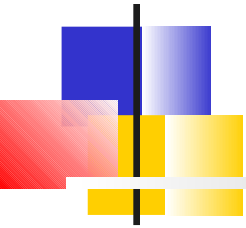
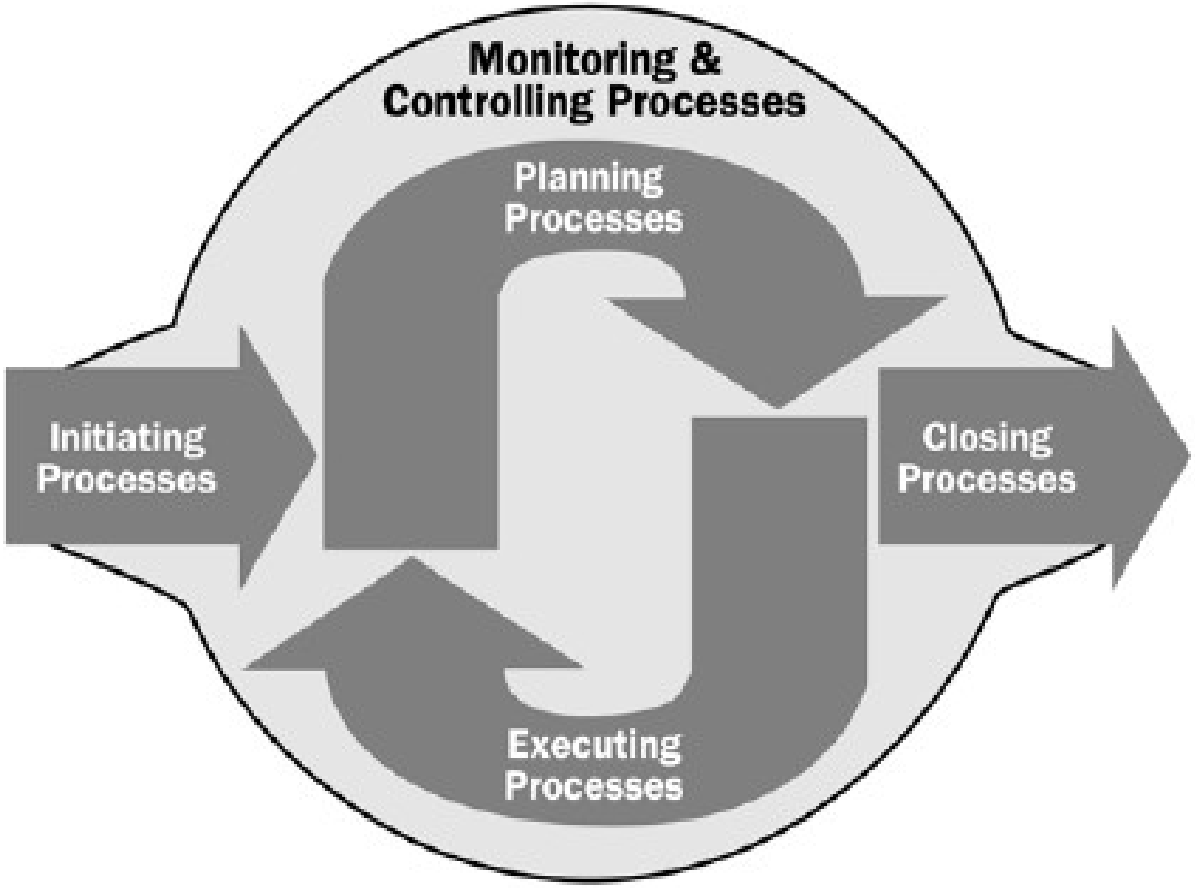
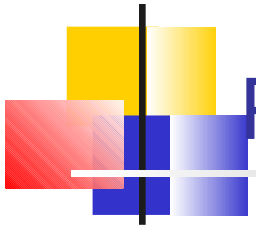
Chapter 9
Project Monitoring and Control



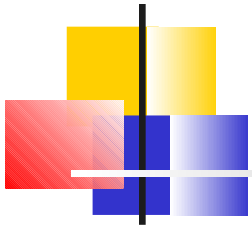
Project Management Process Groups





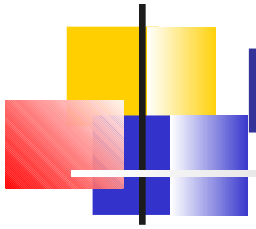
Project Monitoring and Control

- Monitoring – collecting, recording, and reporting information concerning project performance that project manger and others wish to know
- Controlling – uses data from monitor activity to bring **actual performance to planned performance**
- Outputs include performance reports, requested changes, and updates to various plans



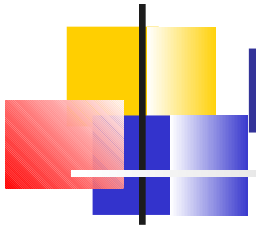
Why do we monitor?

- Simply because we know that things don’t always go according to plan (no matter how much we prepare)
- To detect and react appropriately to deviations and changes to plans



Project Control

- Ongoing effort to keep your project on track
- 4 primary activities:
  - 1. Planning performance
    - schedule, and a control process
  - 2. Measuring status of work performed
    - Actuals
  - 3. Comparing to baseline
    - Variances
  - 4. Taking corrective action as needed
    - Response
- Prerequisite to good control is a good plan



Project Control

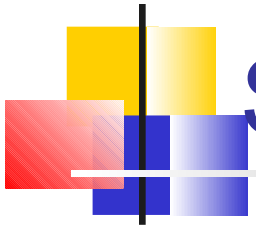
- "Control"
  - Power, authority, domination. No.
  - Guiding a course of action to meet an objective. Yes.
- Principles
  - Work is controlled, not workers
    - Control helps workers be more effective & efficient
  - Control based on work completed
  - Balance
    - Appropriate level between too much and too little
    - Includes:
      - Micro-managing vs. neglect
      - Too much tracking detail vs. too little

Progress Monitoring

- The 3 key Progress Monitoring Questions
  - What is the actual status?
  - If there's a variance, what is cause?
  - What to do about it?
- Possible responses
  - 1. Ignore
  - 2. Take corrective action
  - 3. Review the plan

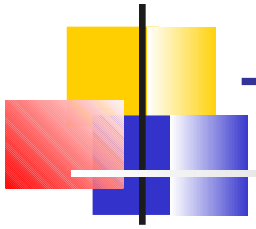
Progress Monitoring

- Monitoring rates
  - Daily, weekly, monthly
  - If problems occur – then adjust
    - You may have to monitor problem areas more closely
    - For some period of time
    - Almost always there's one or more areas under closer scrutiny
- Status Reporting
  - Part of the communications management plan



Status Reports

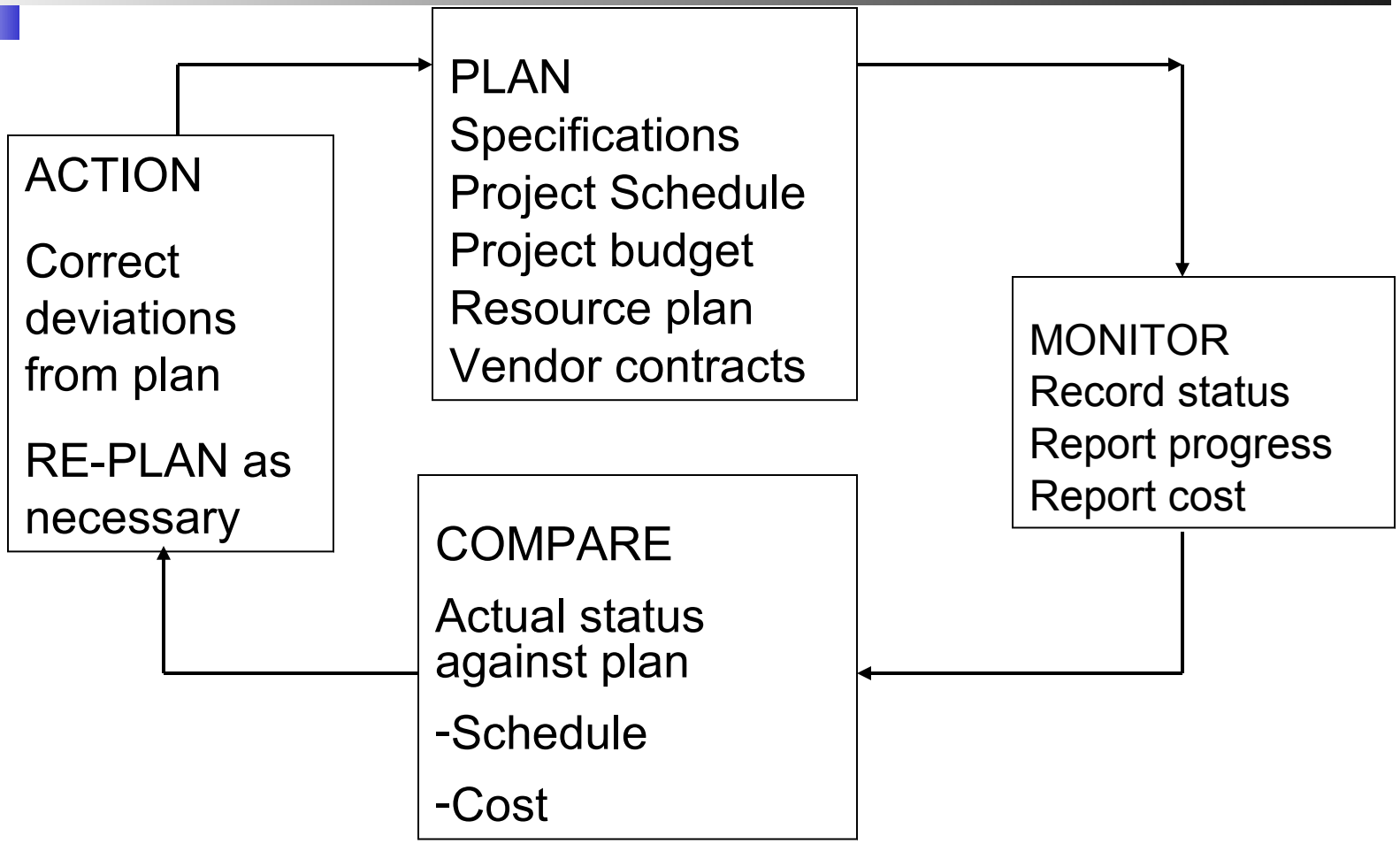
- From team to PM, from PM to stakeholders
- Typical format for letter
  - Summary
  - Accomplishments for this period (done)
    - Tasks, milestones,
    - Plans for next period (to-do)
  - Risk analysis and review
  - Issues & Actions
- Shoot for weekly updates
  - Email notes, then hold brief meeting
  - More frequently during crises

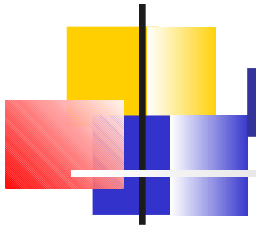


Traffic Light Assessment

- Identify the key element
- Break these key element in constitute element
- Access each second level element
  - Green (on target)
  - Amber (not on target but recoverable)
  - Red (not on target but recoverable with difficulties)
- Review all the second level assessment to arrive at first level assessment

Project Control Cycle

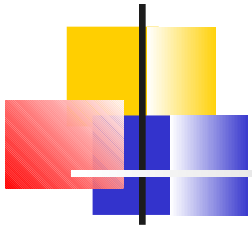




Project Control

- Control – process and activities needed to correct deviations from plan
- Control the triple constraints
  - time (schedule)
  - cost (budget, expenses, etc)
  - performance (specifications, testing results, etc.)

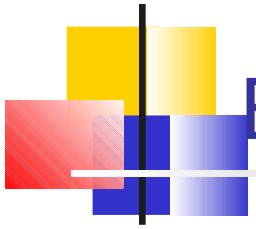
Techniques for monitoring and control



- Earned Value Analysis
- Critical Ratio

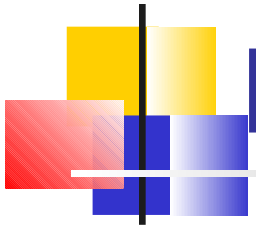
Earned Value Analysis (EVA)

- Earned Value analysis is a method of performance measurement
- EVA is also called Variance Analysis
- Metric of project tracking
- “What you got for what you paid”
  - Physical progress
- Pre-EVA ‘traditional’ approach
  - 1. Planned time and costs
  - 2. Actual time and costs
  - Progress: compare planned vs. actual
- EVA adds third dimension: value
  - Planned, actual, earned



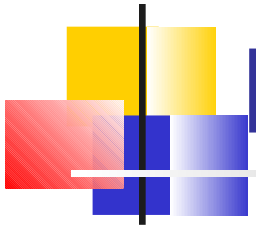
Earned Value Analysis

- If total value of the work accomplished is in balance with the planned (baseline) cost, and actual cost then top mgmt has no particular need for a detailed analysis of individual tasks
- Old models include cost & expenditure
- EVA adds schedule estimation
- Measured in dollars or hours



Earned Value Analysis

- 3 major components
  - BCWS: Budgeted Cost of Work Scheduled
    - Now called “Planned Value” (PV)
    - “Yearned”
    - How much work should be done?
  - BCWP: Budgeted Cost of Work Performed
    - Now called “earned value” (EV)
    - “Earned”
    - How much work is done?
    - BCWS * % complete
  - ACWP: Actual Cost of Work Performed
    - Now called “Actual Cost” (AC)
    - “Burned”
    - How much did the work done cost?



Derived EVA Variances

- SV: Schedule Variance
  - BCWP – BCWS
  - Planned work vs. work completed
- CV: Cost Variance
  - BCWP – ACWP
  - Budgeted costs vs. actual costs
  - Negatives are termed ‘unfavorable’
- “What is the project status”?
  - You can use variances to answer this

Derived EVA Ratios

- SPI: Schedule Performance Index
  - BCWP / BCWS
- CPI: Cost Performance Index
  - BCWP / ACWP
- Interpretation of Indexes

Index	Cost (CPI)	Schedule (SPI)
>1.00	Under cost	Ahead of schedule
=1.00	On cost	On schedule
<1.00	Over cost	Behind schedule

Earned Value Analysis

- Other Derived Values
  - BAC: Budget At Completion
    - Sum of all budges (BCWS). Your original budget.
    - Planned Value (PV) at the end of the project
  - EAC: Estimate At Completion
    - Forecast total cost at completion
    - EAC = ((BAC – BCWP)/CPI) + ACWP
    - Unfinished work divided by CPI added to sunk cost
    - If CPI < 1, EAC will be > BAC
  - CR: Critical Ratio
    - SPI x CPI
    - 1: everything on track
    - > .9 and < 1.2 ok
    - Can be charted

EVA Example-1

- You have a project to be completed in 12 months and total cost of project is $100,000. Six months have been passed (and schedule says that 50% of work should be completed).
- Six months have been passed and $60,000 is spent but on closer look you find that only 40% of work is completed so far.
- Planned Value (BCWS)
  - Project duration – 12 months
  - Project Cost (BAC) = $100,000
  - Percent complete – 50% (as per the schedule)
  - Planned Value = 50% of value of total work
  - = 50% of BAC
  - = 50% of $100,000
  - = (50/100)X $100,000
  - = $50,000

EVA Example-1

- Earned Value (BCWP)
- Hence, Earned Value is = 40% of value of total work
- = 40 % of BAC
- = 40% of $100,000
- = 0.4X$100,000
- = $40,000
- Therefore, Earned Value (EV) is $40,000
- Actual Cost (ACWP)

  And in our question, you have spent $60,000 on the project so far.
- Hence, Actual Cost is $60,000
- Calculate SPI and CPI?

Earned Value Analysis

- Benefits
  - Consistent unit of measure for total progress
  - Consistent methodology
    - Across cost and completed activity
    - Apples and apples comparisons
  - Ability to forecast cost & schedule
  - Can provide warnings early
- Success factors
  - A full WBS is required (all scope)