Project Management Institute (PMBOK 2000) – PMP Preparation Worksheet

Project Integration Management *– Processes required to ensure that the various elements of the project are properly coordinated to meet / exceed stakeholder expectations.*					
Area Process	**Inputs**	**Tools and Techniques**	**Outputs / Deliverables**	**Process Group**	**Other Notes**
Project Plan Development – Integrates the strategic plan, project portfolio and results of other planning processes into a consistent, coherent document to guide execution and control.	♦ Other planning outputs ♦ Historical information ♦ Organizational policies ♦ Constraints ♦ Assumptions	♦ Project Planning Methodology ♦ Stakeholder skills and knowledge ♦ PMIS ♦ EVM	♦ Project Plan ♦ Supporting detail	Core Planning	Project Plan includes: Project Charter, Project approach, Scope Statement, WBS, Staff, Budget, Schedule, Management plans, Constraints, Assumptions, Risks, Issues, etc.
Project Plan Execution – Coordinate and direct the various technical and organizational interfaces of the project.	♦ Project plan ♦ Supporting details ♦ Organizational policies ♦ Preventive action ♦ Corrective action	♦ General Management Skills ♦ Product skills and knowledge ♦ Work Authorization System ♦ Status review meetings ♦ PMIS ♦ Organizational procedures	♦ Work Results ♦ Change Requests	Core Executing	PM's role is to integrate all pieces of a project into a cohesive whole. It is senior management's responsibility to define the project and "protect" it from changes.
Integrated Change Control – Coordinating changes across the entire project	♦ Project plan ♦ Performance reports ♦ Change requests	♦ Change Control System ♦ Configuration Management ♦ Performance Measurement ♦ Additional Planning ♦ PMIS	♦ Project Plan Updates ♦ Corrective Action ♦ Lessons Learned	Core Controlling	PM must be concerned with the following for overall change control: 1. Influencing the factors that affect change. 2. Ensuring that change is beneficial. 3. Determining that a change has occurred. 4. Managing changes as they occur. 5. Maintaining the integrity of baselines. 6. Maintaining the integrity of scope statement. 7. Ensure coordination across knowledge areas.

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Project Scope Management *– Processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully*					
Area Process	**Inputs**	**Tools and Techniques**	**Outputs / Deliverables**	**Process Group**	**Other Notes**
Initiation – Formal authorization that a new project or phase can proceed.	♦ Product description ♦ Strategic plan ♦ Project selection criteria ♦ Historical information	♦ Project Selection Methods ♦ Expert Judgment	♦ Project Charter ♦ PM identified and assigned ♦ Constraints ♦ Assumptions	Core Initiating	Project Manager should be identified in this phase. PMI considers this an output.
Scope Planning – Progressively elaborating and documenting the work.	♦ Project Charter ♦ PM identified and assigned ♦ Constraints ♦ Assumptions	♦ Product Analysis ♦ Benefit/Cost Analysis ♦ Alternatives Identification ♦ Expert Judgment	♦ Scope Statement ♦ Supporting detail ♦ Scope management plan	Core Planning	Scope Statement forms the basis for an agreement between the project and project customer and includes: ♦ Project Justification ♦ Project Product ♦ Project Objectives ♦ Project Deliverables
Scope Definition – Subdividing the major project deliverables into smaller, more manageable components	♦ Scope statement ♦ Constraints ♦ Assumptions ♦ Other planning outputs ♦ Historical information	♦ WBS Templates ♦ Decomposition	♦ Work Breakdown Structure ♦ Scope statement updates	Core Planning	WBS is used as a basis for many planning activities and is considered very important by PMI.
Scope Verification – Formalizing acceptance of the projects scope	♦ Work results ♦ Product documentation ♦ WBS ♦ Scope statement ♦ Project plan	♦ Inspection	♦ Formal Acceptance	Facilitating Controlling	Scope Verification deals with the **acceptance** of the work, not the *correctness* of the work. Quality Control deals with the *correctness* of the work.
Scope Change Control – Controlling changes to the project scope	♦ WBS ♦ Performance reports ♦ Change requests ♦ Scope management plan	♦ Scope Change Control System ♦ Performance Measurement ♦ Additional planning	♦ Scope Changes ♦ Corrective Action ♦ Lessons Learned ♦ Adjusted baseline	Facilitating Controlling	Corrective Action – Anything done to bring expected future project performance into line with the project plan. (May include fast tracking and crashing.)

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Project Time Management *- Processes required to ensure timely completion of the project*

Area Process	Inputs	Tools and Techniques	Outputs / Deliverables	Process Group	Other Notes
Activity Definition – Identifying the specific activities that must be performed to produce the various project deliverables	♦ WBS ♦ Scope statement ♦ Historical information ♦ Constraints ♦ Assumptions ♦ Expert Judgement	♦ Decomposition ♦ Templates	♦ Activity List ♦ Supporting detail ♦ WBS updates	Core Planning	Decomposition here generates activities (action steps) whereas decomposition in Scope Definition generates deliverables.
Activity Sequencing – identifying and documenting interactivity dependencies	♦ Activity list ♦ Product description ♦ Mandatory dependencies ♦ Discretionary dependencies ♦ External dependencies ♦ Milestones	♦ Precedence Diagram Method (PDM) ♦ Arrow Diagram Method (ADM) ♦ Conditional Diagram Techniques (e.g. GERT) ♦ Network templates	♦ Project Network Diagrams ♦ Activity list updates	Core Planning	PDM (a.k.a Activity on Node) uses 4 types of dependencies (F-S, F-F, S-S, S-F). ADM (a.k.a. Activity on Arrow) uses only F-S dependencies. Allows dummy activities to show logical relationships. (Usually shown as a dashed line.)
Activity Duration Estimating – Estimating the number of work periods which will be needed to complete individual activities	♦ Activity list ♦ Constraints ♦ Assumptions ♦ Resource requirements ♦ Resource capabilities ♦ Historical information ♦ Identified risks	♦ Expert Judgment ♦ Analogous Estimating (Top Down Estimates) ♦ Quantitative (Unit productivity * quantity) ♦ Reserve time for risk / uncertainty	♦ Activity Duration Estimates ♦ Basis of estimates ♦ Activity list updates	Core Planning	Critical Path is the longest path through a network diagram and shows earliest completion of a project. It can be derived using CPM, PERT, or Monte Carlo.
Schedule Development – analyzing activity sequences, activity durations, and resource requirements to create the project schedule	♦ Network diagrams ♦ Activity durations ♦ Resource requirements ♦ Resource pool description ♦ Calendars ♦ Constraints ♦ Assumptions ♦ Leads and lags ♦ Risk Management plan ♦ Activity attributes	♦ Mathematical Analysis ♦ Duration Compression (Crashing / Fast tracking) ♦ Simulation ♦ Resource leveling heuristics ♦ PM software ♦ Coding structure	♦ Project Schedule ♦ Supporting detail ♦ Schedule Management Plan ♦ Resource requirements update	Core Planning	CPM uses the most likely estimate to calculate the float to determine project duration and scheduling flexibility. PERT uses the weighted average of - (O)ptimistic, (P)essimistic, and (M)ost Likely - to determine project duration. PERT Formulas: ♦ Mean - (P+4M+O)/6 ♦ Standard Deviation – (P-O)/6 ♦ Variance – $((P-O)/6)^2$
Schedule Control – controlling changes to the project schedule	♦ Project schedule ♦ Performance reports ♦ Change requests ♦ Schedule management plan	♦ Schedule Change Control System ♦ Performance Measure ♦ Additional planning ♦ PM software ♦ Variance analysis	♦ Schedule Updates ♦ Corrective Action ♦ Lessons Learned	Facilitating Controlling	*Revisions* are a special schedule update, which are changes to the start and finish dates in approved schedule. They are usually revised only in response to scope changes.

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Project Cost Management *- processes required to ensure that the project is completed within the approved budget*

Area Process	Inputs	Tools and Techniques	Outputs / Deliverables	Process Group	Other Notes
Resource Planning – Determining what resources (people, equipment, materials) and what quantities of each should be used to perform project activities	♦ WBS ♦ Historical information ♦ Scope statement ♦ Resource pool description ♦ Organization policies ♦ Activity duration estimates	♦ Expert Judgment ♦ Alternatives Identification ♦ PM software	♦ Resource requirements	Core Planning	
Cost Estimating – Developing an approximation (estimate) of the costs of the resources needed to complete project activities	♦ WBS ♦ Resource requirements ♦ Resource rates ♦ Activity duration estimates ♦ Estimating publications ♦ Historical information ♦ Chart of accounts ♦ Risks	♦ Analogous Estimating (i.e. top-down estimating) ♦ Parametric Modeling (e.g. regression analysis and learning curve) ♦ Bottom-Up Estimating ♦ Computerized tools ♦ Other (eg vendor bids)	♦ Cost Estimates ♦ Supporting detail ♦ Cost Management Plan	Core Planning	Top down / analogous estimating is generally less costly and less accurate than other techniques. Bottom-up estimating accuracy is driven by size of work items being estimated. Smaller items increase both cost and accuracy.
Cost Budgeting – allocating the overall cost estimate to individual work items	♦ Cost estimates ♦ WBS ♦ Project schedule ♦ Risk management plan	♦ See "Cost Estimating" "Tools and Techniques"	♦ Cost Baseline	Core Planning	Cost baseline is a time-phased budget to measure and monitor cost performance.
Cost Control – controlling changes to the project budget	♦ Cost baseline ♦ Performance reports ♦ Change requests ♦ Cost management plan	♦ Cost Change Control System ♦ Performance measurement ♦ EVM ♦ Additional planning ♦ Computerized tools	♦ Revised Cost Estimates ♦ Budget Updates ♦ Corrective Action ♦ Estimate at Completion (EAC) ♦ Project closeout ♦ Lessons Learned	Facilitating Controlling	♦ PV - Planned Value ♦ EV - Earned Value ♦ AC - Actual Cost Formulas to remember: ♦ SV = EV-PV (old BCWP-BCWS) ♦ CV = EV-AC (old BCWP-ACWP) ♦ SPI = EV/PV (old BCWP/BCWS) ♦ CPI = EV/AC (old BCWP/ACWP) ♦ BCWR = BAC-EV ♦ EAC = AC+BCWR or EAC = AC+(BCWR/CPI) ♦ ETC = EAC-AC ♦ VAC = BAC-EAC

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Project Quality Management *– processes required to ensure that the project will satisfy the needs for which it was undertaken*					
Area Process	**Inputs**	**Tools and Techniques**	**Outputs / Deliverables**	**Process Group**	**Other Notes**
Quality Planning – Identifying which quality standards are relevant to the project and determining how to satisfy them	♦ Quality policy ♦ Scope statement ♦ Product description ♦ Standards and regulations ♦ Other process inputs	♦ Benefit/Cost Analysis ♦ Benchmarking ♦ Flowcharting ♦ Design of experiments ♦ Cost of quality	♦ Quality Management Plan ♦ Operational Definitions (i.e. Metrics) ♦ Checklists ♦ Inputs to other processes	Facilitating Planning	*Quality*: The totality of characteristics of an entity that bear on its ability to satisfy stated or implied needs. *Customer Satisfaction*: Conformance to requirements, specifications, and fitness for use. Quality is planned in, not inspected in.
Quality Assurance – Planned and systematic activities to provide confidence that the project will satisfy the relevant quality standards	♦ Quality management plan ♦ Quality control measurements ♦ Operational definitions	♦ See "Quality Planning" "Tools and Techniques" ♦ Quality Audits	♦ Quality Improvement (ie. Corrective action)	Facilitating Executing	Deming: Plan, Do, Check, Act *Kaizen (Continuous Improvement)*: Small improvements in products or processes to reduce costs and ensure consistency of products or services. *ISO 9000*: An international standard that *describes* a recommended quality system. Does not include quality procedures or forms. *Heuristic* is a rule of thumb (e.g. Rule of Seven)
Quality Control – Monitoring specific project results to determine if they comply with relevant quality standards and identifying ways to eliminate causes of unsatisfactory performance	♦ Work results ♦ Quality management plan ♦ Operational definitions ♦ Checklists	♦ Inspection ♦ Control Charts ♦ Pareto Diagrams ♦ Statistical sampling ♦ Flow charting ♦ Trend analysis (Project and/or product)	♦ Quality Improvement ♦ Acceptance Decisions ♦ Rework ♦ Completed checklists ♦ Process adjustments (Corrective / preventive)	Facilitating Controlling	♦ +/- 1 sigma = 68.26% ♦ +/- 2 sigma = 95.46% ♦ +/- 3 sigma = 99.73% ♦ +/- 6 sigma = 99.99 % *Variable: Characteristic* to be measured (e.g. size, shape) *Attribute:* The measurement (e.g. inches, pounds) *Statistical Independence:* The probability of 1 event occurring does not affect the probability of another event occurring.

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Project Human Resource Management *– process required to make the most effective use of the people involved with the project*

Area Process	Inputs	Tools and Techniques	Outputs / Deliverables	Process Group	Other Notes
Organizational Planning – Identifying, documenting, and assigning project roles, responsibilities and performing relationships	♦ Project interfaces ♦ Staffing requirements ♦ Constraints	♦ Templates ♦ Human Resource Practices ♦ Organizational Theory ♦ Stakeholder Analysis	♦ Role and responsibility assignments ♦ Staffing Mgmt Plan ♦ Organization Chart ♦ Supporting detail	Facilitating Planning	PM Forms of Power: ♦ Formal (legitimate) – Based on Position ♦ Reward – Giving Rewards ♦ Penalty (coercive) – Penalizing ♦ Expert – Knowledge and experience ♦ Referent – Charisma / role model. PMI says best forms of power are Expert and Reward. Formal, Reward, and Penalty are derived from PM's position in organization.
Staff Acquisition – Getting the human resources needed assigned to and working on the project	♦ Staffing management plan ♦ Staffing pool description ♦ Recruitment practices	♦ Negotiations ♦ Pre-assignment ♦ Procurement	♦ Project Staff Assigned ♦ Project Team Directory	Facilitating Planning	Conflict Resolution Techniques: ♦ Problem Solving (Address interests) ♦ Compromising (Middle ground) ♦ Forcing (Impose judgement) ♦ Withdrawal (Avoidance) ♦ Smoothing (Peace keeping) PMI recommends Problem Solving as best choice followed by compromising. Forcing is last.
Team Development – Developing individual and group skills to enhance project performance	♦ Project staff ♦ Project plan ♦ Staffing management plan ♦ Performance reports ♦ External feedback	♦ Team Building Activities ♦ General management skills ♦ Reward and Recognition Systems ♦ Collocation ♦ Training	♦ Performance Improvements ♦ Input to performance appraisals	Facilitating Executing	Maslow's Hierarchy of Needs (in order): ♦ Physiological (Lowest) ♦ Safety ♦ Social ♦ Esteem ♦ Self-Actualization (Highest) MacGregor's Theory X – People must be constantly watched. They are incapable, avoid responsibility, and avoid work. MacGregor's Theory Y – People are willing to work without supervision and want to achieve. Ouchi's Theory Z - People work effectively when secure, consulted and held collectively responsible.

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Project Communications Management *– Processes required to ensure timely and appropriate generation, collection, dissemination, storage and ultimate disposition of project information*

Area Process	Inputs	Tools and Techniques	Outputs / Deliverables	Process Group	Other Notes
Communication Planning – Determining the information and communications needs of the stakeholders	♦ Communications requirements ♦ Communications technology ♦ Constraints ♦ Assumptions	♦ Stakeholder Analysis	♦ Communications Management Plan (Who, what, when, where, why, how)	Facilitating Planning	Communication Methods: ♦ Formal Written – Project Plans/Charters ♦ Formal Verbal – Presentations, Speeches ♦ Informal Written – Memos, e-mail ♦ Informal Verbal – Meetings, Conversations Comm. Channels: N(N-1)/2 where N is equal to the number of people. ♦
Information Distribution – Making needed information available to project stakeholders in a timely manner	♦ Work results ♦ Communications management plan ♦ Project plan	♦ Communication Skills ♦ Information retrieval systems ♦ Information distribution systems	♦ Project records ♦ Project reports ♦ Project presentations	Facilitating Executing	PM should spend 70 - 90% of their time communicating. Basic elements of communication: ♦ Sender (or encoder) ♦ Message. ♦ Receiver (or decoder)
Performance Reporting – Collecting and disseminating performance information to provide stakeholders with information on how resources are being used to achieve project objectives.	♦ Project plan ♦ Work results ♦ Other project records	♦ Performance Reviews ♦ Variance Analysis ♦ Trend Analysis ♦ Earned Value Analysis ♦ See "Information Distribution" "Tools and Techniques"	♦ Performance Reports ♦ Change Requests	Core Controlling	Performance Reporting Tools: ♦ Status Report ♦ Progress Report ♦ Trend Report ♦ Forecasting Report ♦ Variance Report ♦ Earned Value**
Administrative Closure – Documenting project results to formalize acceptance of the product of the project by the sponsor or customer.	♦ Performance measurement documentation ♦ Product documentation ♦ Other project records	♦ See "Performance Reporting" "Tools and Techniques" ♦ Project reports ♦ Project presentations	♦ Project Archives ♦ Formal Acceptance ♦ Lessons Learned	Core Closing	Admin Closure should be done for each phase of the project.

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Project Risk Management *– processes concerned with identifying, analyzing and responding to project risk*					
Area Process	**Inputs**	**Tools and Techniques**	**Outputs / Deliverables**	**Process Group**	**Other Notes**
Risk Management Planning Deciding how to approach and plan the risk mgmt activities for a project	♦ Project charter ♦ Organizational risk management policies ♦ Defined roles and responsibilities ♦ Stakeholder risk tolerances ♦ Organization risk management template ♦ WBS	♦ Planning Meetings	♦ Risk Management Plan	Core Planning	Risk management plan includes methodology, roles, responsibilities, budget, timing, scoring / interpretation, thresholds, reporting, tracking, etc. Risk Categories: ♦ Technical ♦ Project management ♦ Organizational ♦ External
Risk Identification – Determining which risks are likely to affect the project and documenting the characteristics of each	♦ Risk management plan ♦ Project plan ♦ Risk categories ♦ Historical information	♦ Documentation reviews ♦ Information gathering ♦ Checklists ♦ Assumptions analysis ♦ Diagramming	♦ Risks ♦ Triggers ♦ Inputs to other processes	Facilitating Planning	Risk Components: ♦ Risk event ♦ Risk event probability ♦ Risk event consequence ♦ Risk event status
Qualitative Risk Analysis – Assessing the impact & likelihood of identified risks, prioritizing them based on their impact to the project's objectives	♦ Risk management plan ♦ Identified risks ♦ Project status ♦ Project type ♦ Data precision ♦ Scales of probability ♦ Assumptions	♦ Risk Probability and Impact ♦ Probability / Impact Risk Rating Matrix ♦ Project Assumptions Testing ♦ Data Precision Ranking	♦ Overall Risk Ranking for the project ♦ List of Prioritized risks ♦ List of risks for additional analysis & mgmt ♦ Trends	Facilitating Planning	Use of low precision data may lead to faulty analysis. Risks calculated as high or moderate would be prime candidates for further analysis.
Quantitative Risk Analysis Analyze numerically the probability of each risk and its consequence on overall project activities, as well as the extent of overall project risk	♦ Risk management plan ♦ Identified risks ♦ List of prioritized risks ♦ List of risks for additional analysis ♦ Historical information ♦ Expert judgement ♦ Other planning outputs	♦ Interviewing ♦ Sensitivity Analysis ♦ Decision Tree Analysis ♦ Simulation	♦ Prioritized list of Quantitative Risks ♦ Probabilistic analysis of the project ♦ Probability of achieving the cost and time objectives ♦ Trends	Facilitating Planning	Quantitative analysis follows qualitative analysis. Objectives include: ♦ Determine probability of reaching project objectives ♦ Determine size of contingency needed ♦ Identify risks requiring most attention based on their priority ♦ Identify realistic cost and scope targets

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Project Risk Management *– processes concerned with identifying, analyzing and responding to project risk*

Area Process	Inputs	Tools and Techniques	Outputs / Deliverables	Process Group	Other Notes
Risk Response Planning – Developing options and determining actions to enhance opportunities and reduce threats to project objectives	♦ Risk management plan ♦ List of prioritized risks ♦ Risk ranking of the project ♦ Prioritized list of quantified risks ♦ Probabilistic analysis of the project ♦ Probability of achieving time & cost objectives ♦ List of potential responses ♦ Risk thresholds ♦ Risk owners ♦ Common risk causes ♦ Trends	♦ Avoidance ♦ Transference ♦ Mitigation ♦ Acceptance (with fallback / contingency plan)	♦ Risk response plan ♦ Residual risks ♦ Secondary risks ♦ Contractual agreements ♦ Contingency reserve amounts needed ♦ Inputs to other processes ♦ Inputs to revised project plan	Facilitating Planning	*Contingency Plan* is a management plan that identifies alternative strategies to be used to ensure project success if specified risk events occur. Fallback plan is a management plan that identifies alternative project approaches if the risk has high impact, or if the strategy might not be fully effective. Contingency Reserve accounts for known risks that have been accepted. Secondary risks arise from implementing the contingency plan.
Risk Monitoring and Control – Keeping track of identified risks, monitoring residual risks and identifying new risks, ensuring the execution of risk plans, and evaluating their effectiveness in reducing risk	♦ Risk management plan ♦ Risk response plan ♦ Project communication ♦ Additional risk identification and analysis ♦ Scope changes	♦ Project Risk Response Audits ♦ Periodic Project Risk Reviews ♦ Earned Value Analysis ♦ Technical Performance Measurement ♦ Additional risk response planning	♦ Workaround plans ♦ Corrective action ♦ Project change requests ♦ Updates to risk response plan ♦ Risk database ♦ Updates to risk identification checklists	Facilitating Controlling	Purpose of Risk Monitoring is to determine if: ♦ Risk responses implemented as planned ♦ Risk response actions were as effective as planned ♦ Project assumptions are still valid ♦ Risk trigger has occurred ♦ Risk exposure has changed

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Project Procurement Management *– processes required to acquire goods and services from outside the performing organization*					
Area Process	**Inputs**	**Tools and Techniques**	**Outputs / Deliverables**	**Process Group**	**Other Notes**
Procurement Planning – Determining what to procure and when	♦ Scope statement ♦ Product description ♦ Procurement resources ♦ Market conditions ♦ Other planning outputs ♦ Constraints ♦ Assumptions	♦ Make or Buy Analysis ♦ Expert Judgment ♦ Contract Type Selection	♦ Procurement Management Plan ♦ Statements of Work	Facilitating Planning	Contract Type: ♦ FP – Fixed Price. (Low cost risk to buyer.) ♦ T&M – Time and Materials. (Moderate cost risk to buyer.) ♦ CR – Cost Reimbursable. (High cost risk to buyer.) Incentives – Align to buyer's objectives.
Solicitation Planning – Documenting project requirements and identifying potential sources	♦ Procurement management plan ♦ SOW ♦ Other planning outputs	♦ Standard Forms ♦ Expert Judgment	♦ Procurement Documents ♦ Evaluation Criteria ♦ SOW Updates	Facilitating Planning	RFP (Request for Proposal) - Requests detailed proposal on how work will be accomplished. RFQ (Request for Quotation) - Requests a price quote per commodity item, hour, etc. IFB (Invitation for Bid) - Similar to RFQ.
Solicitation – Obtaining responses from prospective sellers.	♦ Procurement documents ♦ Qualified seller lists	♦ Bidders Conferences ♦ Advertising	♦ Proposals	Facilitating Executing	All bidders conference Q&A should be put in writing and issued to all potential sellers as an addendum to the procurement docs.
Source Selection – choosing from among potential sellers	♦ Proposals ♦ Evaluation criteria ♦ Organizational policies	♦ Contract Negotiation ♦ Weighting System ♦ Screening System ♦ Independent Estimates (i.e. "Should Cost")	♦ Contract	Facilitating Executing	Objectives of Negotiation: ♦ Obtain a fair and reasonable price ♦ Develop a good relationship with the seller (should be a win-win situation) Items to negotiate include: Responsibilities, authority, applicable law, technical and business mgmt approaches, contract financing, and price.
Contract Administration – managing the relationship with the seller	♦ Contract ♦ Work results ♦ Change requests ♦ Seller invoices	♦ Contract Change Control System ♦ Performance Reporting ♦ Payment System	♦ Correspondence ♦ Contract Changes ♦ Payment Requests	Facilitating Executing	Contracts are often managed by a contract department who have authority and responsibility for contracts. The PM must work closely with this group to ensure that project objectives are met.
Contract Close-out – completing and settlement of the contract, including resolution of any open items	♦ Contract documentation	♦ Procurement Audits	♦ Contract File ♦ Formal Acceptance and Closure	Core Closing	Centralized Contracting – A separate contracting office handles contracts for all projects. Decentralized Contracting – A contract administrator is assigned to each project.