

PROJECT MONITORING

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PMG333

Lecture 00

INTRODUCTION TO PROJECT MONITORING

Prepared by
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About the Instructor

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PhD in Civil Engineering

Specialization: Construction Engineering & Management

Key Highlights

- **Academic Experience:** Teaching experience in 3 Syrian Universities.
- **Research:** Extensive academic publication record (11+ articles).
- **Conferences:** Active participation in international engineering conferences.
- **Expertise:** Project Management, BIM, Feasibility Studies.



**If you fail to plan, you're
planning to fail.” –
Benjamin Franklin.**

From Pyramids to Rockets: The Evolution of Project Management Through History

❑ Is Project Management a Modern Science?

- ❑ The designation of Project Management as a formal profession is relatively new, dating back only to the middle of the last century. However, project management as an activity and practice is an ancient process that dates back thousands of years.



Project Management: Integrating Knowledge, Skills, and Tools to Achieve Result

❑ Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Project management is accomplished through the appropriate application and integration of the project management processes identified for the project



Definition (PMI): A project is a temporary endeavor undertaken to create a unique product, service, or result

Key characteristics:

- ❑ **Temporary:** Has a defined beginning and end
- ❑ **Unique:** Creates something new or different
- ❑ **Specific objectives:** Clear goals and deliverables
- ❑ **Organized effort:** Requires coordination and resources

Practical Examples:

- ❑ Building construction (12-24 months)
- ❑ Software development (release date)
- ❑ Marketing campaign (3-6 months)



The Five Phases of Project Management Lifecycle

Phase 1 - Initiation: Define project, obtain authorization

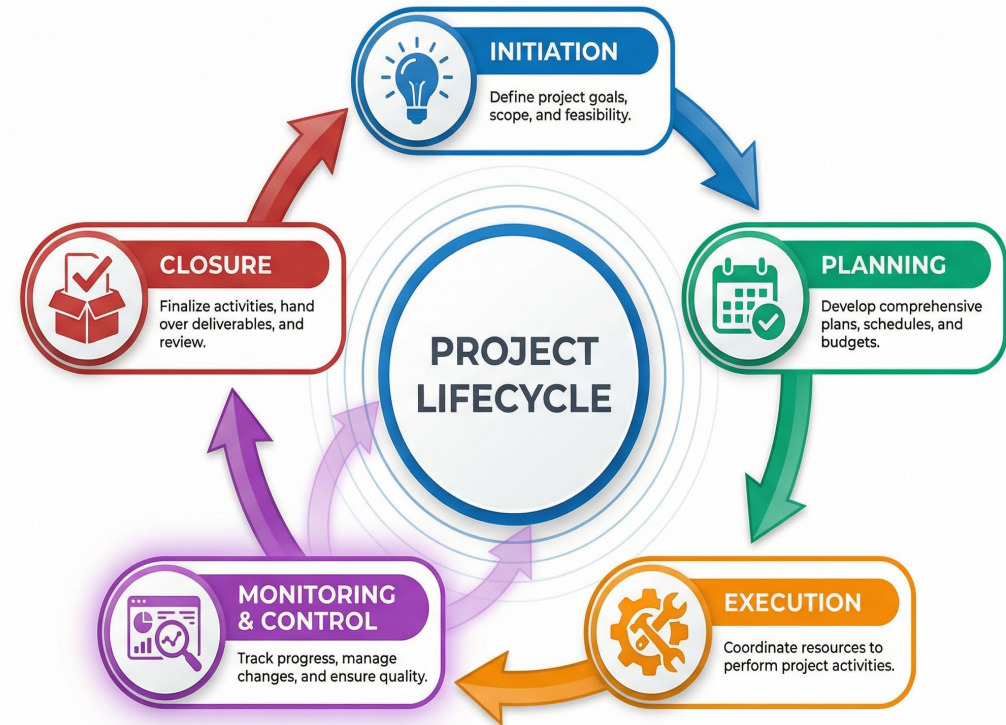
Phase 2 - Planning: Develop detailed plans, define scope, schedule, budget

Phase 3 - Execution: Perform project work, produce deliverables

Phase 4 - Monitoring & Control: Track progress, measure performance

Phase 5 - Closure: Archive knowledge, release resources

Key Principle: Monitoring and control occur throughout all phases



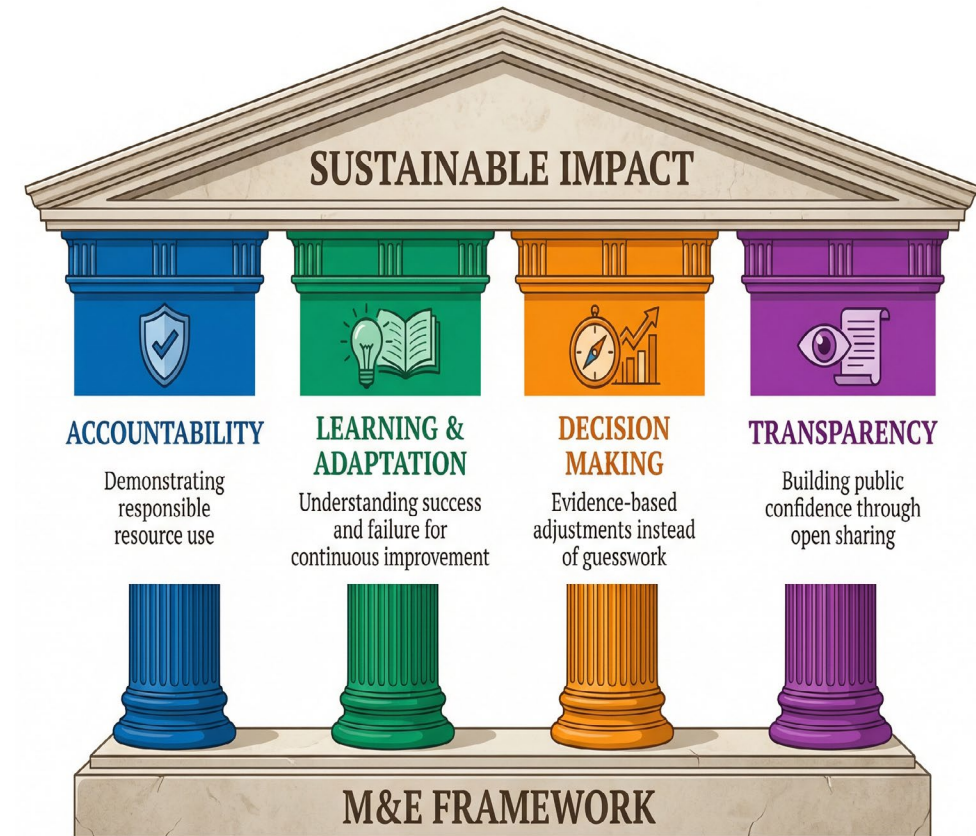
Definition: Project monitoring is the continuous process of collecting, measuring, and analyzing project performance data

Purpose:

- ❑ Ensure project stays on track with schedule and budget
- ❑ Identify issues and risks early
- ❑ Enable timely corrective actions
- ❑ Maintain stakeholder confidence

Monitoring vs. Control:

- ❑ Monitoring: Observation and measurement
- ❑ Control: Taking corrective actions



MONITORING

- ❑ **Timing:** Continuous and regular throughout the project lifecycle.
- ❑ **Focus:** Inputs, activities, outputs, and deliverables.
- ❑ **Core Question:** "Is the work being done correctly?" (Compliance).
- ❑ **Example:** Did we distribute the food baskets on time as scheduled

EVALUATION

- ❑ **Timing:** At specific phases (beginning, middle, end).
- ❑ **Focus:** Results and outcomes.
- ❑ **Core Question:** "Did the work achieve its intended goal?" (Effectiveness).
- ❑ **Example:** Did malnutrition rates decrease in the region?

Robust Monitoring Improves
Performance by 30-40%

Key benefit:

30-40% Better
Performance (PMI Research)

Practical Example: Dubai Commercial Building

Context: \$50M Budget, Weekly Earned Value Monitoring

Scenario:

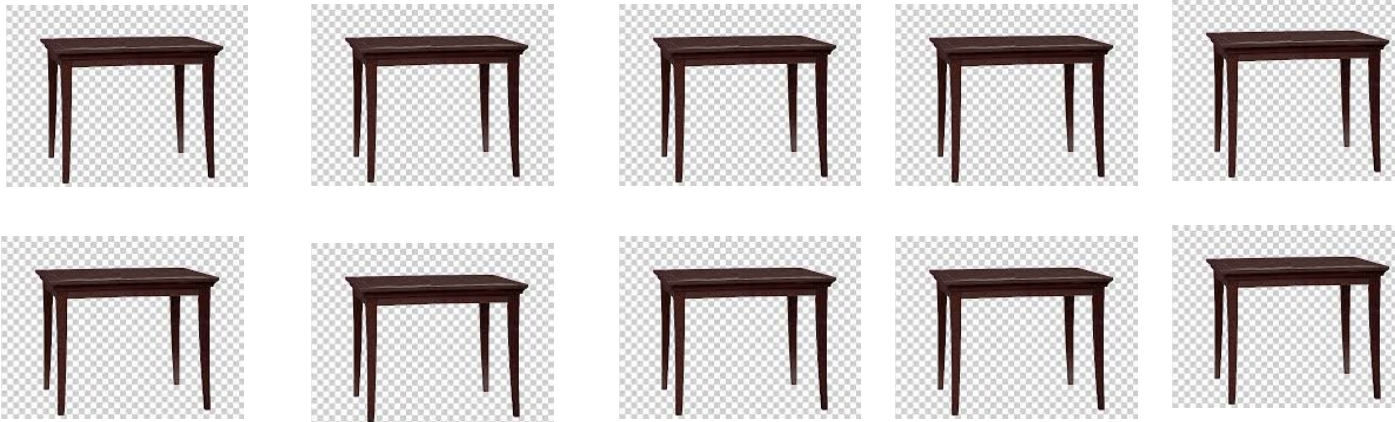
Identified 3-week foundation slip early.

Outcome:

Corrective
action saved
\$2.3 Million
in delay costs.



The requirement is to deliver ten tables in ten days at a cost of one thousand per table



As a result, one table is delivered daily at a unit cost of one thousand

By day four, the planned completion is four tables at a cost of 4,000



However, upon reviewing the actual progress on day four, three tables had been completed at a cost of 5,000

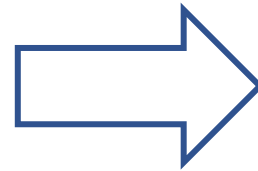


Budget Cost of
Work
Performed
(BCWP)=3000

Budget Cost
of Work
Schedule
(BCWS)=
4000

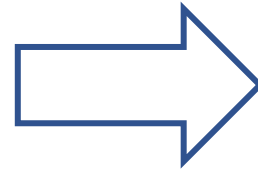
Actual Cost
of Work
Performed
(ACWP)=
5000

Schedule Variance (SV)
= BCWP-BCWS
= 3000-4000=-1000<0



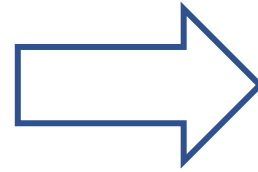
behind schedule

- Cost Variance (CV)
= BCWP-ACWP
= 3000- 5000= -2000<0



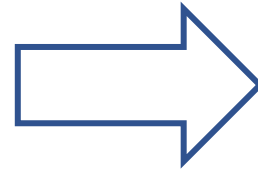
over budget

- Schedule performance Index (SPI)
= $BCWP / BCWS$
= $3000 / 4000 = 0.75 < 1$



behind schedule

- Cost performance Index (CPI)
= $BCWP / ACWP$
= $3000 / 5000 = 0.6 < 1$



over budget

Schedule Variance

$$S.V = BCWP - BCWS = +ve$$



Ahead

$$S.V = BCWP - BCWS = 0.0$$



As
Planned

$$S.V = BCWP - BCWS = -ve$$



Behind &
Delay

Schedule Performance Index

$$SPI = BCWP / BCWS = > 1$$



Ahead

$$SPI = BCWP / BCWS = 1$$



As Planned

$$SPI = BCWP / BCWS < 1$$



Behind & Delay

Estimated Final Time (EFT)

$$\text{EFT} = \text{TAC} / \text{SPI}$$

$$\text{EFT} = 10 / 0.75 = 13.33 = 14$$

Cost Variance

$$C.V = BCWP - ACWP = +ve$$



Under Budget

$$C.V = BCWP - ACWP = 0.0$$



As Budget

$$C.V = BCWP - ACWP = -ve$$



Over Budget

Cost Performance Index

$$\text{CPI} = \text{BCWP} / \text{ACWP} = > 1$$



Under Budget

$$\text{CPI} = \text{BCWP} / \text{ACWP} = 1$$



As Budget

$$\text{CPI} = \text{BCWP} / \text{ACWP} < 1$$



Over Budget

Estimated Cost At Completion (EAC)

$$EAC = BAC / CPI$$

Estimated) $EAC = 10000 / 0.6 = 16667$ •
(at complete

$$EAC = ACWP + \text{Original Remaining Budget}$$

$$EAC = ACWP + \text{New Budget for the remaining work}$$

Estimated To Complete (ETC)

$$\text{(estimated to complete)ETC} = \text{EAC} - \text{ACWP}$$
$$\text{ETC} = 16667 - 5000 = 11667$$

Variance At Completion (VAC)

$$VAC = BAC - EAC$$

$$VAC = 10000 - 16667 = -6667$$

Variance At Completion = Budget Cost At Completion - Estimated Cost At Completion

Best Practices:

1. Establish clear baseline before execution
2. Collect data regularly (daily to weekly)
3. Measure against plan consistently
4. Analyze trends, not just individual data points
5. Communicate transparently
6. Take corrective action quickly
7. Involve stakeholders throughout
8. Use tools effectively
9. Adapt to changes
10. Document everything





Thank You