

## Lesson 10: Program Benefits Delivery Supporting Processes

Based on *PMBOK® Guide* – Fifth Edition  
and  
The Standard for Program Management – Third  
Edition

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## Agenda

- ✓ Integration Management Processes
- ✓ Scope Management Processes
- ✓ Schedule Management Processes
- ✓ Financial Management Processes
- ✓ Quality Management Processes
- ✓ Resource Management Processes
- ✓ Risk Management Processes
- ✓ Communications Management Processes
- ✓ Procurement Management Processes

## Integration Management Processes

- ✓ Integration management processes:
  - Program Execution Management
  - Program Performance Monitoring and Control

## Program Execution Management

- ✓ Initiate, change, transition, and close program components
- ✓ Activities
  - ✓ Component initiation:
    - Initiated by component manager or sponsor
    - Approved by program manager and/or program board
  - ✓ Approve or reject change requests:
    - Establish a change review or advisory board in line with program governance
    - Establish who can approve and authorize the kind of changes
    - Establish a robust impact analysis framework
    - Consult the team regarding potential impact to other components
  - ✓ Transitioning of component deliverables

## Program Performance Monitoring and Control

- ✓ Performed throughout the course of the program and component management.
- ✓ Collecting, measuring, and disseminating performance information and assessing program trends.
- ✓ Program manager will monitor and control at a fairly high level, delegating project-level monitoring and controlling.
- ✓ Output:
  - Program performance reports: EVM status, remaining work, risks, issues, milestone accomplishments, and changes under consideration.
  - Forecasts: These include future outcomes against planned outcomes.

## Scope Management Processes

- ✓ Scope management processes:
  - Program Scope Control

## Program Scope Control

- ✓ Program manager should address and control program scope.
- ✓ To handle changes, change management should be established.
- ✓ Change management establishes:
  - Approach for capturing changes; and
  - Evaluation, disposition, communication, and documentation of changes.
- ✓ Accepted and approved change requests are updated in program management plan and program scope statement.
- ✓ Program manager is responsible for determining which program components are affected due to change request.
- ✓ Output:
  - An updated program scope statement;
  - Dispositions of requests with documentation of the rationale for the decision; and
  - An updated program work breakdown structure.

## Schedule Management Processes

- ✓ Schedule management processes:
  - Program Schedule Control



## Program Schedule Control

- ✓ Ensures that the program produces the required capabilities and benefits on time.
- ✓ Includes tracking and monitoring the start and finish of high-level program level milestones.
- ✓ Works closely with other program activities.
- ✓ Identifies slippages and opportunities with schedule for proper risk management.
- ✓ Does NOT replace project and component level schedule tracking.
- ✓ Output:
  - Updates to the program master schedule;
  - Updates to the program risk register; and
  - Updates to the program roadmap.

## Financial Management Processes

- ✓ Financial management processes:
  - Component Cost Estimation
  - Program Cost Budgeting
  - Program Financial Monitoring and Control

## Component Cost Estimation

- ✓ Cost estimates for individual components within the program are developed and baselined; they become budget at component level.
- ✓ A good practice is to make an estimate as close to the beginning of a work effort as possible.
- ✓ The estimates at component level should be reconciled with expectations from the stakeholders.
- ✓ Output:
  - Component cost estimates and documentation

## Program Cost Budgeting

- ✓ Program budgeting requires compiling all financial information and listing all income and payment schedules so that tracking of program budget baseline becomes convenient.
- ✓ Program overhead and contingency reserves are added to initial budget to make it the baseline budget of the program.
- ✓ Nature of the cost (capital or expense) needs to be considered.
- ✓ Two parts of budget:
  - Program funding schedules: When funding will be received
  - Component payment schedules: When payments need to be made
- ✓ Output:
  - Program budget baseline
  - Program payment schedules
  - Component payment schedules

## Program Financial Monitoring and Control

- ✓ Monitoring the program's finances and controlling expenditures within budget are critical so as to meet the goal of funding agency or higher organization.
- ✓ Financial management activities:
  - Identifying factors that create changes to the budget baseline;
  - Monitoring the environmental factors, costs reallocation, and contract expenditures;
  - Implementing earned value management;
  - Communicating changes in the baseline to governance and auditors; and
  - Managing expenditure on program and changes when they occur.
- ✓ Output:
  - Contract payments;
  - Component budget closed;
  - Program budget baseline updates;
  - Approved change requests;
  - Estimate at completion;
  - Program management plan updates; and
  - Corrective actions.

## Earned Value Management Technique

The earned value management technique is a method to measure project performance against the project baselines. It results from an earned value analysis indicating potential deviation of the project from the cost and/or schedule baselines.

<i><b>Acronym</b></i>	<i><b>Term</b></i>	<i><b>Explanation</b></i>
PV	Planned Value	The authorized budget assigned to scheduled work
EV	Earned Value	Work performed in terms of budget authorized for that work
AC	Actual Cost	Actual cost incurred in work performed
BAC	Budget at Completion	The budgeted amount for the total work
EAC	Estimate at Completion	The expected total cost of the project
ETC	Estimate to Complete	The expected cost to finish all the remaining project work
VAC	Variance at Completion	Projected budget surplus or deficit at the end of the project

## Earned Value Formulae

<i>Acronym</i>	<i>Formula</i>	<i>Interpretation</i>
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 are getting \$_____ worth of work out of every \$1 spent.
Schedule Performance Index (SPI)	$EV/PV$	We are progressing at _____ percent of the rate originally planned.
Estimate at Completion (EAC)	$BAC/CPI$ $AC + (BAC - EV)$ $AC + [(BAC - EV)/(CPI * SPI)]$ $AC + ETC$	Work performed at current CPI Rest of the project at budgeted rate Factoring in both CPI and SPI Re-evaluated based on forecast value for ETC
Estimate to Complete (ETC)	$EAC - AC$	How much more the project would cost from here to the end of the project
Variance at Completion	$BAC - EAC$	How much over or under budget we expect to be at the end of the project
To-Complete Performance Index (TCPI)	$(BAC - EV)/(BAC - AC)$ $(BAC - EV)/(EAC - AC)$	For managing to budget For managing to a specified value (EAC)

## Earned Value Problem – Example

Take the example of a software development project with four phases. Each phase will take one month to complete and it is estimated to cost \$10,000 per phase. The phases are planned to be completed one after the other. Today is end of month 3. Calculate the CPI and SPI of this project.

Project Phases	Month 1	Month 2	Month 3	Month 4	Status at the End of Month 3
Requirement Definition	S-----F				Complete, spent \$10,000
Architecture and Design		S-----PF	---F		Complete, spent \$12,000
Development and Unit Testing			S-----PF		50% done, spent \$9,000
System Testing and Go Live					Not yet started



## Earned Value Problem – Solution

Term	Calculation	Value	Interpretation of the Answer
PV	$\$10,000 + \$10,000 + \$10,000$	\$30,000	By third month, we should have done \$30,000 worth of work.
EV	$\$10,000 + \$10,000 + \$5,000$	\$25,000	We have actually accomplished work worth \$25,000.
AC	$\$10,000 + \$12,000 + \$9,000$	\$31,000	We have actually spent \$31,000.
CV	$\$25,000 - \$31,000$	-\$6,000	We are over budget by \$6,000.
SV	$\$25,000 - \$30,000$	-\$5,000	We are behind schedule.
CPI	$\$25,000 / \$31,000$	0.80	We are getting \$.80 out of every dollar spent.
SPI	$\$25,000 / \$30,000$	0.83	We are progressing at 83% of the rate originally planned.

## Quality Management Processes

✓ Quality management processes:

- Program Quality Assurance
- Program Quality Control

## Program Quality Assurance

- ✓ Evaluates overall program quality on a regular basis.
- ✓ Conducts quality audits to ensure that proper updates are performed.
- ✓ Implements changes in policies and procedures as appropriate.
- ✓ Analyzes quality control results of program components to ensure that overall program quality is delivered.
- ✓ Assurance focuses on the process.
- ✓ Outputs:
  - Quality assurance audit findings;
  - Quality assurance standards reports; and
  - Quality assurance change requests.

## Program Quality Control

- ✓ Monitoring specific deliverables to determine if they fulfill quality requirements which lead to adequate benefits realization.
- ✓ Ensures that quality plans are implemented using review technique.
- ✓ Performed throughout the program duration.
- ✓ At the end of program, customer satisfaction survey is used as quality control measurement.
- ✓ Quality control focuses on the products.
- ✓ Outputs:
  - Quality change requests;
  - Quality control completed checklists and inspection reports; and
  - Quality test reports or measurement results.

## Resource Management Processes

- ✓ Resource management processes:
  - Resource Prioritization
  - Resource Interdependency Management

## Resource Prioritization

- ✓ Program manager should prioritize the allocation of critical resources to components when there is a conflict.
- ✓ Program manager should try to ensure optimum utilization of resources within the program.
- ✓ HR planning is required to identify, document, and assign program roles and responsibilities.
- ✓ Program manager creates a program resource plan.
- ✓ Program manager manages resources at program level and works with project manager who manages the resources at component level.
- ✓ Outputs:
  - Program resource priorities; and
  - Program resource plan.

## Resource Interdependency Management

- ✓ Within a program, resources are shared between different components and program manager should ensure that conflicts are resolved in the best interest of benefits realization.
- ✓ The program manager ensures that resources are released for other programs in a timely fashion.
- ✓ The program manager has to work with component managers to ensure that the schedule accounts for timed use of interdependent resources.
- ✓ Outputs:
  - Program resource plan

## Risk Management Processes

- ✓ Risk management processes:
  - Program Risk Identification
  - Program Risk Analysis
  - Program Risk Response Planning
  - Program Risk Monitoring and Control



## Program Risk Identification

- ✓ Determines the risks which affect program, documents characteristics and prepares for successful risk management.
- ✓ Risks can be identified by anyone of the following:
  - Program manager;
  - Program sponsor;
  - Program team members;
  - Specialized risk management team;
  - SMEs, customers, and end users; and
  - Other stakeholders.
- ✓ It is NOT a one-time activity; everybody should be encouraged to highlight risks as early as possible.
- ✓ Program-level risk register does NOT replace the project-level risk register; program should focus at macro level.
- ✓ Output:
  - Program risk register

## Program Risk Analysis

- ✓ Both qualitative and quantitative risk analysis should be carried out.
- ✓ Assessments should include costs, schedules, and performance outcomes.
- ✓ Analysis should consider entire product lifecycle or lifecycle of service including operations, maintenance, and other costs.
- ✓ Impact of both threats and opportunities should be considered.
- ✓ Component managers escalate risks to program levels when:
  - Project-level risks cannot be resolved by the project management team at component level; or
  - Project-level risks can be managed more efficiently at program level.

## Program Risk Analysis (Contd.)

There are five crucial factors for risk analysis.

- ✓ Availability of information: Focus on good communication and knowledge management strategies.
- ✓ Availability of resources: Program management team negotiates so that effective resource utilization happens.
- ✓ Time and cost: Provides long-term view of project scheduling and managing reserves.
- ✓ Quality of information: The information should be reliable and verifiable.
- ✓ Control: There should be a mechanism to keep apprised of work which is outside the direct control of project team on which they are dependent.
- ✓ Output:
  - Updated risk register; and
  - Periodic risk reports showing threats and opportunities.

## Program Risk Response Planning

- ✓ Develop mitigation plans and manage contingency reserves at program level.
- ✓ Update program risk register:
  - Risk owners and assigned responsibilities;
  - Agreed-upon strategies;
  - Specific actions to implement the chosen response strategy;
  - Symptoms and warning signs of risk occurrence;
  - Budget and schedule;
  - Contingency reserves of time and cost;
  - Contingency plans and trigger conditions;
  - Fallback plans; and
  - Residual and secondary risks.
- ✓ Output:
  - Definitive response plans;
  - Risk register updates;
  - Contingency budgets; and
  - Change requests (if required).

## Program Risk Response Planning (Contd.)

- ✓ Strategies to manage threats:
  - Avoid
  - Transfer
  - Mitigate (Impact or probability)
  - Accept
- ✓ Strategies to manage opportunities:
  - Exploit
  - Enhance
  - Share
  - Accept

## Program Risk Monitoring and Control

- ✓ Identifying, analyzing and planning for new risks, and tracking identified risks.
- ✓ Monitoring trigger conditions, contingency plans, residual risks, and effectiveness of planned risk responses.
- ✓ Reduces impact of threat and increases impact of opportunity.
- ✓ It is an ongoing activity for the program duration.
- ✓ Risk monitoring is conducted to :
  - Determine the validity of assumptions;
  - Determine change in the state of risk analysis;
  - Ensure that the risk management policies and procedures are working well.
  - Ensure that modification of cost or schedule contingency reserve is in line with program risk.
- ✓ Output:
  - Timely execution of a risk response when a risk event occurs;
  - Monitoring the effects of the response with further action if required;
  - Documented lessons learned; and
  - An updated risk register.

## Communications Management Processes

- ✓ Communications management processes:
  - Information Distribution
  - Program Performance Reporting

## Information Distribution

- ✓ Information distribution:
  - Timely and accurate information to stakeholders
  - Includes:
    - Status information about cost and risk analysis
    - Change request notification and response to the same
    - Internal and external budgetary information
    - External fillings as per law and regulations
    - Press releases and media interviews
    - Public announcements
    - Presentations to legislative bodies
- ✓ Consciously over-do internal and external publication:
  - Lost or misinterpreted messages can be very costly



## Program Performance Reporting

- ✓ Program performance reporting:
  - Aggregate all performance information across projects and non-project activities, and report to the stakeholders.
  - Communication is two way – Gather the information, analyze, and distribute back.
  - Outputs are:
    - Contractually and/or sponsor-required data reports and accompanying formats;
    - Customer feedback requests; and
    - Periodic reports, presentations, and KPIs.

## Procurement Management Processes

- ✓ Procurement management processes:
  - Program Procurement
  - Program Procurement Administration

## Program Procurement

- ✓ Set standards for conducting procurement at component level.
- ✓ Centralize the procurement where it makes sense.
- ✓ Outputs:
  - Request for quote (RFQ);
  - Request for proposal (RFP);
  - Invitation for bid (IFB);
  - Proposal evaluation criteria;
  - Contracts management plan; and
  - Awarded contracts.

## Program Procurement Administration

- ✓ Managing the procurement happens at component level, and individual managers report the status.
- ✓ Program manager maintains visibility in the procurements to ensure that the budget is spent properly to obtain program benefits.
- ✓ Program manager should ensure that good relationships are maintained with the suppliers.
- ✓ Outputs:
  - Performance/earned value reports;
  - Monthly progress reports; and
  - Vendor/contractor performance reports including KPIs assigned to contractors.

## Summary

- ✓ **Integration Management Processes**
  - Program Execution Management
  - Program Performance Monitoring and Control
- ✓ **Scope Management Processes**
  - Program Scope Control
- ✓ **Schedule Management Processes**
  - Program Schedule Control
- ✓ **Financial Management Processes**
  - Component Cost Estimation
  - Program Cost Budgeting
  - Program Financial Monitoring and Control
- ✓ **Quality Management Processes**
  - Program Quality Assurance
  - Program Quality Control

## Summary (Contd.)

- ✓ **Resource Management Processes**
  - Resource Prioritization
  - Resource Interdependency Management
- ✓ **Risk Management Processes**
  - Program Risk Identification
  - Program Risk Analysis
  - Program Risk Response Planning
  - Program Risk Monitoring and Control
- ✓ **Communications Management Processes**
  - Information distribution
  - Program Performance Reporting
- ✓ **Procurement Management Processes**
  - Program Procurement
  - Program Procurement Administration

## Quiz – 1

A program manager is working with the component managers to identify risks. Which of the following risks should be managed at the program level rather than project level?

- a) Project A has a complex technology for which knowledgeable resources are not easily available
- b) Project B has many tasks for which the customer has not yet given clear requirements
- c) Projects C and D have a dependency on an external vendor
- d) Project F has a large number of activities on the critical path

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**Answer:** c. Projects C and D have a dependency on an external vendor.

**Explanation:** Of all the given choices, option c talks about a risk that affects multiple projects. Therefore, it is possible that the risk is better managed at program level rather than individual project level.



## Quiz – 2

A program manager is trying to estimate the costs of the components. The sum of the individual component estimates is nearly 30% higher than the expectations of the program sponsor. What should the program manager do?

- a) Ask all components to cut their estimates by 30%
- b) Reset expectations of the sponsor about the likely cost
- c) Try to identify ways in which the overall cost of the program can be reduced
- d) Try to increase the projected revenues so that higher cost can be justified

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**Answer:** c. Try to identify ways in which the overall cost of the program can be reduced.

**Explanation:** The component estimates cannot be cut down unilaterally. It is a natural process that the program manager needs to reconcile top-down expectations with bottom-up estimates. So option b is the most reasonable choice.

## Quiz – 3

While coming up with a component-level budget, which of the following should the program manager be MOST concerned about?

- a) Reviewing the component estimates through a third party so that they are assured to be reasonable
- b) Matching the schedule for component funding with the schedule for availability of funds at program level
- c) Making sure that the correct budgeting and cost classification techniques are being used
- d) Documenting all the items of costs and establishing a clear audit trail to prevent misuse of available budget

## Quiz – 3

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- c) Making sure that the correct budgeting and cost classification techniques are being used
- d) Documenting all the items of costs and establishing a clear audit trail to prevent misuse of available budget

**Answer:** b. Matching the schedule for component funding with the schedule for availability of funds at program level.

**Explanation:** All of the above may be important, but what the program manager needs to assure is that there will be funds available when components need them. All other things follow this – but if option b is not met, then the budget is not fit for purpose.

## Quiz – 4

A new program is being formed out of projects A, B, C, and D which were already existing as independent entities. They all use different suppliers at present to do similar kind of work. As a program manager, what should you do about the procurement strategy?

- a) Ask the projects to consolidate the orders to one supplier within 6 months
- b) Evaluate possibilities to optimize the procurement strategy at program level in consultation with component managers
- c) Ask for evaluation reports of the 4 suppliers and get rid of the two worst-performing suppliers
- d) Appoint a procurement manager to look at the situation and come back with recommendations in a time-bound manner

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- d) Appoint a procurement manager to look at the situation and come back with recommendations in a time-bound manner

**Answer:** b. Evaluate possibilities to optimize the procurement strategy at program level in consultation with component managers

**Explanation:** The program manager should not immediately disrupt what is going on. There should be an evaluation of opportunities to optimize and the component managers should be part of the evaluation.

**Thank You**