CSE 4016 Software Project Management

Monitoring and Control

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Framework for Management and control

Objectives

- Once the project is started, attention must be focused on the following
  - Monitor the progress of the projects
  - Assess the risk of slippage
  - Visualize and assess the state of a project
  - Revise targets to correct or counteract drift
  - Control changes to a project's requirements

Creating Framework

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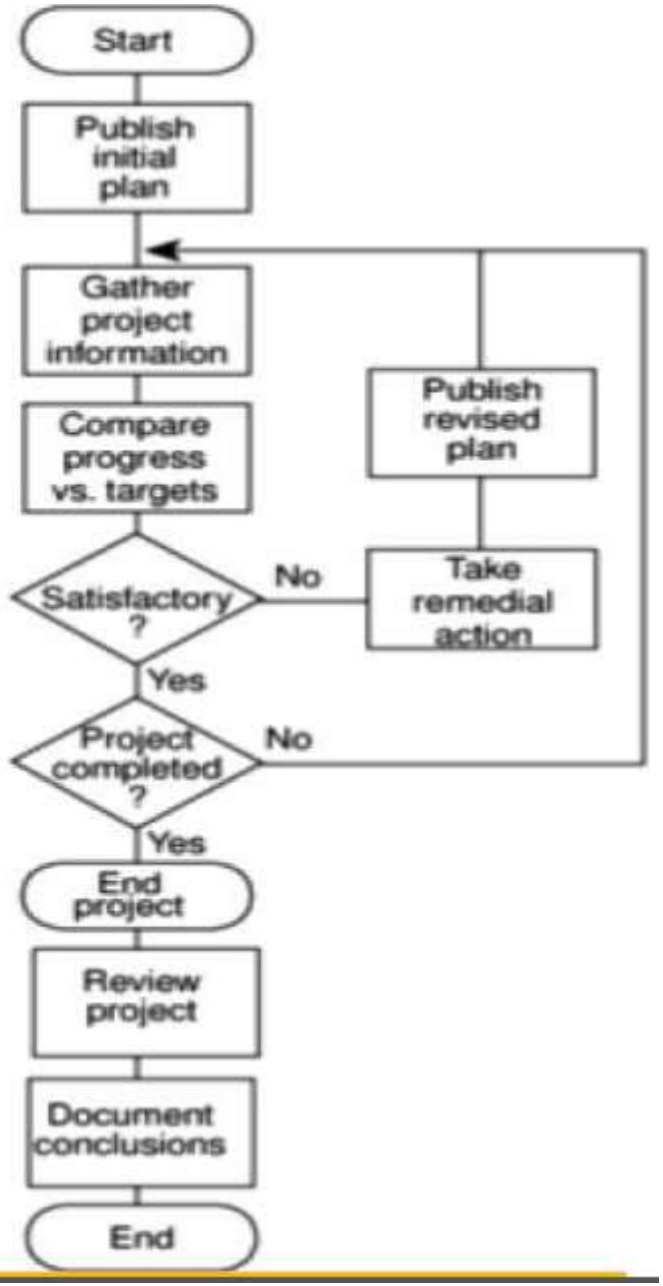
- Project control cycle
  - Starts when the initial project plan is published
  - Continuous process of monitoring the progress against the plan
  - Revising the plan takes place whenever necessary



Four types of shortfalls

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1. Delays in meeting the target dates
2. Shortfalls in quality
3. Inadequate functionality
4. Cost going over target

- Focus is given more on 1 and 4
  - Delays in meeting the target dates and
  - Cost going over target

Responsibility

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Project reporting structure for medium and large projects

- The overall responsibility for ensuring satisfactory progress on a project is often the role of
  - Project steering committee or
  - Project management board or
  - Project board

Categories of Reporting

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- Reporting may be oral or written, formal or informal and regular or ad hoc

Report type	Example	Comment
Oral formal regular	Weekly or monthly progress meetings	While reports may be oral, formal written minutes should be kept
Oral formal adhoc	End-of-stage review meetings	While largely oral, likely to receive and generate written reports
Written formal regular	Job sheets, progress reports	Normally weekly using forms
Written formal adhoc	Exception reports, change reports	
Oral informal adhoc	Canteen discussion, social interaction	Often provides early warning; must be backed up by formal reporting

Assessing progress

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- Information used to assess project progress will be
  - Objective and tangible
  - Collected routinely or
  - Triggered by specific events
  - Dependent on the proportion of the current activity that has been completed

Setting check points

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- It is essential to set a series of check points in the initial activity plan
- Check points may be
  - Regular(ex: monthly)
  - Tied to specific events (ex. Production of a report)

Taking snap shots

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- Frequency of progress reports depends upon
  - The size of the project
  - The degree of the risk of the project
  - Ex : team leaders - assess the progress daily

    Project managers – weekly or monthly assessment
  - Higher the level – the less frequent and less detailed report
- Review points or control points
  - Major or project level progress review generally takes place at a particular point during the life of a project

Collecting the data

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- Generally long activities are broken down into controllable tasks(1 or 2 weeks)
- It is necessary to gather information about partially completed activities to forecast the work to be completed
- Partial completion reporting
  - Many organizations have their own templates for partial completion reports
    - Ex: weekly time sheets
  - Does not tell the project manager what has been produced and whether the tasks are on schedule

Weekly time sheet and progress review form

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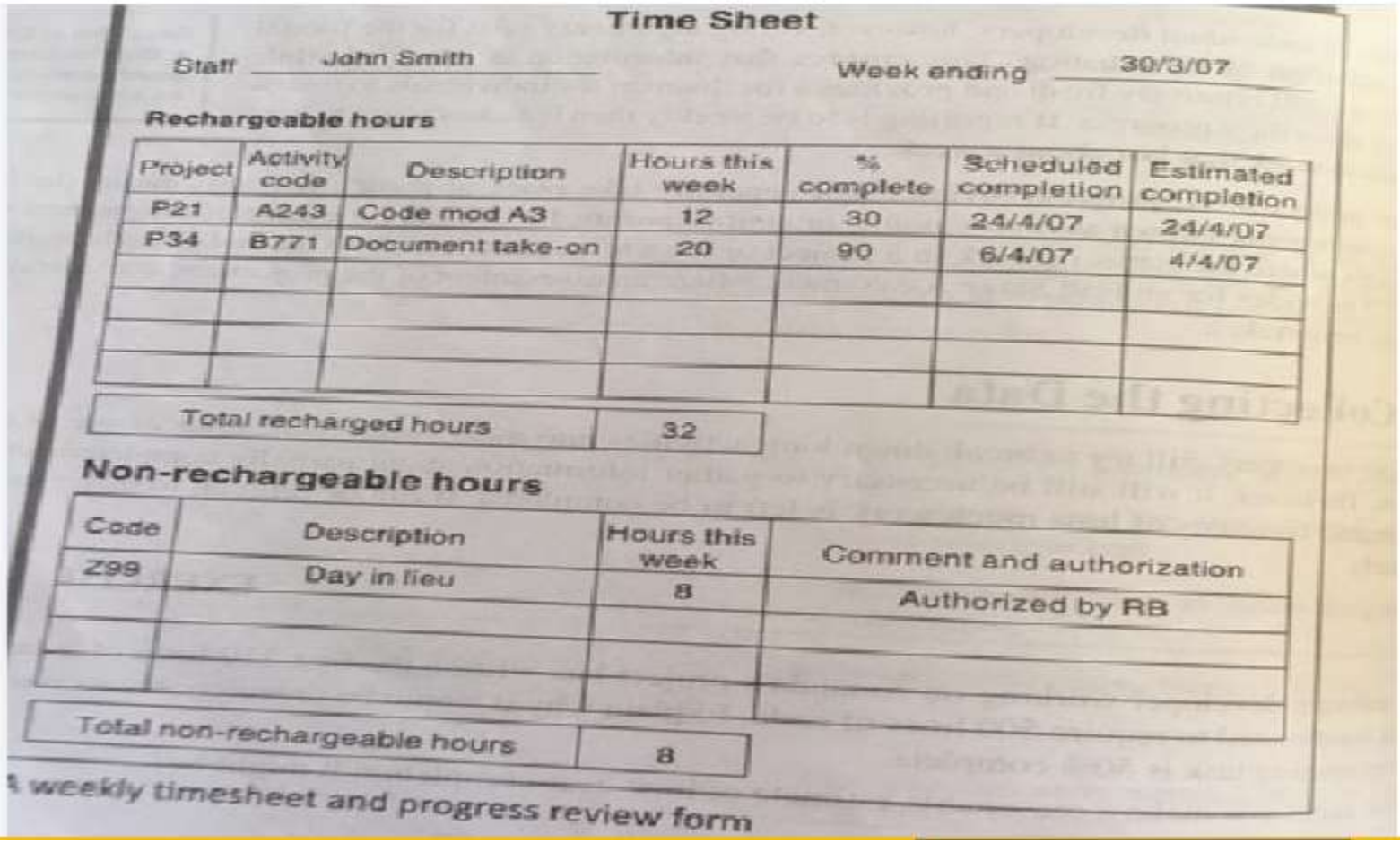

Time Sheet

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 and authorization
Z99	Day in lieu	8	Authorized by RB

Total non-rechargeable hours: 8

weekly timesheet and progress review form

Red/Amber/Green (RAG) reporting

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- Traffic light method is used to overcome the objections of partial completion reporting
- It consists of the following steps
- Identify key elements(first level)
- Break down into constituent elements(second level)
- Assess constituent elements on the scale:
  - **Green** – 'on target'
  - **Amber** – 'not on target but recoverable'
  - **Red** – 'not on target and recoverable only with difficulty'

Review

- Review of work products is an important mechanism for
  - monitoring the progress of a project and
  - ensuring the quality of the work products
- Review is a very effective and cost effective technique to remove defects from all work products including code

Visualizing progress

- Gantt Chart
- Slip chart
- Timeline Chart

Visualizing Progress

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- After collecting the data about the progress of the project, a manager needs to present the data.
- Some methods of presenting the picture of a project and its future are
  - Gantt chart
    - Essentially an activity bar chart indicating the scheduled activity dates and duration with activity floats
  - Slip chart
    - Provides a more striking visual induction of the activities
    - The more the slip line bends, the greater the variation from the plan. Very jagged slip line indicates a need for rescheduling
  - Timeline
    - A method of recording and displaying the way in which targets have changed throughout the duration of the project

Gantt charts

Slip charts

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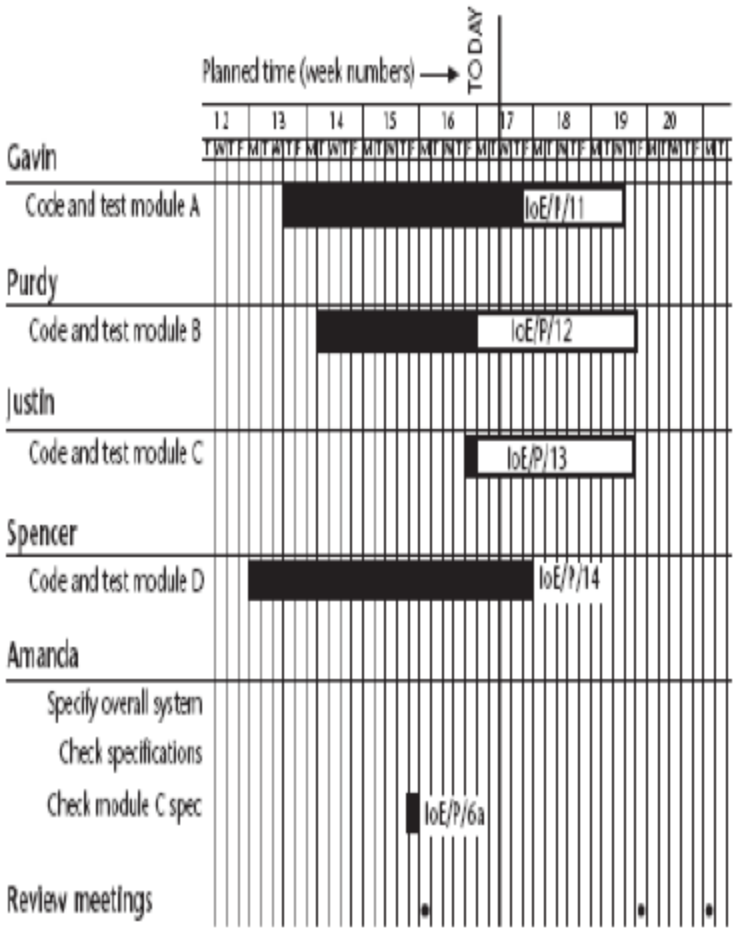

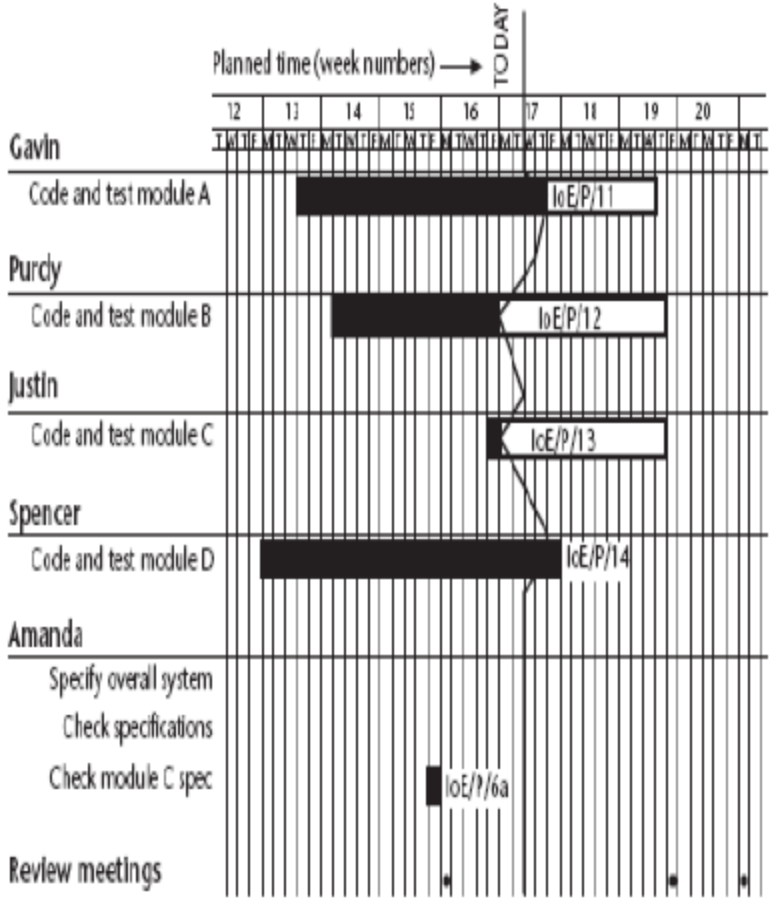

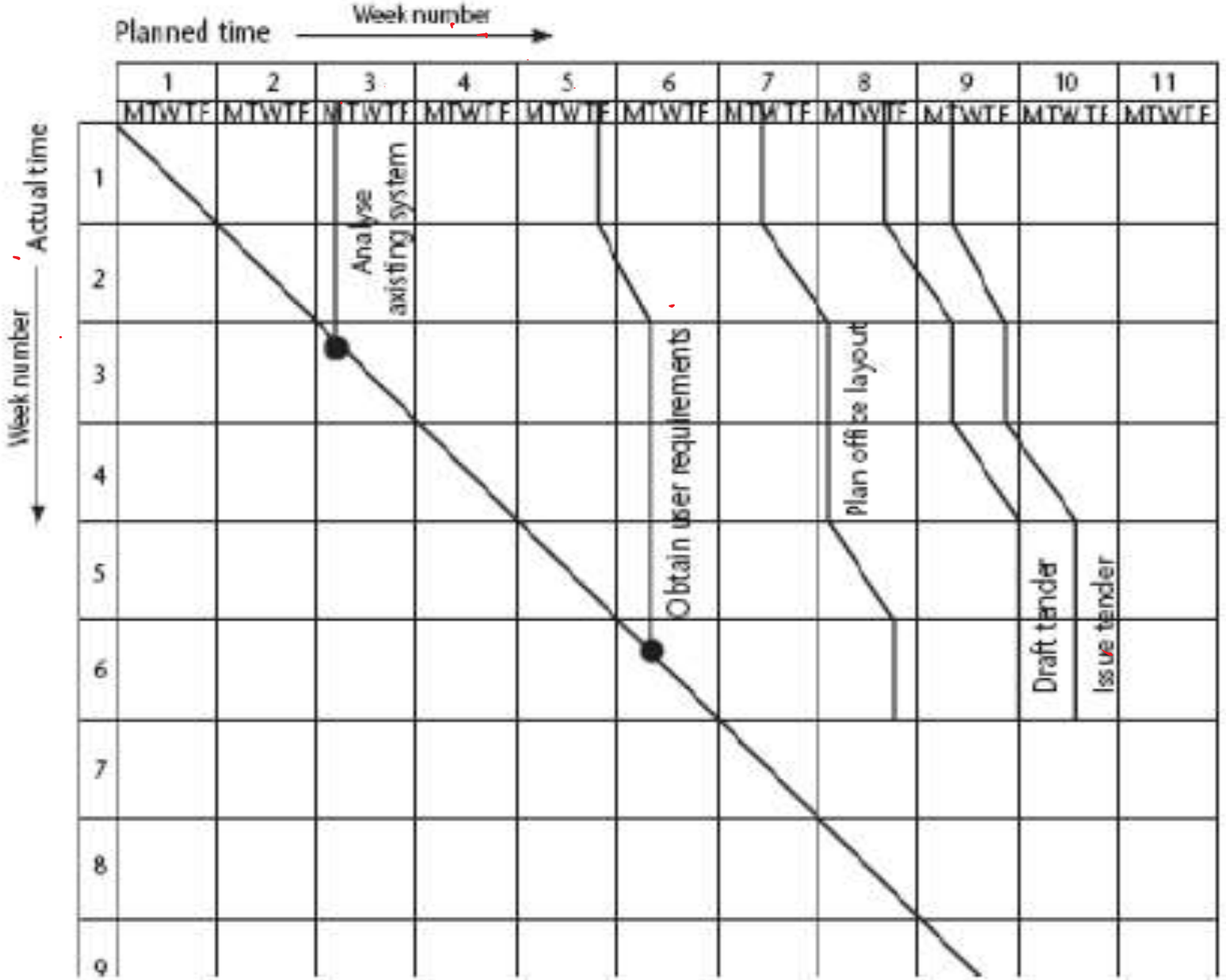
Planned time
Week number
1
2
3
4
5
6
7
8
9
10
11
M T W T F
Week number
Actual time
1
2
3
4
5
6
7
8
9
Analyse existing system
Obtain user requirements
Plan office layout
Draft tender
Issue tender

Cost monitoring

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- A project could be late because the staff originally committed, have not been deployed
- In this case the project will be *behind time* but *under budget*
- A project could be *on time* but only because additional resources have been added and so by *over budget*
- Need to monitor both *achievements* and *costs*

Earned value analysis

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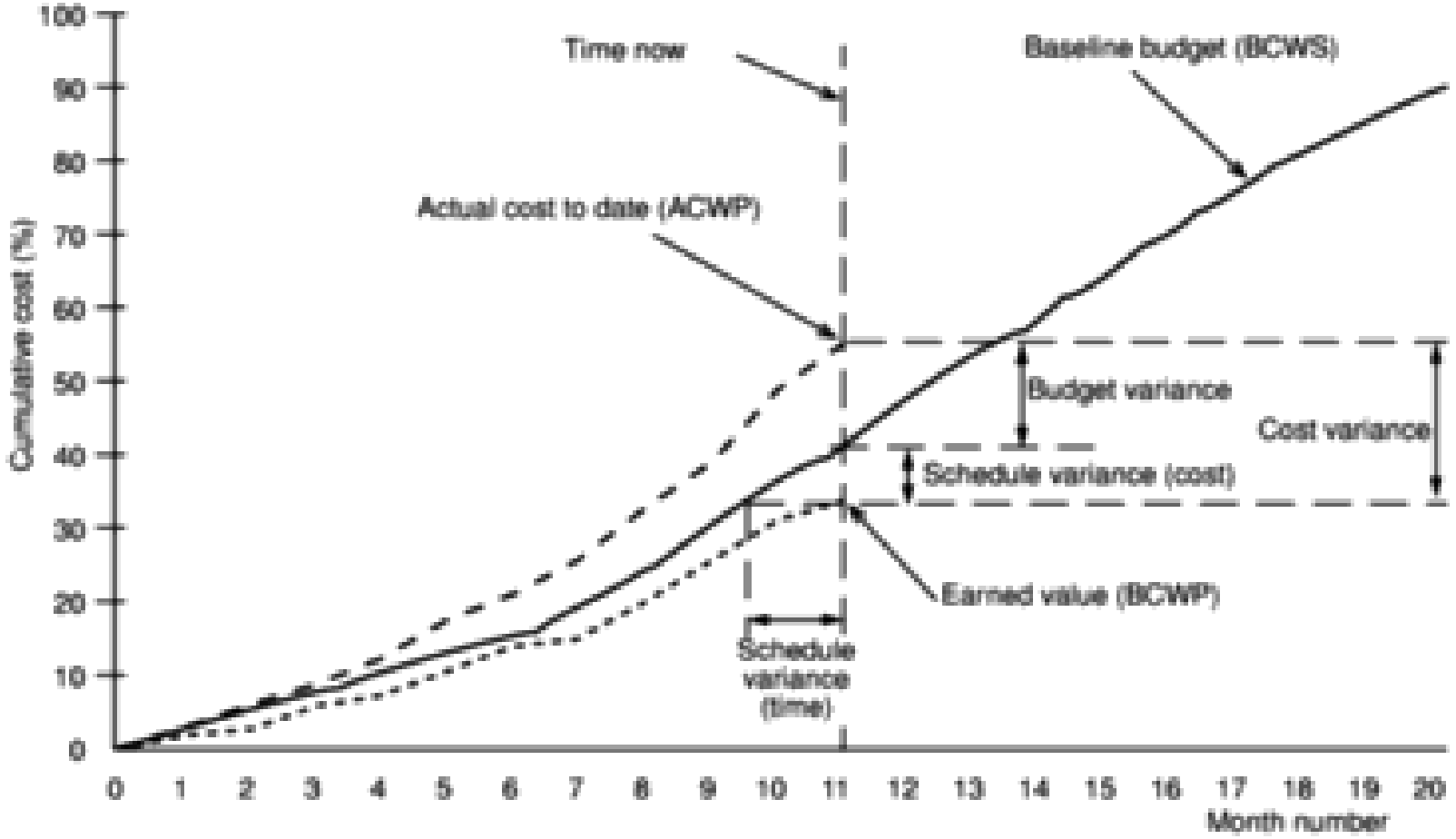
- Planned value (PV) or Budgeted cost of work scheduled (BCWS) –
  - The assigned value
  - The original budgeted cost for the item
- Earned value (EV) or Budgeted cost of work performed (BCWP) –
  - The total value credited to a project at any point of time

- **The 0/100 technique**
  - **A task is assigned a value zero until it is completed. On completion its value will be 100% of the budgeted value**
- **The 50/50 technique: At the starting 50% of the budgeted value. Upon completion 100% (remaining 50%)of the budgeted value**
- **The 75/25 technique: At the starting 75% of the budgeted value. Upon completion 25% of the budgeted value**
- **The Milestone technique**
  - **Value is given based on the achievement of the milestones**
- **Percentage complete**
  - **Value will be assigned based on the objective measurement of the work completion. 0/100 technique is preferred for software development**


Time now
Baseline budget (BCWS)
Actual cost to date (ACWP)
Budget variance
Cost variance
Schedule variance (cost)
Earned value (BCWP)
Schedule variance (time)
Cumulative cost (%)
Month number
0
10
20
30
40
50
60
70
80
90
100
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Prioritizing Monitoring

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Prioritizing is important to decide the level of monitoring

List of priorities

- Critical Path Activities
- Activities with no free float
- Activities with less than a specified float
- High risk activities
- Activities using critical resources