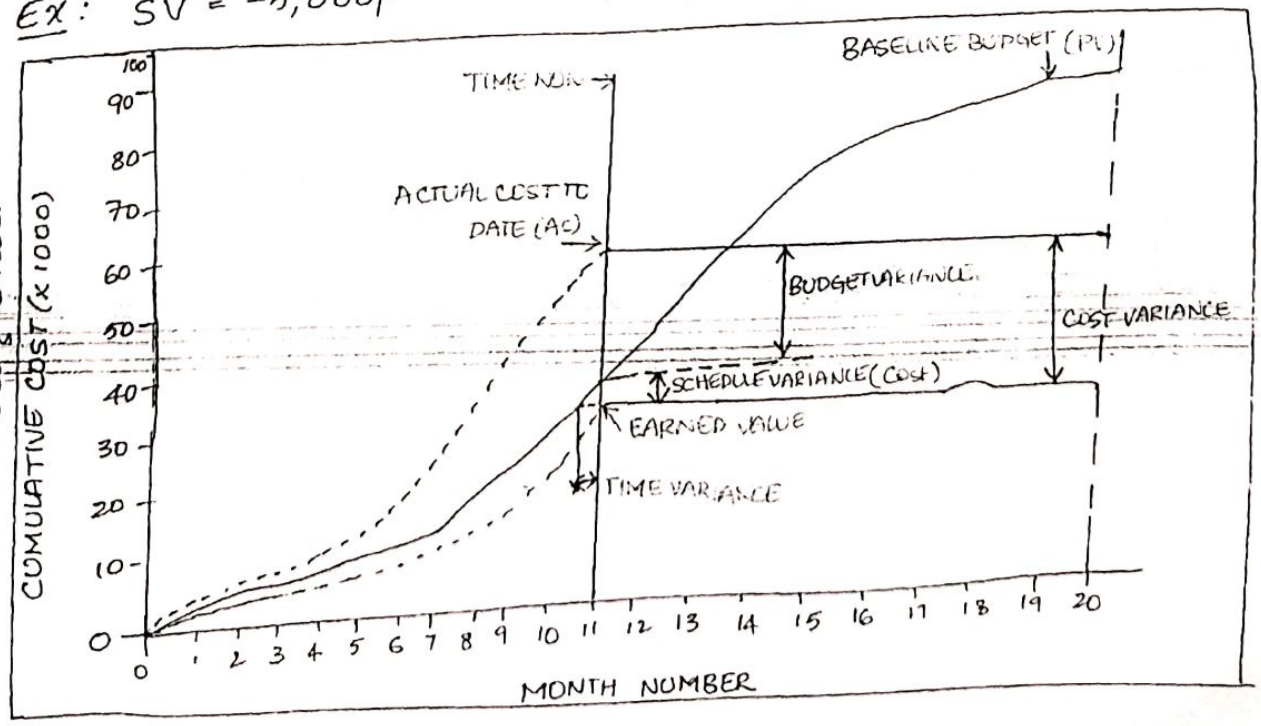
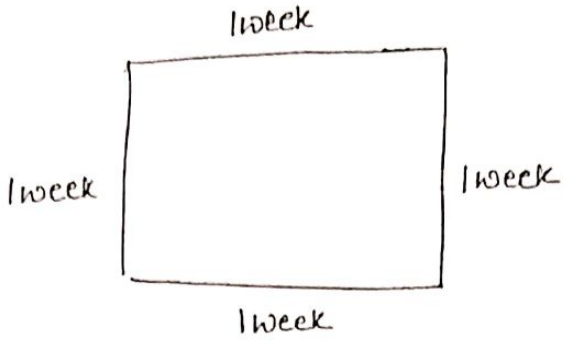


Fig: An EV Tracking Chart

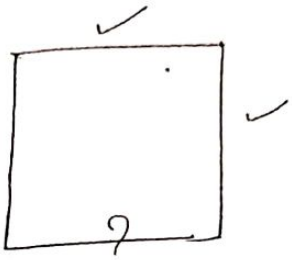


Overall budget = 10,000/-

Baseline = Identify initia plan

Duration = 4 weeks

2½ k / week.



Revisit baseline after 1 week

8000/- is spent

As per plan 3 steps should be covered, 7½ k should be spent.

∴ Actual work done = 2,500 + 2,500

= 5,000

Money Spent = 8,000.

5,000 = Earned Value

7,5000 = Planned Value

8,000 = Actual value.

Scheduled Preferred Index = $\frac{EV}{PV} = \frac{5000}{7,500} =$ $\frac{EV-PV}{}$

Cost of —" — $= \frac{EV}{AC} = \frac{5000}{8000} =$ $\frac{EV-AC}{}$

SPI < 1 behind time/schedule

> 1 Ahead

= 1 Right speed

CPI ≤ 1 over budget

> 1 Under

= 1 Right

Risk Acceptance rrocess