IT PROJECT MANAGEMENT

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Knowledge Areas	Project Management Process Groups				
	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring and Controlling Process Group	Closing Process Group
4. Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work 4.4 Manage Project Knowledge	4.5 Monitor and Control Project Work 4.6 Perform Integrated Change Control	4.7 Close Project or Phase
5. Project Scope Management		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS		5.5 Validate Scope 5.6 Control Scope	
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Project Quality Management

- Includes the processes for incorporating the organization's quality policy regarding planning, managing and controlling project and product quality requirements to meet stakeholders' objectives.
- Supports continuous process improvement activities.
- Processes
  - Plan Quality Management
  - Manage Quality
  - Control Quality
- Addresses the management of the project and the deliverables of the project.
- Meeting customer requirements by overworking the project team may result in
  - decreased profits
  - increased levels of overall project risks, employee attrition, errors and rework.
- Meeting project schedule objectives by rushing planned quality inspections may result in
  - undetected errors
  - decreased profits
  - increased post-implementation risks.

Project Quality Management

- Quality as a delivered performance or result is the degree to which a set of inherent characteristics fulfil requirements. (ISO 9000[18]).
- Grade as a design intent is a category assigned to deliverables having the same functional use but different technical characteristics.
- The project team together with the Project Manager are responsible for managing the trade-offs associated with delivering the required levels of both grade and quality.
- Quality level that fails to meet requirements is always a problem.
  - A low-grade product may not be a problem.
- Prevention is preferred over inspection.
  - Better to design quality into deliverables, rather than find quality issues during inspection.
  - Cost of preventing mistakes is generally much less than the cost of correcting mistakes.
- Terms
  - Prevention – keeping errors out of the processes
  - Inspection – keeping errors out of the hands of the customer

Project Quality Management

- Terms
  - Attribute sampling - the result either conforms or does not conform
  - Variable sampling – the result is rated on a continuous scale that measures the degree of conformity
  - Tolerances – specified range of acceptable results
  - Control limits - identify the boundaries of common variation in a statistically stable process or process performance.
- Cost of Quality (COQ)
  - Includes all costs incurred over the life of the product by:
    - Investment in preventing nonconformance to requirements
    - Appraising the product or service for conformance to requirements
    - Failing to meet requirements (rework).
- Levels of Effective Quality Management
  - Most expensive approach is to let the customer find the defects.
    - Can lead to warranty issues, recalls, loss of reputation and rework costs.
  - Detect and correct defects before deliverables are sent to customer.
  - Use quality assurance to examine and correct the process itself and not just special defects.
  - Incorporate quality into the planning and designing of the project and product.
  - Create a culture of awareness and commitment to quality in processes and products.

Project Quality Management

- Trends & Emerging Practices
  - Customer Satisfaction
    - Understand, evaluate, define and manage requirements to meet customer expectations.
    - Requires conformance to requirements
    - Fitness for use – the product or service satisfies the real needs
  - Continual Improvement
    - Plan-do-check-act (PDCA) cycle is the basis for quality improvement.
  - Management Responsibility
    - Should provide suitable resources at adequate capacities.
  - Mutually beneficial partnership with suppliers
- Tailoring Considerations
  - Policy compliance and auditing
  - Standards and regulatory compliance
  - Continuous Improvement
  - Stakeholder engagement

Project Quality Management

- Plan Quality Management
  - The process of identifying quality requirements and/or standards for the project and its deliverables.
  - Documenting how the project will demonstrate compliance with quality requirements and/or standards.
  - Provides guidance and direction on how quality will be managed and verified throughout the project.
  - Tools & Techniques
    - Expert judgment
    - Data gathering
      - Benchmarking
      - Brainstorming
      - Interviews
    - Data Analysis
      - Cost-benefit analysis
      - Cost of Quality
    - Decision making
      - Multicriteria decision analysis

Project Quality Management

- Plan Quality Management
  - Tools & Techniques
    - Data representation
      - Flowcharts
      - Logical data model
      - Matrix diagrams
      - Mind mapping
    - Test and inspection planning
    - Meetings
  - Outputs / Documents
    - Quality metrics
    - Project Management Plan updates
      - Risk Management Plan
      - Scope baseline
    - Project documents update
      - Lessons learned
      - Requirements traceability matrix
      - Risk Register
      - Stakeholder register

Project Quality Management

- Plan Quality Management
  - Outputs / Documents
    - Quality Management Plan
      - Quality standards that will be used by the project
      - Quality objectives of the project
      - Quality roles and responsibilities
      - Project deliverables and processes subject to quality review
      - Quality control and quality management activities planned for the project
      - Quality tools that will be used for the project
      - Major procedures relevant for the project, such as dealing with nonconformance, corrective actions procedures and continuous improvement procedures.

Project Quality Management

- Plan Quality Management
  - Expert Judgment
    - Quality assurance
    - Quality control
    - Quality measurements
    - Quality improvements
    - Quality systems
  - Cost of Quality
    - Cost of Conformance describes the amount of resources needed to achieve the quality requirements and targets of a project.
    - underlying rationale is to spend money on the prevention of quality issues rather than for fixing them
    - Prevention cost refers to money spent on actions and material that facilitate the creation of a quality deliverable.
      - Includes
        - training,
        - documentation,
        - equipment, and
        - sufficient time

Project Quality Management

- Plan Quality Management
  - Cost of Quality
    - Cost of Conformance includes
      - proper staffing of projects (getting the “best person for the job”),
      - market intelligence and lessons learned with respect to similar projects,
      - creating “spikes” (i.e. pilots) to test different approaches and choose the right one, as well as
      - any other activity that helps increase the quality of the output.
    - Appraisal cost.
      - the (financial and non-financial) resources that are consumed to assess and measure the quality of the deliverables of a project.
      - Includes:
        - testing,
        - destructive testing loss (i.e. testing the durability of a product which can involve losing the amount spent to produce that piece)
        - inspections or quality checks.
        - external quality audits,
        - measurement of quality indicators (e.g. quality gates), and
        - mystery shopping (i.e. testing a product or service from a customer’s perspective).

Project Quality Management

- Plan Quality Management
  - Cost of Quality
    - Cost of non-conformance is used as a synonym for failure cost.
      - It refers to the resources that are required to fix failures and take corrective actions but also to indirect effects from quality issues, such as negative business impact.
      - Internal failure costs are costs for those failures that are discovered by the project or the organization itself.
        - rework and scrap
      - External failure costs are referring to resources required to address customer complaints or lost business due to customer dissatisfaction.
        - Includes
          - liabilities,
          - warranty work,
          - lost business
        - In projects driven by legal and regulatory requirements, external failure costs can be fatal for an organization and even put their viability at risk.
    - COQ = Cost of Conformance + Cost of Non-Conformance (or failure costs)

Project Quality Management

- **Manage Quality**
  - The process of translating the quality management plan into executable quality activities that incorporate the organization's quality policies into the project.
  - the process of auditing the quality requirements and the results from quality control measurements to ensure that appropriate quality standards and operational definitions are used.
  - The quality audits test and/or confirm that the system is functioning correctly.
  - Quality assurance should always be based on a foundation of continuous improvement.
  - Tools & Techniques
    - Data gathering
      - Checklists
    - Data analysis
      - Alternatives analysis
      - Document analysis
      - Process analysis
      - Root cause analysis
    - Decision making
      - Multicriteria decision analysis
    - Audits
    - Design for X
    - Problem solving

Project Quality Management

- **Manage Quality**
  - Tools & Techniques
    - Data representation
      - Affinity diagrams
      - Cause-and-effect diagrams
      - Flowcharts
      - Histograms
      - Matrix diagrams
      - Scatter diagrams
    - Quality improvement methods
  - **Outputs**
    - Quality reports
    - Test and evaluation documents
    - Change requests
    - Project management plan updates
      - Quality management plan
      - Scope baseline
      - Schedule baseline
      - Cost baseline
  - Project documents updates
    - Issue log
    - Lessons learned register
    - Risk register

Project Quality Management

- **Control Quality**
  - the process of monitoring and recording results of executing the quality management activities to assess performance and ensure the project outputs are complete, correct, recommend necessary changes and meet customer expectations.
  - Key benefit is verifying that project deliverables and work meet the requirements specified by key stakeholders for final acceptance.
  - Determines if the project outputs do what they were intended to do.
    - Outputs should comply with all applicable standards, requirements, regulations and specifications.
  - Covers the measurement of defects
- **Tools & Techniques**
  - Data gathering
    - Checklists
    - Check sheets
    - Statistical sampling
    - Questionnaires and surveys

Project Quality Management

- Control Quality
  - Outputs
    - Quality control measurements
    - Verified deliverables
    - Work performance information
    - Change requests
    - Project management plan updates
      - Quality management plan
    - Project documents updates
      - Issue log
      - Lessons learned register
      - Risk register
      - Test and evaluation documents

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Project Resource Management

- includes the processes to identify, acquire, and manage the resources needed for the successful completion of the project.
- Processes
  - Plan Resource Management
  - Estimate Activity Resources
  - Acquire Resources
  - Develop Team
  - Manage Team
  - Control Resources
- Resources include both team and physical resources.
  - Physical resources include
    - Equipment
    - Materials
    - Facilities
    - Infrastructure

Project Resource Management

- Project team consists of individuals with assigned roles and responsibilities who work collectively to achieve a shared project goal.
- Efforts should be invested in acquiring, managing, motivating and empowering the team.
- Project Manager responsibilities in team management include considering the following factors:
  - Team environment
  - Geographical locations of team members
  - Communications among stakeholders
  - Organizational change management
  - Internal and external politics
  - Cultural issues and organizational uniqueness
  - Other factors that may alter project performance.
- Project Manager responsibilities include:
  - Proactively developing team skills and competencies
  - Retaining and improving team satisfaction and motivation
  - Awareness and subscription to professional and ethical behaviors

Project Resource Management

- Physical resource management concentrate on allocation and usage of physical resources needed for successful completion of the project in an efficient and effective way.
- Trends & Emerging Practices
  - Resource management methods
    - Lean management
    - Just-in-time (JIT) manufacturing
    - Kaizen
    - Total productive Maintenance (TPM)
    - Theory of Constraints (TOC)
  - Emotional Intelligence (EI)
    - Self Management
    - Self-awareness
    - Relationship Management
  - Self-organizing teams
  - Virtual teams/distributed teams

Project Resource Management

- Tailoring Considerations
  - Diversity
  - Physical location
  - Industry-specific resources
  - Acquisition of team members
  - Management of team
  - Life cycle approaches

Project Resource Management

- **Plan Resource Management**
  - The process of defining how to estimate, acquire, manage and use team and physical resources.
  - It establishes the approach and level of management effort needed in managing project resources based on the type and complexity of the project.
  - **Tools & Techniques**
    - Expert judgment
    - Data representation
      - Hierarchical charts
        - Work Breakdown Structures
        - Organizational breakdown Structures
        - Resource Breakdown Structure
      - Responsibility assignment matrix
      - Text-oriented formats
      - Organizational theory
    - Meetings

Project Resource Management

- **Plan Resource Management**
  - **Tools & Techniques**
    - Responsibility Assignment Matrix (RAM)
      - Shows the project resources assigned to each work package.
      - Illustrates the connections between work packages, or activities and project team members.
      - Used to designate roles, responsibilities and levels of authority for specific activities.
      - Shows all activities associated with one person and all people associated with one activity.
      - Ensures that there is only one person accountable for any one task
      - Is a RACI (responsible, accountable, consult and inform) chart
        - Who is responsible for completing the task or making the decision
        - Who is accountable for the project overall or must review and sign off on deliverables and decisions
        - Who needs to be consulted to provide input on a particular item or task
        - Who needs to be kept informed on project progress and completion

RACI CHART

Step	Project Initiation	Project Executive	Project Manager	Business Analyst	Technical Architect	Application Developers
1	Task 1	C	A/R	C	I	I
2	Task 2	A	I	R	C	I
3	Task 3	A	I	R	C	I
4	Task 4	C	A	I	R	I

Project Resource Management

- **Plan Resource Management**
  - Outputs
    - Resource management plan
    - Team charter
    - Project documents updates
      - Assumption log
      - Risk register