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Project Planning & Scheduling

Objectives

- **To introduce and discuss key concepts and techniques for planning and scheduling major projects**
- **To provide ideas for development of a practice session to apply these planning and scheduling techniques**

Key Project Management Concepts

Typical Duties Of A Project Manager

Planning

- Become completely familiar with project objectives and deliverables
- Develop the basic plan for executing and controlling the project
- Direct the preparation of the project budget and schedule
- Direct the preparation of basic project design criteria and general specifications
- Review plans and procedures periodically and institute changes if necessary

Organizing

- Develop organization for project
- Review project position descriptions, outlining duties and responsibilities
- Participate in the selection of key project members
- Develop project manpower requirements
- Continually review project organization and recommend changes in organizational structure and personnel, if necessary

Directing

- Direct all work on the project
- Develop and maintain a system for decision making within the project
- Promote growth of project members
- Establish objectives for project manager and performance goals for project members
- Foster and develop a spirit of project team effort
- Assist in resolution of differences or problems between departments or groups on assigned projects
- Anticipate and avoid or minimize potential problems by maintaining current knowledge of overall project status

Controlling

- Monitor project activities to assure attainment of project objectives
- Interpret, communicate, and require compliance with the approved plan and schedule, and project procedures
- Closely monitor project activities. Establish change notice procedure to evaluate and communicate scope changes
- Ensure the plans for controlling and reporting on costs, schedule, and quality are effectively utilized
- Maintain effective communications with all groups performing project work

Top Ten Reasons For Schedule & Budget Overruns

- 1) Insufficient front end planning
- 2) Unrealistic project plan
- 3) Project scope underestimated
- 4) Management changes
- 5) Insufficient contingency planning
- 6) Inability to track progress
- 7) Inability to detect problems early
- 8) Insufficient number of checkpoints
- 9) Staffing problems
- 10) Technical difficulties

Criteria For Effective Project Control

- 1) Develop a detailed project plan involving all key personnel
- 2) Break the overall project into phases and sub-groups
- 3) Clearly define specific deliverables and tangible results
- 4) Define measurable milestones and check points
- 5) Gain buy-in from executive sponsors and key project personnel
- 6) Define interfaces with supporting functions and assure the early and on-going involvement of key people
- 7) Establish measurement baselines & track project performance data
- 8) Define/implement a project tracking process to summarize project performance and highlight accomplishments & potential risks
- 9) Schedule routine project reviews, both at the project team and at the executive sponsor levels
- 10) Implement an on-going communications plan to address project needs

Planning & Scheduling Techniques

An Overview Of Project Planning

Four basic reasons for Project Planning:

- To obtain a better understanding of the objectives
- To eliminate or reduce uncertainty
- To improve the efficiency of the assigned resources
- To provide a basis for monitoring and controlling work

Major components of Project Planning include:

- Statement of Work (SOW)
- Work Breakdown Structure (WBS)
- Milestone Schedule
- Project Approach
- Project Schedule
- Resource Assignment
- Change Control
- Progress Reporting

Statement of Work (SOW)

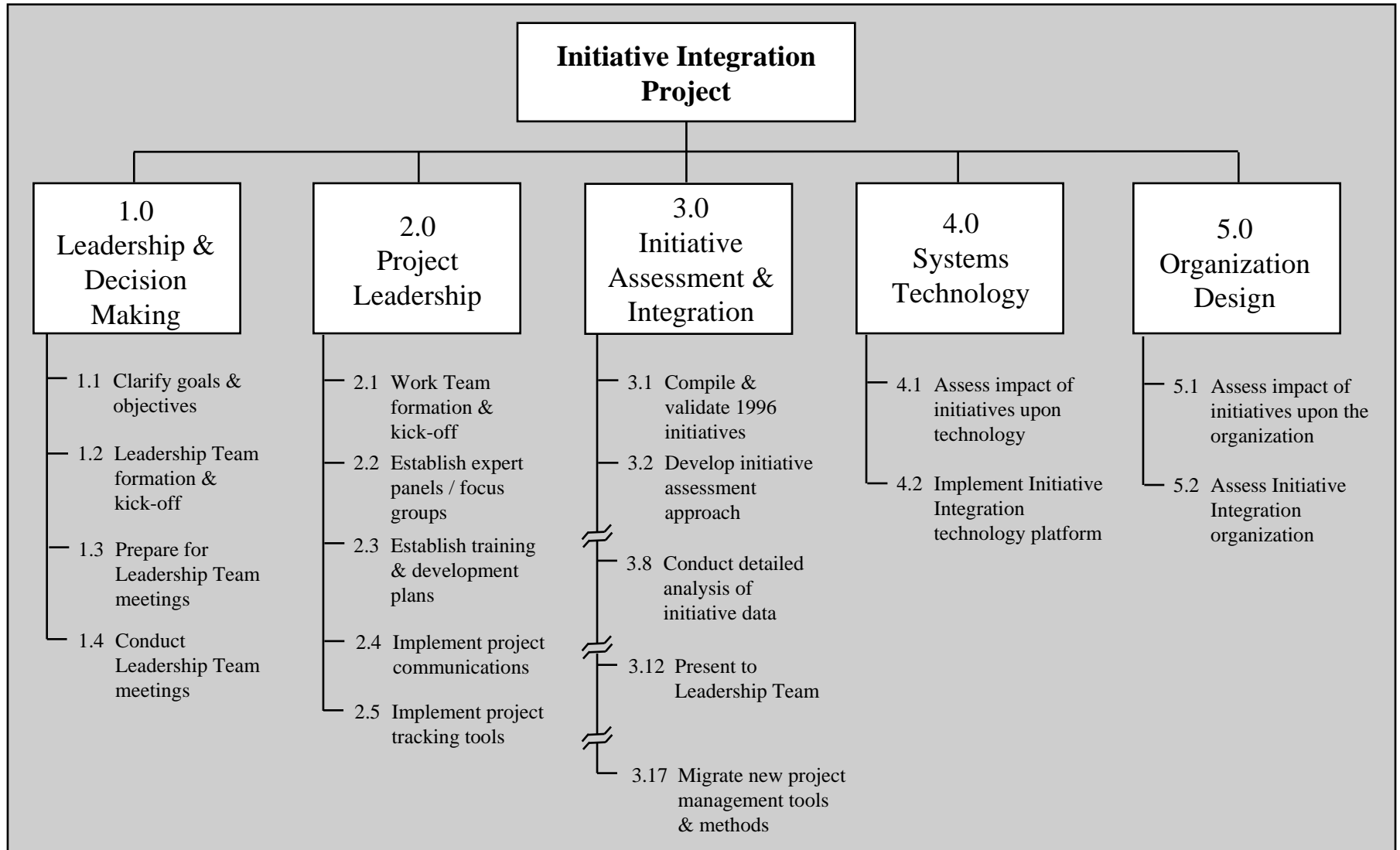
- A written agreement which communicates mutual understanding and clarifies the exact deliverables expected to result from the project
- Prepared by the person / organization performing the work (Accountable Executive &/or Project Lead) in partnership with the organization receiving the benefits
- Always answers three questions for the Executive Sponsor
 - 1) What am I getting?
 - 2) When am I getting it?
 - 3) How much will it cost?
- Should be approved before work begins; serves as the foundation upon which all subsequent project documentation is built

Work Breakdown Structure (WBS)

Virtually every project can be divided into major phases, then further subdivided into a hierarchy of discrete tasks necessary to complete the desired work.

- A completed WBS is critical since many project failures are the result of overlooked tasks required for successful project delivery
- Provides the basis for accurate estimates of project time, resources and overall cost
- Enables the assignment of team and individual accountability for deliverables

Example Of A WBS For An Initiative Integration Project



Milestone Schedule

- Milestones are major events which occur on, or by, a certain date. By virtue of being an *event*, they have a duration time of zero.
- Typical project milestones include:
 - Key decisions
 - Completion of project deliverables
 - Completion of major phases of work
- A ‘Milestone Schedule’ is simply the definition of these major events in relation to a timeline for the project.
- Milestone Schedules are used both during the definition of the project to help communicate the completion of key milestones (decisions, deliverables, major phases), and during routine status updates to show progress toward the timely completion of project milestones.

Project Approach

- The Project Approach is the overall method by which the project objectives will be realized.
- An approach typically includes the following elements:
 - A definition of the major phases of work
 - A timescale for the project
 - Methodologies and tools to be employed
 - Tactical strategies for the completion of work
- The Project Approach will also show the linkage of these elements to the deliverables of the project.
- A Project Logic may also be used to help clarify project objectives, goals, critical factors for project success, and deliverables.

Example Of A Project Logic For An Initiative Integration Project

Objective

To manage the implementation of initiatives in the field organization to assure their alignment with the business goals, minimize disruption to field operations, ensure effectiveness of implementation methods, and identify the proper sequencing & scope of change.

<i>Goals</i>	<i>CSF's</i>	<i>Work Streams</i>	<i>Deliverables</i>
<ul style="list-style-type: none"> • Assess major improvement initiatives which will significantly impact the field sales operations. • Develop insights & implementation alternatives, and provide recommendations to prioritize, sequence, integrate, improve and accelerate current plans. • Partner with members of Initiative Integration to transfer project management tools, methods, and skills. 	<ul style="list-style-type: none"> • Visible leadership from members of the Leadership Team • Dedicated team members from Initiative Integration • Continued focus on the Project as a high priority for top management • The active involvement of key management groups and committees • Positive energy, enthusiasm, and a willing attitude for learning • Maintain a balanced, company-wide perspective 	<ul style="list-style-type: none"> • Project Leadership and Decision Making • Stream Leadership and Team Development • Initiative Assessment & Integration • Systems Technology • Organization Structure 	<ul style="list-style-type: none"> • Identify implementation risks and develop recommendations to mitigate • Recommend sequence of change at the agency level • An integrated view of the impact of change at the agency level • A problem solving & decision making process for the Leadership Team • A process to effectively link / integrate with key organization areas • The archival of tools, methods, training, & lessons learned • The transfer of skills, tools, methods to team members • Redefine/validate the charter & core capabilities for Initiative Integration

Project Management Models / Systems

Critical Path Method (CPM)

Developed in the 1950s by DuPont; calculates the total duration of a project based on individual task durations and dependencies, and identifies which tasks are critical. This model is the fundamental scheduling method used in project management software.

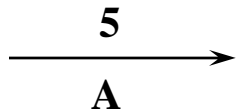
Program Evaluation Review Technique (PERT)

Developed in the 1950s by the US Navy on the Polaris Missile Project. Uses statistical probabilities to calculate individual task and project duration. A PERT chart refers to the graphic representation of task relationships; sometimes called a network diagram.

Gantt Chart

Developed in 1910 by Henry L. Gantt to graphically represent activities across a timescale. Many project management systems use Gantt Charts to create schedules and track progress; sometimes called a bar graph.

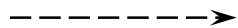
Network Diagram Symbols



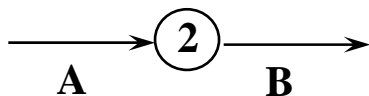
Activity or Task: Number on top of arrow is an estimate of it's duration. Letter on the bottom is its identification.



Node: The beginning or end of an activity.



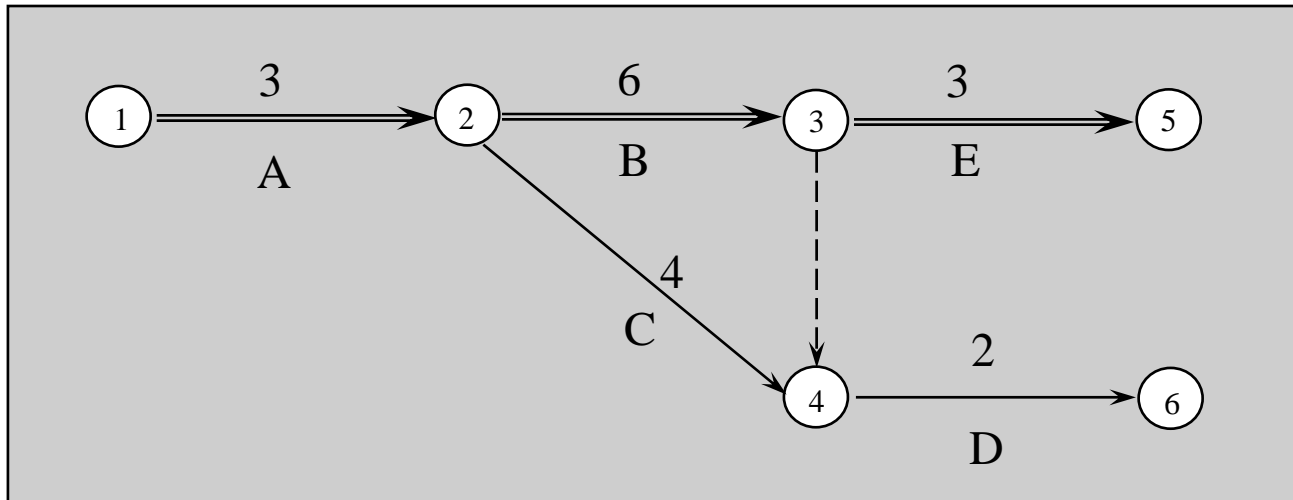
Dummy Activity: Used to accurately represent relationships of activities; requires no time or resources.



Activity 'A' must complete before activity 'B' begins.

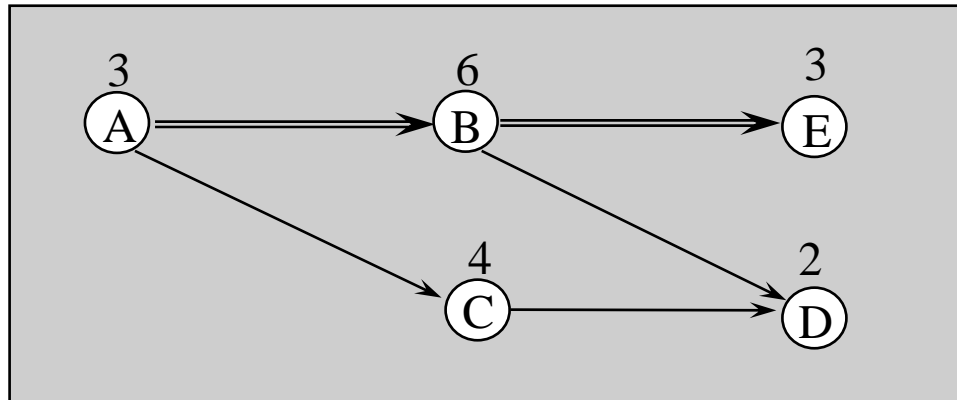
An Example Of A Network Diagram

<u>Activity</u>	<u>Duration</u>	<u>Preceding Activities</u>
A	3	None
B	6	A
C	4	A
D	2	B, C
E	3	B



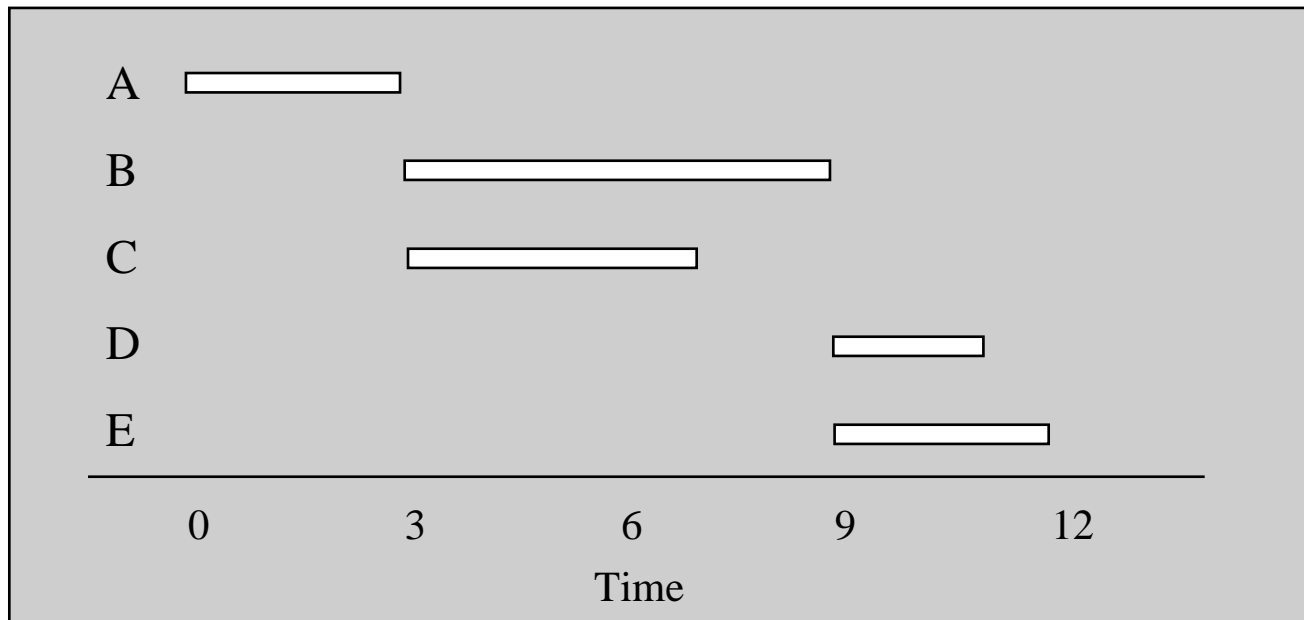
'Activity On The Node' Network Diagram

<u>Activity</u>	<u>Duration</u>	<u>Preceding Activities</u>
A	3	None
B	6	A
C	4	A
D	2	B, C
E	3	B



An Example Of A Gantt Chart

<u>Activity</u>	<u>Duration</u>	<u>Preceding Activities</u>
A	3	None
B	6	A
C	4	A
D	2	B, C
E	3	B



Advantages Of Networks Over Gantt Charts

- Explicit representation of the sequential relationship between the activities that must be performed to complete the project
- Ease in determining the critical path
- Ease in determining activities whose completion on schedule is not critical to the completion of the project on schedule
- Ability to determine the impact on project completion of the probability of different activities being completed in less, or in more, time than the most likely time estimate (PERT)

Resource Assignment

- Once all project tasks have been identified, the project manager must answer three key questions as part of the resource assignment process:
 - What people skills & resources are required for each project task?
 - Where do these people resources exist within the organization?
 - What type of project organizational structure will be best?
- Upon the identification of these resources and their assignment to specific tasks & deliverables, projections can be made for each individual's required time commitment to the project.
- This, of course, requires the previous development of estimated times for the completion of each scheduled task.

Change Control

- Effective project management anticipates change and enables the project team to be responsive to changes, rather than reactive to events
- A process to analyze and evaluate the impact of proposed changes upon the project plans.
- Approved changes are documented and incorporated into project documentation as appropriate.
- Change may impact many areas of the project:
 - Scope / boundaries
 - Level of effort
 - Required deliverables
 - Personnel / Resources
 - Budget or Finish Date
 - Priority

Progress Reporting

Progress reporting is required at both the project team and the executive sponsor levels. This process consists of four recurring steps:

- Gather update information and determine overall project status
- Assess project status:
 - Compare current status to plan
 - Evaluate discrepancies & trends
 - Identify problems & potential risks
- Develop corrective action steps:
 - Reallocate resources
 - Adjust priorities
 - Obtain required decisions
 - Re-schedule task finish dates
- Communicate required action plans:
 - Provide follow-up to assure their completion