**Project Management – Introduction – Summer 2020**

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***Overview***

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| *“The art and science of transforming an idea into a product or service.”***What is a project?***“A project is a temporary endeavor undertaken to create a unique product or service.”***What is project management?***“Project management is the application of knowledge, skills, tools, and techniques* *to project activities that fulfills the project scope on time and within budget* *in order to meet or exceed stakeholder needs and expectations.”***Project Management Organizational Structure*** *Project, Program, Portfolio, PMO*

**Stakeholders*** *Sponsor, Project Manager, Team Members, Vendors*

**PMBoK (Project Management Body of Knowledge)*** *Cycles, Phases, Process Groups, Knowledge Areas, ITTO*

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| **Project Management Checklist.*** **Project Charter –** *Initiate the project.*
* **Project Scope Statement –** *Define the project.*
* **Integrated Change Control** – *Expect change & Plan for change*
* **Stakeholder Analysis** – *Define, Communicate, Validate*
* **Project Management Plan –** *Plan, execute, control, and close the project.*

**Project Management Extensions.*** Agile Project Management
* Extreme Project Management
* Complex, International, Sustainable, & Virtual Projects

**Types of Projects.*** Event Project Management
* Construction Project Management
* Information Technology Project Management
* Systems Engineering Project Management
* Urban Planning Project Management
* Global Supply Chain Project Management

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**Project Management – Definitions**

*“The art and science of transforming an idea into a product or service.”*

**Origination of ideas for projects.**

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|  |  | Idea 🡪 Project |  |  |
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|  |  |  |  |  |  |  |  |
| Need |  | Opportunity |  | Directive |

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| **NEED** | **OPPORTUNITY** | **DIRECTIVE** |
| Use resources as needed | Use resource if available | Use minimum resources |
| Use most reliable solutions | Use innovative solutions | Use most direct solution |
| Achieve goal in minimum time | Achieve best goal possible | Achieve goal to just meet requirements |

**What is a project?**

“A project is a temporary endeavor undertaken to create a unique product or service.”

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| Projects |  | 🡨 🡪 |  | OngoingOperations |
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|  |  |  |  |  |  |  |  |
| Time |  | Uniqueness |  | Objectives |

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|  | **Project vs. Operations** |  |
|  | Projects | ↔ | Ongoing Operations |  |
| Time | Short-termFixedSuccess | ↔ | Long-termContinualResilient |  |
| Uniqueness | DeliverableProcessStakeholdersTiming (Resources,Assets) | ↔ | Family of Products/ServicesContinual ImprovementBusiness GoalsGrowth |  |
| Objectives | Stakeholder-focused | ↔ | Business-focused |  |
|  |  |  |  |  |

**Project vs. Operations**

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| --- | --- |
| Nature\_\_\_Logistics for the next monthly board meeting\_\_\_Logistics for a week retreat in the mountains for the executive board\_\_\_Replace light bulbs in conference room\_\_\_Install new lighting in conference room\_\_\_Insuring successful upgrade of software on all computers\_\_\_Develop new software for inclusion in next product offering\_\_\_Evaluate international vendor performance\_\_\_Conduct international vendor search | Feasibility\_\_\_Create a summit conference on critical issues to your company of all industry leaders including your competitors\_\_\_Design and install conference room with leading edge lighting technology\_\_\_Develop artificial intelligence software to learn from users the best way to do their job and then implement learned behavior\_\_\_Expand global influence of supply chain to effect political stability in host countries |

**What is project management?**

“Project management is the application of knowledge, skills, tools, and techniques

to project activities that fulfills the project scope on time and within budget

in order to meet or exceed stakeholder needs and expectations.”

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|  | “Project management is the |  |
| Integration |  application of  ***knowledge, skills, tools, and techniques*** | PMBOK |
| Flexibility |  to project *activities* that fulfills the  ***project scope on time and within budget*** | Triple Constraint |
| Focus |  in order to meet or exceed ***stakeholder*** needs and expectations.” | Success |

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| Integration |  | Flexibility |  | Focus |
| (PMBOK) |  | (Triple Constraint) |  | (Success) |
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|  |  |  |  |  |  |  |  |  |  | Stakeholders |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Knowledge |  | Skills | 🡪 |  | Scope |  | 🡪 |  |  | Needs |
|  | 🡪 |  |  | 🡪 |  |  |
|  |  |  |  |  | 🡪 |  |  |  |  | 🡪 |  |  |  |
| Tools |  | Techniques | 🡪 | Time |  |  | Cost | 🡪 |  |  | Expectations |
|  |  |  |  |  |  |

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**Wysocki Scope Triangle**

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
| Risk |  |  |  |  |  |  | Risk |
|  |  | 🡨 ----------Time---------- 🡪 | Scope& Quality | 🡨 ----------Cost---------- 🡪 |  |  |
|  |  |  |  |  |  |  |  |
| Risk |  |  | 🡨 --------Resource & Availability-------- 🡪 |  |  |  | Risk |
|  |  |  |  |  |  |  |  |

***Key Project Management Terms.***

**Project Management Checklist.**

* **Project Charter –** *Initiate the project.*
* **Project Scope Statement –** *Define the project.*
* **Integrated Change Control** – *Expect change & Plan for change*
* **Stakeholder Analysis** – *Define, Communicate, Validate*
* **Project Management Plan –** *Plan, execute, control, and close the project.*

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| **Project Management Life Cycles – PMBoK** |
|  | Traditional Project Management |  |
|  |  |  |
| Scope 🡪 Plan 🡪 Launch 🡪 Monitor & Control 🡪 Close |

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| **Project Management Life Cycles – Wysocki** |
|  | Traditional Linear |  |
|  | Traditional Incremental |  |
|  | Agile Iterative |  |
|  | Agile Adaptive |  |
|  | Extreme (Emertxe) |  |
|  |  |  |
| Scope 🡪 Plan 🡪 Launch 🡪 Monitor & Control 🡪 Close 🡪 Next 🡪 Close |
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**Life Cycles**

**Project Life Cycle**

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| Activity |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |  |  |  | *Time* |
| ProcessGroups | Initiating | Planning | Executing & Monitoring & Controlling | Closing |

**Product Life Cycle**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Activity |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |  |  |  | Time |
| Stages | Introduction | Growth | Maturity | Decline |

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| Project1 | Project2 | Project3 | Project4 | Project5 | Project6 | Project7 | Project8 |

**Project Management – Organizational Structure**

**General Organizational Structure**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | Executive Management |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | Administration |  | Functional |  | Project |  |
|  |  |  |  |  |  |  |  |  |  |  |  |

**Project Management Structure**

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| --- | --- | --- |
|  |  |  |
|  | Project Management Office (PMO) |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  | PortfolioManagement |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | ProgramManagement |  |  |  |
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|  |  |  |  |  |  |  | ProjectManagement |  |
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**Functional Organizational Chart**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | CEO |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| HumanResources |  | Finance |  | Marketing |  | InformationTechnology |  | Operations |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Staff |  | Staff |  | Staff |  | Staff |  | Staff |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Staff |  | Staff |  | Staff |  | Staff |  | Staff |

**Project Organizational Chart**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | CEO |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ProjectManager |  | ProjectManager |  | ProjectManager |  | ProjectManager |  | ProjectManager |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| TeamMembers |  | TeamMembers |  | TeamMembers |  | TeamMembers |  | TeamMembers |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Staff |  | Staff |  | Staff |  | Staff |  | Staff |

 **Matrix Organizational Chart**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | CEO |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ProgramManagers |  | Finance |  | Marketing |  | InformationTechnology |  | Operations |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Project Manager |  | Staff |  | Staff |  | Staff |  | Staff |
|  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Project Manager |  | Staff |  | Staff |  | Staff |  | Staff |
|  |  |  |  |

**Matrix Organizational Chart**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | CEO |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| ProgramManagers |  | Finance |  | Marketing |  | InformationTechnology |  | Operations |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Project Manager |  | StaffAuthority |  | Staff |  | Staff |  | Staff |
|  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Project Manager |  | Staff |  | Staff |  | Staff |  | Staff |
|  |  |  |  |

**Organizational Authority & Coordination**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  | Project Manager Authority |  |
|  |  |  | Low |  | High |  |
|  | Coordination | Low | Functional |  | Project |  |
|  |  |  |  |  |  |
|  | High | Weak Matrix |  | Strong Matrix |  |
|  |  |  |  |  |  |  |

**Project Management Office (PMO) – PMBoK**

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| A project management office (PMO) is a management structure that standardizes the project-related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques. |

**Project Support Office (PSO) – Wysocki**

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| A Project support office (PSO) is a temporary or permanent organizational unit that provides a portfolio of services to support project teams that are responsible for a specific portfolio of projects. |

**Functional Organizational Chart**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | CEO |  | PSO |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| HumanResources |  | Finance |  | Marketing |  | InformationTechnology |  | Operations |  | PSO |
|  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Staff |  | Staff |  | Staff |  | Staff |  | Staff |  | PSO |
|  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Staff |  | Staff |  | Staff |  | Staff |  | Staff |  |  |
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**Project Organizational Chart**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | CEO |  | PSO |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ProjectManager |  | ProjectManager |  | ProjectManager |  | ProjectManager |  | ProjectManager |  | PSO |
|  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Staff |  | Staff |  | Staff |  | Staff |  | Staff |  | PSO |
|  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Staff |  | Staff |  | Staff |  | Staff |  | Staff |  |  |
|  |  |  |  |  |  |

**Stakeholders**

|  |
| --- |
| ***A stakeholder is anyone or anything that is involved in,*** ***has interest in, or stands to gain or lose from a project*** |
|  |  |  |  |
| Stakeholder Importance:* supports definition of project expectations
* facilitates project execution and control
* validates project success
 |

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| ***Stakeholders*** |
| **Sponsor****Project Manager****Project Team Members****Vendors****Customers****Community****Environment****Etc.****---** |

***Key Stakeholder*: Project Manager**

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| **The project manager is responsible for all aspect of the project.*** **Design and Planning.**
* **Internal Management & Coordination.**
* **External Communication & Representation.**
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| --- | --- | --- | --- |
| **Project Manager Knowledge.**

|  |  |  |
| --- | --- | --- |
| Project Management Knowledge | vs. | Domain Knowledge |

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| **Project Manager Skills.**

|  |  |
| --- | --- |
| Communication Skills | Negotiation Skills |
| Organization Skills | Leadership Skills |
| Problem Solving Skills | Team Building Skills |

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| **Project Manager Characteristics.**

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| --- | --- |
| Personality | Experience |

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**PMBoK: Project Management Body of Knowledge**

**Reference:** A Guide to the Project Management Body of Knowledge, (PMBOK), 6th Edition, 2017, Project Management Institute, Inc., ISBN: 9781628251845

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| **PMBOK – Cycles, Phases, Process Groups, Knowledge Areas, ITTO*** Cycles
* Product Life Cycle
	+ Introduction, Growth, Maturity, Decline
* Project Life Cycle
	+ Initiating, Planning, Executing, Monitoring, Controlling, Closing
* Phases.
	+ Project Life Cycle Phases.
		- Concept, Development, Implementation, Close-out
	+ Project Time Phases.
		- Sequential, Overlapping, Iterative
	+ Product Life Cycle Phases.
		- Design, Prototype, Final Assembly
* Process groups.
	+ Initiating Process Group. Processes needed to start the project.
	+ Planning Process Group. Processes needed to determine what is to be done in the project.
	+ Executing Process Group. Processes needed to do the project.
	+ Monitoring and Controlling Process Group. Processes needed to manage the project.
	+ Closing Process Group. Processes needed to finalize the project when done.
* Knowledge areas.
	+ Project Integration Management
	+ Project Scope Management
	+ Project Schedule Management
	+ Project Cost Management
	+ Project Quality Management
	+ Project Resource Management
	+ Project Communications Management
	+ Project Risk Management
	+ Project Procurement Management
	+ Project Stakeholder Management
* ITTO.
	+ Inputs, Tools, Techniques, Outputs

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PMBOK 6th Edition

**Project Management Knowledge Areas (10)**

**Project Management Processes (49)**

|  |  |
| --- | --- |
| Project Integration Management1. Develop Project Charter
2. Develop Project Management Plan
3. Direct and Manage Project Work
4. Manage Project Knowledge
5. Monitor and Control Project Work
6. Perform Integrated Change Control
7. Close Project or Phase

Project Scope Management1. Plan Scope Management
2. Collect Requirements
3. Define Scope
4. Create WBS
5. Validate Scope
6. Control Scope

Project Schedule Management1. Plan Schedule Management
2. Define Activities
3. Sequence Activities
4. Estimate Activity Durations
5. Develop Schedule
6. Control Schedule

Project Cost Management1. Plan Cost Management
2. Estimate Costs
3. Determine Budget
4. Control Costs

Project Quality Management1. Plan Quality Management
2. Manage Quality
3. Control Quality
 | Project Resource Management1. Plan Resource Management
2. Estimate Activity Resources
3. Acquire Resources
4. Develop Team
5. Manage Team
6. Control Resources

Project Communications Management1. Plan Communications Management
2. Manage Communications
3. Monitor Communications

Project Risk Management1. Plan Risk Management
2. Identify Risks
3. Perform Qualitative Risk Analysis
4. Perform Quantitative Risk Analysis
5. Plan Risk Responses
6. Implement Risk Responses
7. Monitor Risks

Project Procurement Management1. Plan Procurement Management
2. Conduct Procurements
3. Control Procurements

Project Stakeholder Management1. Identify Stakeholders
2. Plan Stakeholder Engagement
3. Manage Stakeholder Engagement
4. Monitor Stakeholder Engagement
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**Project Management Process Groups (5)**

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| Chapter 3 (PMBOK 6th Edition)1. Initiating
2. Planning
3. Executing
4. Monitoring and Controlling
5. Closing
 |  |  |  |  |  |  |  |  |  |  |  |
|  |  | Monitoring and Controlling |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | Planning |  |  |  |  |
|  | Initiating | 🡪 | 🡪 |  | 🡪 | 🡪 | Closing |  |
|  |  |  |  | Executing |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
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**Interrelationship between:**

* **Project Management Knowledge Areas (10)**
* **Project Management Processes (49)**
* **Project Management Process Groups (5)**

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|  |  | **Process Groups (5)** |
|  | **#=Processes (49)** | **Initiating** | **Planning** | **Executing** | **Monitoring &****Controlling** | **Closing** |
| **Knowledge Areas (10)** | Integration | 1 | 2 | 3,4 | 5,6 | 7 |
| Scope |  | 1,2,3,4 |  | 5,6 |  |
| Schedule |  | 1,2,3,4,5 |  | 6 |  |
| Cost |  | 1,2,3 |  | 4 |  |
| Quality |  | 1 | 2 | 3 |  |
| Resource |  | 1,2 | 3,4,5 | 6 |  |
| Communications |  | 1 | 2 | 3 |  |
| Risk |  | 1,2,3,4,5 | 6 | 7 |  |
| Procurement |  | 1 | 2 | 3 |  |
| Stakeholder | 1 | 2 | 3 | 4 |  |

|  |  |
| --- | --- |
|  | **Major Take-Aways** |
| **Knowledge Areas (10)** | Integration | Charter, Project Plan, Integrated Change Control, Close Project |
| Scope | Scope Statement, WBS (Work Breakdown Structure) |
| Schedule | Schedule, Gantt, CPM, PERT |
| Cost | Budget, EVM/EVA (Earned Value Management/Earned Value Analysis) |
| Quality | Quality Planning/Quality Assurance/Quality Control, 7 Basic Tools |
| Resource | Team Management, RAM (Responsibility Assignment Matrix), RACI Chart |
| Communications | Communications Plan, Meetings |
| Risk | Risk & Utility, Risk Register, Risk Responses |
| Procurement | Procurement Management Plan, RFP |
| Stakeholder | Stakeholder Register, Stakeholder Engagement Plan |

**PMBoK Knowledge Areas Breakdown.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | **Knowledge****Area** |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Process** |  | **Process** | **. . .** | **Process** |
|  |  |  |  |  |  |  |  |
|  | **ITTO** |  |  | **ITTO** |  |  | **ITTO** |
|  | **1. Inputs** |  |  | **1. Inputs** |  |  | **1. Inputs** |
|  | **2. Tools and** **Techniques** |  |  | **2. Tools and** **Techniques** |  |  | **2. Tools and** **Techniques** |
|  | **3. Outputs** |  |  | **3. Outputs** |  |  | **3. Outputs** |

For example, consider the structure of the Project Cost Management knowledge area.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | **Project Cost Management** |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **Plan Cost****Management** |  | **Estimate** **Costs** |  | **Determine** **Budget** |  | **Control****Costs** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | **ITTO** |  |  | **ITTO** |  |  | **ITTO** |  |  | **ITTO** |  |
|  | **1. Inputs** |  |  | **1. Inputs** |  |  | **1. Inputs** |  |  | **1. Inputs** |  |
|  | **2. Tools and** **Techniques** |  |  | **2. Tools and** **Techniques** |  |  | **2. Tools and** **Techniques** |  |  | **2. Tools and** **Techniques** |  |
|  | **3. Outputs** |  |  | **3. Outputs** |  |  | **3. Outputs** |  |  | **3. Outputs** |  |

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| --- |
| **Plan Cost Management** |
| Inputs1. Project charter2. Project Management Plan* Schedule management plan
* Risk management plan

**3. Enterprise environmental factors****4. Organizational process assets**Tools & Techniques1. Expert judgment2. Data Analysis3. MeetingsOutputs1. Cost management plan |