Project Cost, Schedule and Quality Management

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- Project Human Management

Project Cost Management

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What is Cost and Project Cost Management?

- **Cost** is a resource sacrificed or foregone to achieve a specific objective or something given up in exchange
  - *Usually measured in monetary units like dollars that must be paid to acquire goods and services*

Project cost management includes the processes required to ensure that the project is completed within an approved budget

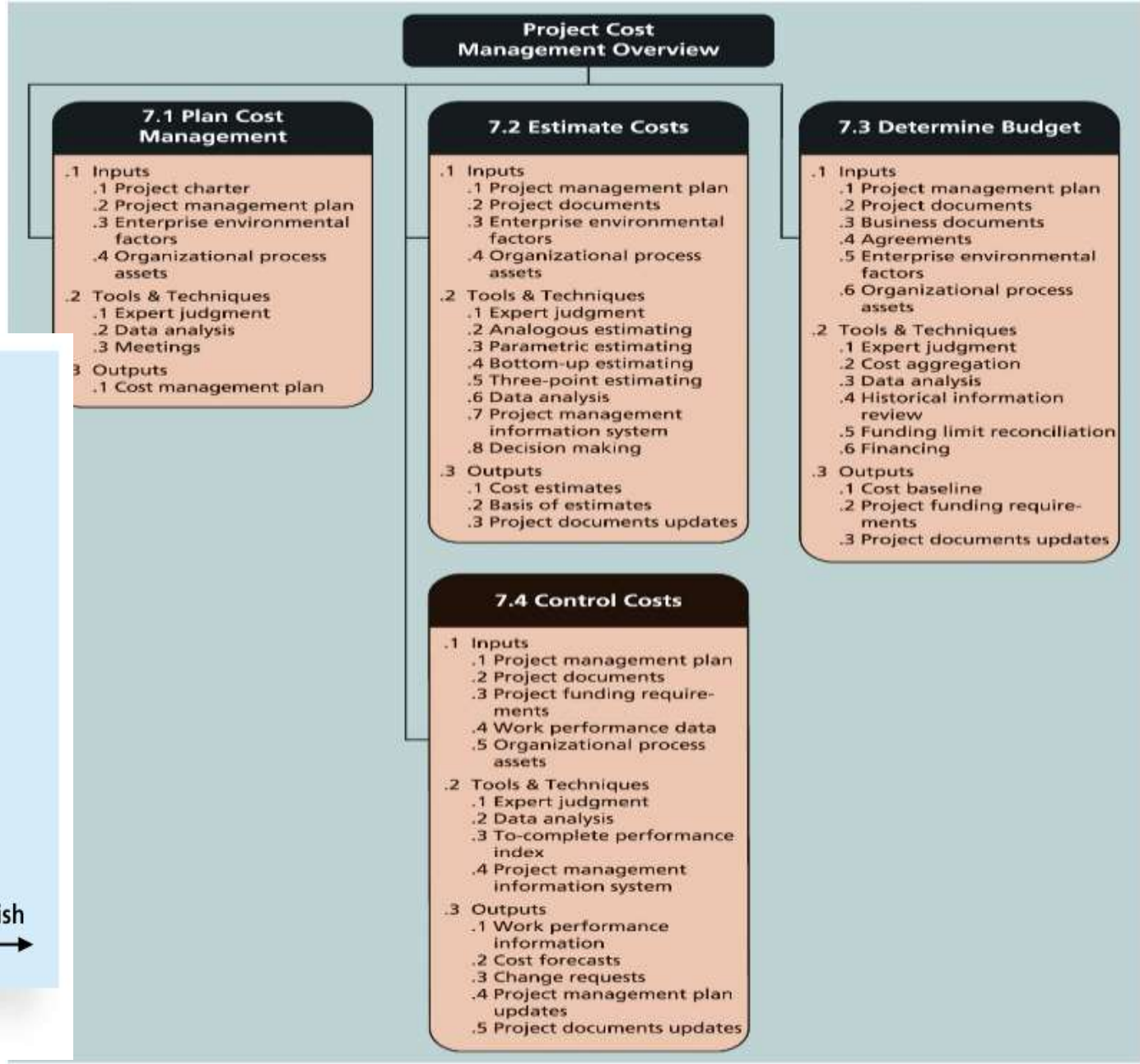
- ***Planning cost management:*** *determining the policies, procedures, and documentation that will be used for planning, executing, and controlling project cost*
- ***Estimating costs:*** *developing an approximation or estimate of the costs of the resources needed to complete a project*
- ***Determining the budget:*** *allocating the overall cost estimate to individual work items to establish a baseline for measuring performance*
- ***Controlling costs:*** *controlling changes to the project budget*

What is Project Cost Management?

Planning
Process: **Plan cost management**
Outputs: Cost management plan
Process: **Estimate costs**
Outputs: Activity cost estimates, basis of estimates, project documents updates
Process: **Determine budget**
Outputs: Cost baseline, project funding requirements, project documents updates

Monitoring and Controlling
Process: **Control costs**
Outputs: Work performance information, cost forecasts, change requests, project management plan updates, project documents updates, organizational process assets updates

Project Start → **Project Finish**



Basic Principles of Cost Management

- Most members of an executive board better understand and are more interested in financial terms than IT terms; they need to be able to present and discuss project information in both
  - ***Profits****: revenues minus expenditures*
  - ***Profit margin:*** *ratio of profits to revenues*
  - ***Life cycle costing****: considers total cost of ownership, or development plus support costs, for a project*
  - ***Cash flow analysis****: determines estimated annual costs and benefits for a project and resulting annual cash flow*

Types of Costs and Benefits

- **Tangible costs** or **benefits** are those costs or benefits that an organization can easily measure in dollars
- **Intangible costs** or **benefits** are costs or benefits that are difficult to measure in monetary terms
- **Direct costs** are costs that can be directly related to producing the products and services of the project
- **Indirect costs** are costs that are not directly related to the products or services of the project, but are indirectly related to performing the project
- **Sunk cost** is money that has been spent in the past; when deciding what projects to invest in or continue, you should *not* include sunk costs

Planning Cost Management

- The first step in project cost management is planning how the costs will be managed throughout the life of the project
- The project team uses expert judgment, analytical techniques, and meetings to develop the cost management plan
- A cost management plan includes:
  - *Level of accuracy and units of measure*
  - *Organizational procedure links*
  - *Control thresholds*
  - *Rules of performance measurement*
  - *Reporting formats*
  - *Process descriptions*

Estimating Costs

- Project managers must take cost estimates seriously if they want to complete projects within budget constraints

- It's important to know the types of cost estimates, how to prepare cost estimates, and typical problems associated with IT cost estimates
  - *Types of cost estimates*
  - *Tools and techniques for estimating costs*
  - *Typical problems associated with IT cost estimates*

Typical Problems with IT Cost Estimates

Reasons for inaccuracies

- Estimates are done too quickly
- People lack estimating experience
- Human beings are biased toward underestimation
- Management desires accuracy

Determining the Budget

- Cost budgeting involves allocating the project cost estimate to individual work items over time
- The WBS is a required input to the cost budgeting process since it defines the work items
- Important goal is to produce a **cost baseline**
  - *a time-phased budget that project managers use to measure and monitor cost performance*

Controlling Costs

- Activities involved in controlling project costs
  - *Monitoring cost performance*
  - *Ensuring that only appropriate project changes are included in a revised cost baseline*
  - *Informing project stakeholders of authorized changes to the project that will affect costs*
- Several tools and techniques assist in project cost control
  - *Expert judgment, data analysis, project management information systems, and the to-complete performance index*

Project Schedule (Time) Management

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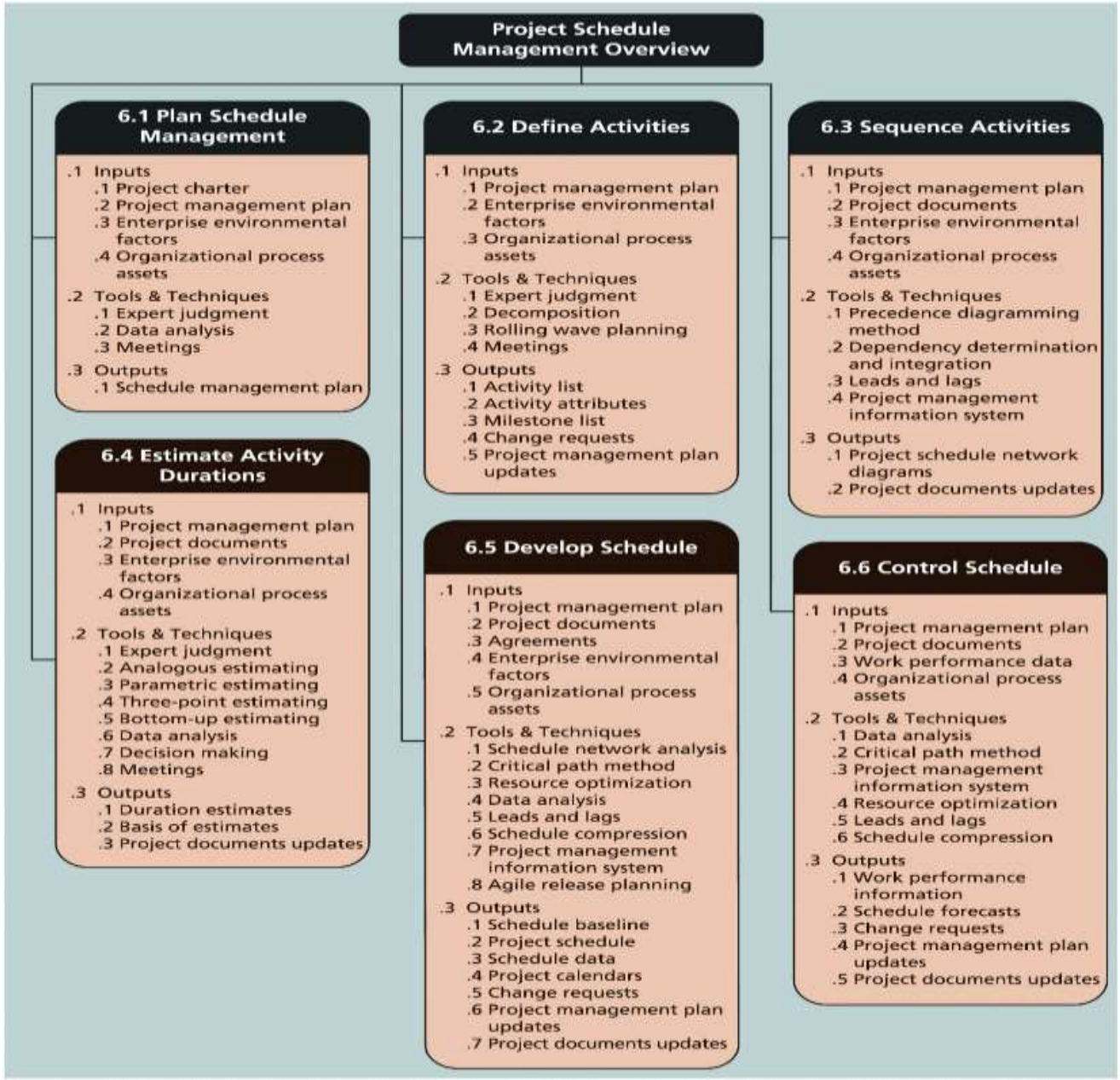
The Importance of Project Schedules

- Managers often cite delivering projects on time as one of their biggest challenges
  - *Time has the least amount of flexibility; it passes no matter what happens on a project*
- Individual work styles and cultural differences may also cause schedule conflicts
  - *Different cultures and even entire countries have different attitudes about schedules*

Project Time Management Processes

- Project time management involves the processes required to ensure timely completion of a project. Processes include:
  - *Activity definition*
  - *Activity sequencing*
  - *Activity duration estimating*
  - *Schedule development*
  - *Schedule control*

The Importance of Project Schedules



Activity Definition

- Activity definition involves developing a more detailed WBS and supporting explanations to understand all the work to be done so you can develop realistic duration estimates
  - *Activity list: a tabulation of activities to be included on a project schedule*
    - Activity name, activity identifier or number, and brief description of the activity
  - *Activity attributes provide more information*
    - Predecessors, successors, logical relationships, leads and lags, resource requirements, constraints, imposed dates, and assumptions related to the activity

Activity Sequencing

- Sequencing process involves evaluating the reasons for dependencies and the different types of dependencies
- A dependency or relationship is the sequencing of project activities or tasks
  - *Mandatory dependencies: inherent in the nature of the work; hard logic*
  - *Discretionary dependencies: defined by the project team; soft logic*
  - *External dependencies: involve relationships between project and non-project activities*
- You *must* determine dependencies in order to use critical path analysis

Estimating Activity Durations

- Duration includes the actual amount of time worked on an activity plus elapsed time
  - *Effort is the number of workdays or work hours required to complete a task and does not normally equal duration*
- People doing the work should help create estimates
  - *An expert should review them*
- A three-point estimate is an estimate that includes an optimistic, most likely, and pessimistic estimate
  - *Three-point estimates are needed for PERT and Monte Carlo simulations*

Developing the Schedule

- Uses results of the other time management processes to determine the start and end date of the project
  - *Ultimate goal is to create a realistic project schedule that provides a basis for monitoring project progress for the time dimension of the project*
- Important tools and techniques
  - *Gantt charts*
  - *Critical path analysis*
  - *Critical chain scheduling*
  - *PERT analysis*

Controlling the Schedule

- Goals of schedule control
  - *Know the status of the schedule*
  - *Influence the factors that cause schedule changes*
  - *Determine that the schedule has changed*
  - *Manage changes when they occur*
- Main inputs to schedule control
  - *Project management plan*
  - *Project documents*
  - *Work performance data*
  - *Organizational process assets*

Project **Quality** Management

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The Importance of Project Quality Management

- Many people joke about the poor quality of IT products (see cars and computers joke)
  - *Most people simply accept poor quality*
  - *Quality is very important*

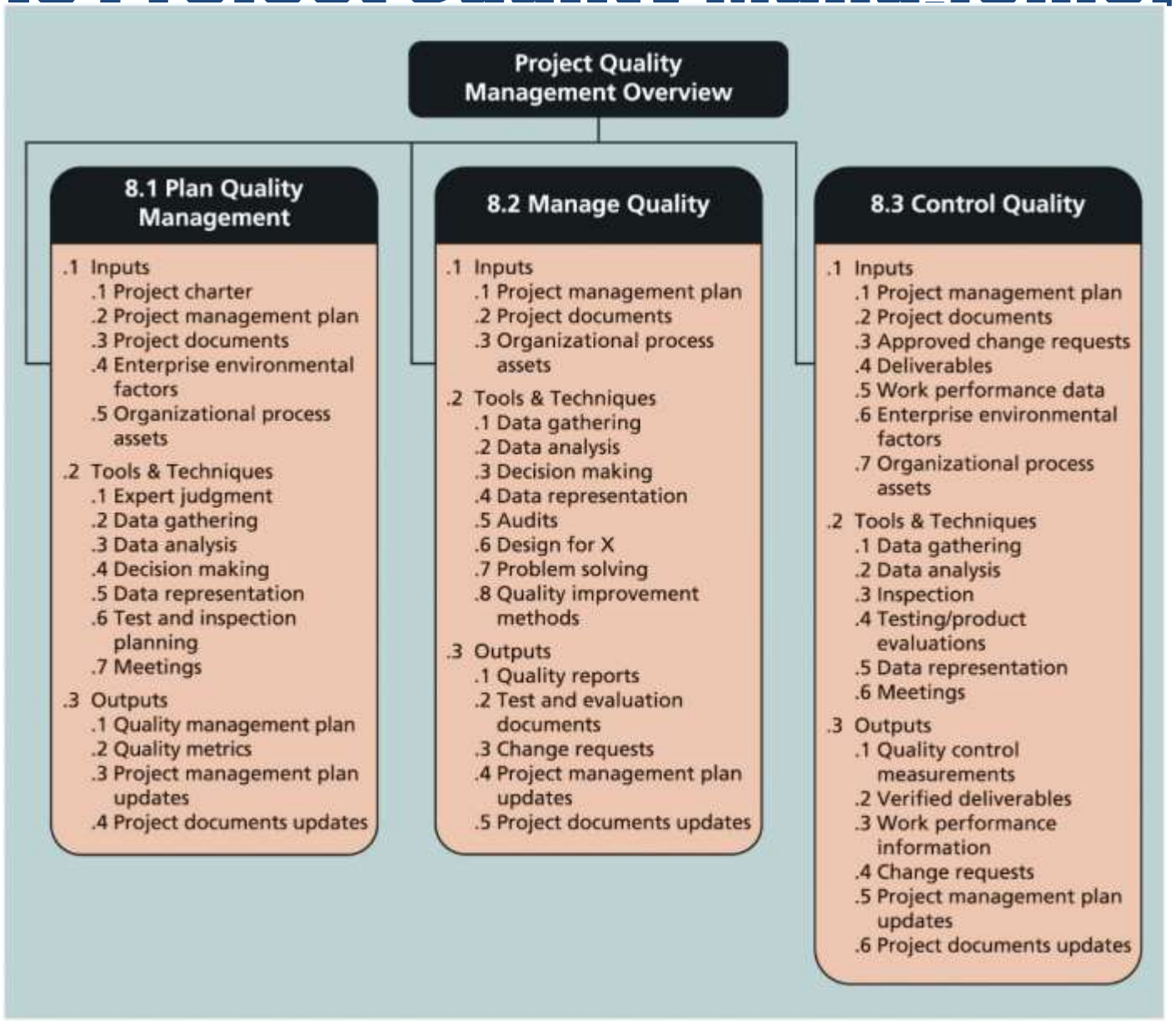
What Is Project Quality Management?

- International Organization for Standardization (ISO) definition of quality
  - *"Totality of characteristics of an entity that bear on its ability to satisfy stated or implied needs" (ISO8042:1994)*
  - *"The degree to which a set of inherent characteristics fulfils requirements" (ISO9000:2000)*
- Other definitions of quality
  - *Conformance to requirements*
    - Project's processes and products meet written specifications
  - *Fitness for use*
    - Product can be used as it was intended

What Is Project Quality Management?

- Project quality management ensures the project will satisfy the needs for which it was undertaken
- Project quality management processes
  - *Planning quality management: identifying which quality standards are relevant to the project and how to satisfy them; a metric is a standard of measurement*
  - *Managing quality: translating the quality management plan into executable quality activities*
  - *Controlling quality: monitoring specific project results to ensure they comply with the relevant quality standards*

What Is Project Quality Management?



Planning Quality Management

- Implies the ability to anticipate situations and prepare actions to bring about the desired outcome
- Defect prevention methods
  - *Selecting proper materials*
  - *Training and indoctrinating people in quality*
  - *Planning a process that ensures the appropriate outcome*

Planning Quality Management

- Scope aspects of IT projects
  - *Functionality: degree to which a system performs its intended function*
  - *Features: system's special characteristics that appeal to users*
  - *System outputs: screens and reports the system generates*
  - *Performance addresses: how well a product or service performs the customer's intended use*
  - *Reliability: ability of a product or service to perform as expected under normal conditions*
  - *Maintainability: ease of performing maintenance on a product*
- All project stakeholders must work together to balance the quality, scope, time, and cost dimensions of the project
  - *Project managers are ultimately responsible for quality management on their projects*

Managing Quality

- Quality assurance includes all the activities related to satisfying the relevant quality standards for a project
  - *Another goal is continuous quality improvement*
  - *Kaizen is the Japanese word for improvement or change for the better*
  - *Lean involves evaluating processes to maximize customer value while minimizing waste*
  - *Benchmarking generates ideas for quality improvements by comparing specific project practices or product characteristics to those of other projects or products within or outside the performing organization*
  - *A quality audit is a structured review of specific quality management activities that help identify lessons learned that could improve performance on current or future projects*

Controlling Quality

- Main outputs of quality control
  - *Acceptance decisions*
  - *Rework*
  - *Process adjustments*
- Basic tools of quality that help in performing quality control
  - *Cause-and-effect diagrams*
  - *Control chart*
  - *Scatter diagram*
  - *Histogram*
  - *Flowcharts/run charts*

Modern Quality Management

- Modern quality management:
  - *Requires customer satisfaction*
  - *Prefers prevention to inspection*
  - *Recognizes management responsibility for quality*

Project **Resource** Management

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The Importance of Resource Management

- People determine the success and failure of organizations and projects
  - *Most project managers agree that managing human resources effectively is one of the toughest challenges they face*
  - *Managing people is a vital component of project resource management*
- Proactive organizations are addressing human resource needs
  - *Improving benefits*
  - *Redefining work hours and incentives*
  - *Finding future workers*

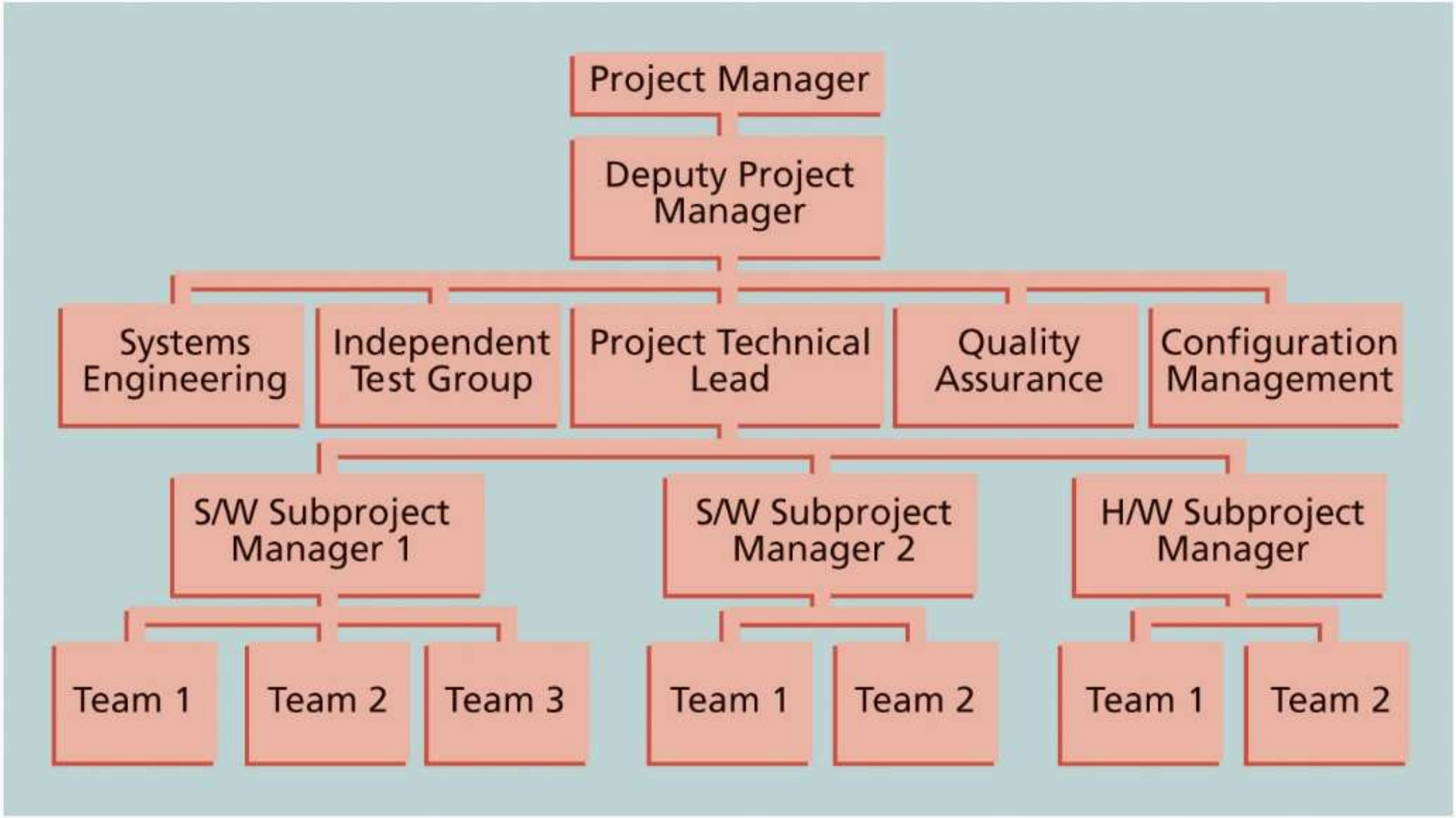
What is Project Resource Management?

- Making the most effective use of the human and physical resources involved with a project
  - *Planning resource management*
  - *Estimating activity resources*
  - *Acquiring resources*
  - *Developing the project team*
  - *Managing the project team*
  - *Controlling resources*

Developing the Resource Management Plan and Team Charter

- Involves identifying and documenting project resources, roles, responsibilities, skills, and reporting relationships
  - *Can be separated into a human resource management plan and a physical resource management plan*
- Contents include:
  - *Project organizational charts*
  - *Responsibility assignment matrixes*
  - *Staffing management plan and resource histograms*
  - *Team charters*

Developing the Resource Management Plan and Team Charter



Estimating Activity Resources

- Tools that can assist in resource estimating
  - *Expert judgment*
  - *Various estimating approaches*
  - *Data analysis*
  - *Project management software*
  - *Meetings*

Acquiring Resources and Developing the Project Team

- During the late 1990s, the IT job market became extremely competitive
  - *Today, many organizations again face a shortage of IT staff*
- Regardless of the current job market, acquiring qualified IT professionals is critical
- The main goal of team development is to help people work together more effectively to improve project performance
  - *It takes teamwork to successfully complete most projects*
- *Training*
  - *Project managers often recommend that people take specific training courses to improve individual and team development*
- Team-building activities
  - *Physical challenges*
  - *Psychological preference indicator tools*

Managing the Project Team

- Project managers must lead their teams in performing various project activities
- After assessing team performance and related information, the project manager must make several decisions
  - *Changes to be requested*
  - *Corrective or preventive actions*
  - *Updates needed*
- Several tools and techniques are available to assist in managing project teams
  - *Interpersonal and team skills*
  - *Project management information systems*
  - *Conflict management*

Controlling Resources

- Ensuring physical resources assigned to the project are available as planned
  - *Also involves monitoring the planned versus actual resources utilization and taking corrective actions as needed*

Thank you once again

and God bless you more