Monitoring & Controlling Process Group

Those processes required to track, review, and regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes.

Monitoring & Controlling Process Group
Monitor & Control Project Work

“The process of tracking, reviewing, and reporting project progress against the performance objectives defined in the project management plan”

Monitoring & Controlling Process Group
Monitor & Control Project Work

Includes and not limited to:

- Comparing actual project performance against the project management plan;
- Assessing performance to determine whether any corrective or preventive actions are indicated, and then recommending those actions as necessary;
- Identifying new risks and analyzing, tracking, and monitoring existing project risks to make sure the risks are identified, their status is reported, and that appropriate risk response plans are being executed;
- Maintaining an accurate, timely information base concerning the project's product(s) and their associated documentation through project completion;
- Providing information to support status reporting, progress measurement, and forecasting;
- Providing forecasts to update current cost and current schedule information;
- Monitoring implementation of approved changes as they occur; and
- Providing appropriate reporting on project progress and status to program management when the project is part of an overall program

Project management Institute, A Guide to the Project Management Body of Knowledge (*PMBOK® Guide*) – Fourth Edition, Project Management Institute, Inc . , 2008, Page 61.

Monitoring & Controlling Process Group
Monitor & Control Project Work

Inputs:

- Project management plan
- Schedule forecasts
- Cost forecasts
- Validated changes
- Work performance information
- Enterprise environmental factors
- Organizational process assets

Monitoring & Controlling Process Group
Monitor & Control Project Work

Tools and techniques:

- Expert judgment
- Analytical techniques
  - Root cause analysis,
  - Forecasting methods (e.g., time series, scenario building, simulation, etc.),
  - Failure mode and effect analysis (FMEA),
  - Fault tree analysis (FTA),
  - Reserve analysis,
  - Trend analysis
- Project management information system
- Meetings

Monitoring & Controlling Process Group
Monitor & Control Project Work

Outputs:

- Change requests
- Work performance reports
- Project management plan updates
- Project documents updates

Monitoring & Controlling Process Group
Perform Integrated Change Control

"The process of reviewing all change requests; approving changes and managing changes to deliverables, organizational process assets, project documents, and the project management plan; and communicating their disposition"

Monitoring & Controlling Process Group Perform Integrated Change Control

Inputs:

- Project management plan
- Work performance reports
- Change requests
- Enterprise environmental factors
- Organizational process assets

Monitoring & Controlling Process Group Perform Integrated Change Control

Tools and techniques:

- Expert judgment
- Meetings
- Change control tools

Monitoring & Controlling Process Group Perform Integrated Change Control

Outputs:

- Approved change requests
- Change log
- Project management plan updates
- Project documents updates

Monitoring & Controlling Process Group Validate Scope

"Formalizing acceptance of the completed project deliverables"

Monitoring & Controlling Process Group Validate Scope

Inputs:

- Project management plan
- Requirements documentation
- Requirements traceability matrix
- Verified deliverables
- Work performance data

Monitoring & Controlling Process Group Validate Scope

Tools and techniques:

- Inspection
- Group decision-making techniques

Monitoring & Controlling Process Group Validate Scope

Outputs:

- Accepted deliverables
- Change requests
- Work performance information
- Project documents updates

Monitoring & Controlling Process Group Control Scope

"The process of monitoring the status of the project and product scope and managing changes to the scope baseline"

Monitoring & Controlling Process Group Control Scope

Inputs:

- Project management plan
- Requirements documentation
- Requirements traceability matrix
- Work performance data
- Organizational process assets

Monitoring & Controlling Process Group Control Scope

Tools and techniques:

- Variance analysis

Monitoring & Controlling Process Group Control Scope

Outputs:

- Work performance information
- Change requests
- Project management plan updates
- Project documents updates
- Organizational process assets updates

Monitoring & Controlling Process Group Control Schedule

"the process of monitoring the status of project activities to update project progress and manage changes to the schedule baseline to achieve the plan"

Monitoring & Controlling Process Group Control Schedule

Inputs:

- Project management plan
- Project schedule
- Work performance data
- Project calendars
- Schedule data
- Organizational process assets

Monitoring & Controlling Process Group Control Schedule

Tools and techniques:

- Performance reviews
  - Trend Analysis
  - CPM
  - CCM
  - Earned Value Management (SV-SPI)
- Project management software
- Resource optimization techniques
- Modeling techniques
- Leads and lags
- Schedule compression
- Scheduling tool

Monitoring & Controlling Process Group Control Schedule

Outputs:

- Work performance information
- Schedule forecasts
- Change requests
- Project management plan updates
- Project documents updates
- Organizational process assets updates
  - Causes of variances,
  - Corrective action chosen and the reasons, and
  - Other types of lessons learned from project schedule control

Monitoring & Controlling Process Group Control Costs

"Monitoring the status of the project to update the project budget and managing the changes to the cost baseline"

Monitoring & Controlling Process Group Control Costs

Inputs:

- Project management plan
- Project funding requirements
- Work performance data
- Organizational process assets

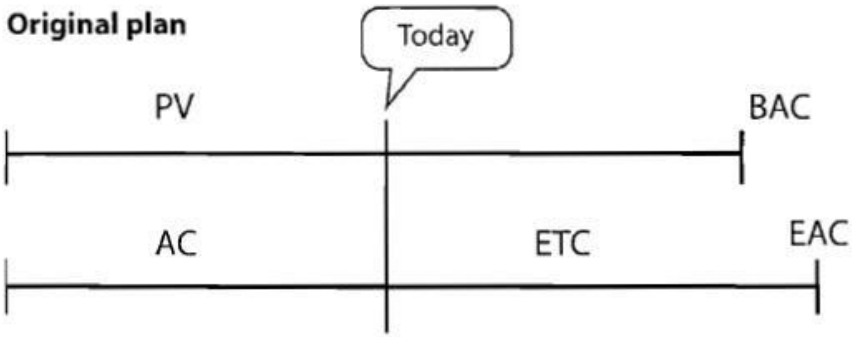
Monitoring & Controlling Process Group Control Costs

Tools and techniques:

- Earned value management
- Forecasting
- To-complete performance index (TCPI)
- Performance reviews
- Project management software
- Reserve analysis

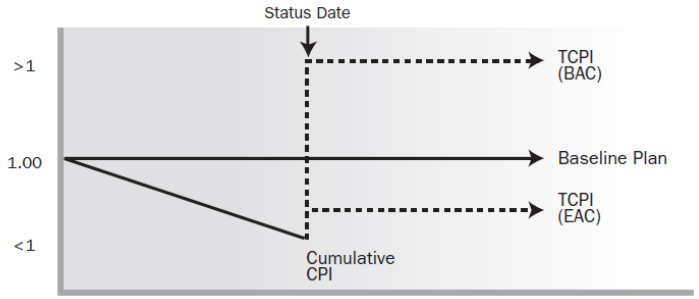
Terminology

Acronym	Term	Interpretation
PV	Planned Value	The estimated value of the work planned to be done
EV	Earned Value	The estimated value of the work actually accomplished
AC	Actual Cost	The actual cost incurred
BAC	Budget At Completion	The original budget
EAC	Estimate At Completion	The current estimate we expect the project to cost
ETC	Estimate To Complete	The current estimate of how much more will still need to complete the project
VAC	Variance At Completion	How much over- or under-budget do we expect to be at the end of the project



Formulas

Name	Formula	Interpretation
Cost Variance CV	EV-AC	Negative is over-budget, positive is under-budget
Schedule Variance SV	EV-PV	Negative is behind schedule, positive is ahead of schedule
Cost Performance Index CPI	EV/AC	We're accomplishing $$ of work for every 1 $ we spend
Schedule Performance Index SPI	EV/PV	We're progressing at --% of the original schedule rate
Estimate At Completion EAC	BAC/CPI AC+ETC AC+(BAC-EV) AC + [(BAC – EV) / (CPI × SPI)] AC+(BAC-EV)/CPI	How much $$ we estimate will be the final cost of the project
Estimate To Complete ETC	EAC-AC	How much $$ we still need to complete the project
Variance At Completion VAC	BAC-EAC	how much over- or under-budget we'll be at the end of the project



Formula:

$$\frac{\text{Work Remaining (BAC-EV)}}{\text{Funds Remaining (BAC-AC) or (EAC-AC)}} = \text{TCPI}$$

Monitoring & Controlling Process Group Control Costs

Outputs:

- Work performance information
- Cost forecasts
- Change requests
- Project management plan updates
- Project documents updates
- Organizational process assets updates

Monitoring & Controlling Process Group Control Quality

"the process of monitoring and recording results of executing the quality activities to assess performance and recommend necessary changes"

Monitoring & Controlling Process Group Perform Quality Control

Inputs

- Project management plan
- Quality metrics
- Quality checklists
- Work performance data
- Approved change requests
- Deliverables
- Project documents
- Organizational process assets

Monitoring & Controlling Process Group Perform Quality Control

Tools and techniques:

- Seven basic quality tools
- Statistical sampling
- Inspection
- Approved change requests review

Monitoring & Controlling Process Group Perform Quality Control

Outputs:

- Quality control measurements
- Validated changes
- Verified deliverables
- Work performance information
- Change requests
- Project management plan updates
- Project documents updates
- Organizational process assets updates

Monitoring & Controlling Process Group Control Communications

"the process of monitoring and controlling communications throughout the entire project life cycle to ensure the information needs of the project stakeholders are met"

Monitoring & Controlling Process Group Control Communications

Inputs:

- Project management plan
- Project communications
- Issue log
- Work performance data
- Organizational process assets

Monitoring & Controlling Process Group Control Communications

Tools and techniques:

- Information management systems
- Expert judgment
- Meetings

Monitoring & Controlling Process Group Control Communications

Outputs:

- Work performance information
- Change requests
- Project management plan updates
- Project documents updates
- Organizational process assets updates

Monitoring & Controlling Process Group Control Risks

"Implementing risk response plans , tracking identified risks , monitoring residual risks , identifying new risks and evaluating risk process effectiveness throughout the project"

Monitoring & Controlling Process Group Control Risks

Inputs:

- Project management plan
- Risk register
- Work performance data
- Work performance reports

Monitoring & Controlling Process Group Control Risks

Tools and techniques:

- Risk reassessment
- Risk audits
- Variance and trend analysis
- Technical performance measurement
- Reserve analysis
- Meetings

Monitoring & Controlling Process Group Control Risks

Outputs:

- Work performance information
- Change requests
  - Recommended corrective actions
  - Recommended preventive actions
- Project management plan updates
- Project documents updates
- Organizational process assets updates

Monitoring & Controlling Process Group Control Procurements

"the process of managing procurement relationships, monitoring contract performance, and making changes and corrections to contracts as appropriate"

Monitoring & Controlling Process Group Control Procurements

Inputs:

- Project management plan
- Procurement documents
- Agreements
- Approved change requests
- Work performance reports
- Work performance data

Monitoring & Controlling Process Group Control Procurements

Tools and techniques:

- Contract change control system
- Procurement performance reviews
- Inspections and audits
- Performance reporting
- Payment systems
- Claims administration
- Records management system

Monitoring & Controlling Process Group Control Procurements

Outputs:

- Work performance information
- Change requests
- Project management plan updates
- Project documents updates
- Organizational process assets updates

Monitoring & Controlling Process Group Control Stakeholder Engagement

"the process of monitoring overall project stakeholder relationships and adjusting strategies and plans for engaging stakeholders"

Monitoring & Controlling Process Group Control Stakeholder Engagement

Inputs:

- Project management plan
- Issue log
- Work performance data
- Project documents

Monitoring & Controlling Process Group Control Stakeholder Engagement

Tools & Techniques:

- Information management systems
- Expert judgment
- Meetings

Monitoring & Controlling Process Group Control Stakeholder Engagement

Outputs:

- Work performance information
- Change requests
- Project management plan updates
- Project documents updates
  - Stakeholder register
  - Issue log
- Organizational process assets updates
  - Stakeholder notifications
  - Project reports
  - Project presentations
  - Project records
  - Feedback from stakeholders
  - Lessons learned documentation