

A Short Course in Project Management: 3rd Capstone Orientation

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Sponsor: SIE, Mayaguez Student Chapter



Break Timer





Project Management Tools and Techniques

An Introductory Course in Project
management Foundations



Break Timer



What Is Project Management?

“Project management is the application of knowledge, skills, tools, and techniques to project activities in order to meet or exceed stakeholder needs and expectations.”

Source: Project Management Institute



Break Timer



What Is a Project?

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

Source: PMI



Break Timer



Project Manager

“The person who is responsible for the project and will be held accountable for its success or failure.”



Break Timer



The Triple Constraint

Project Scope

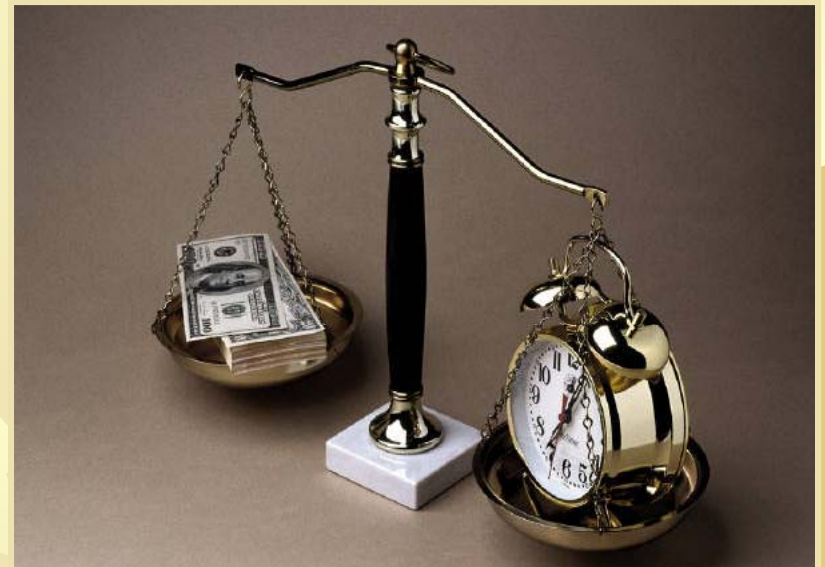


Break Timer



Balancing the “Project Success Triangle”

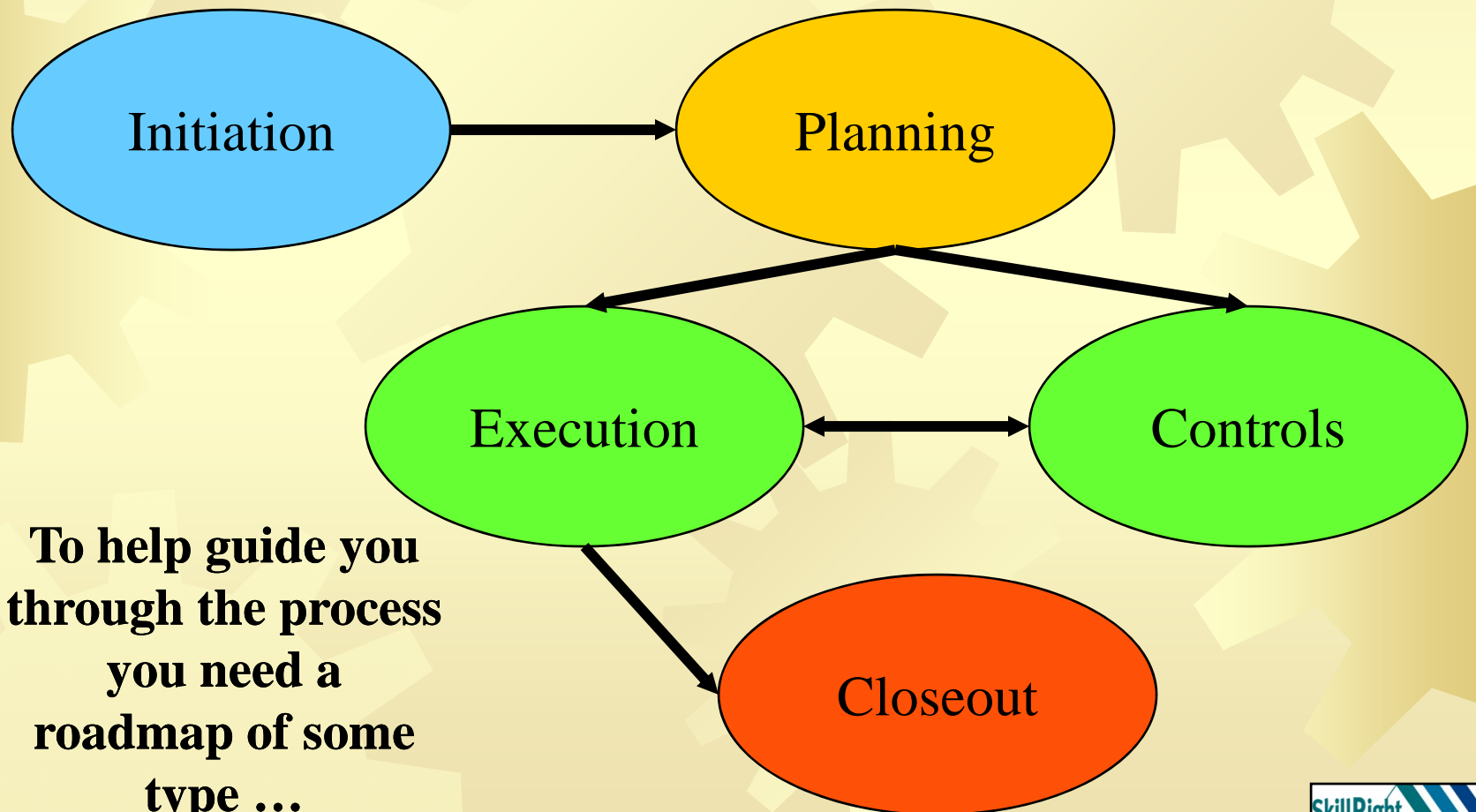
- ★ A clear understanding of customer priorities
- ★ “People” skills
- ★ Thorough planning
- ★ An organized, structured process



Break Timer

Project Management Process

Source: PMBOK



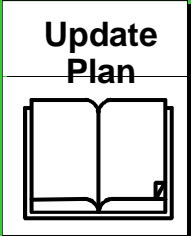
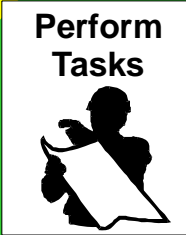
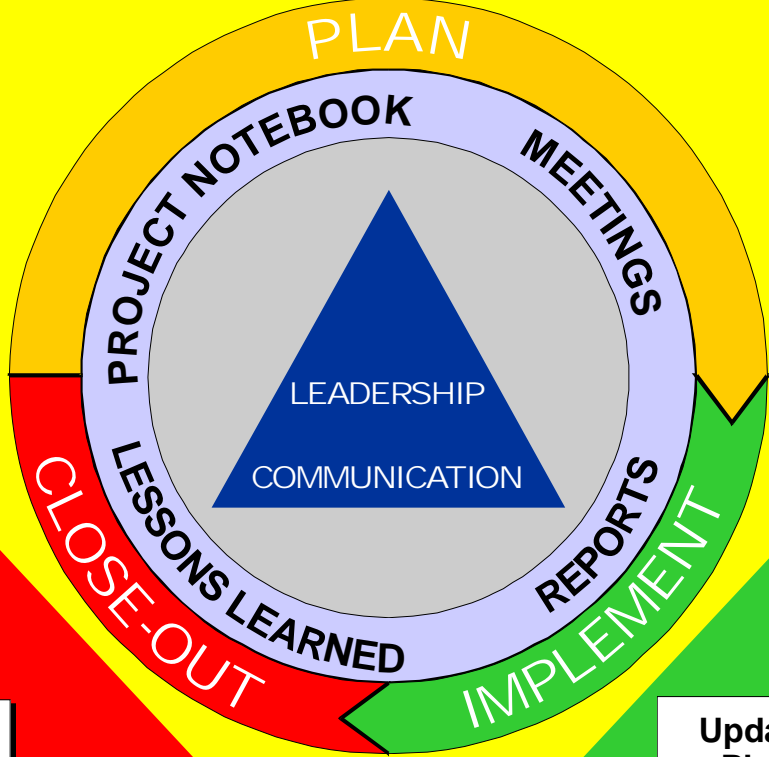
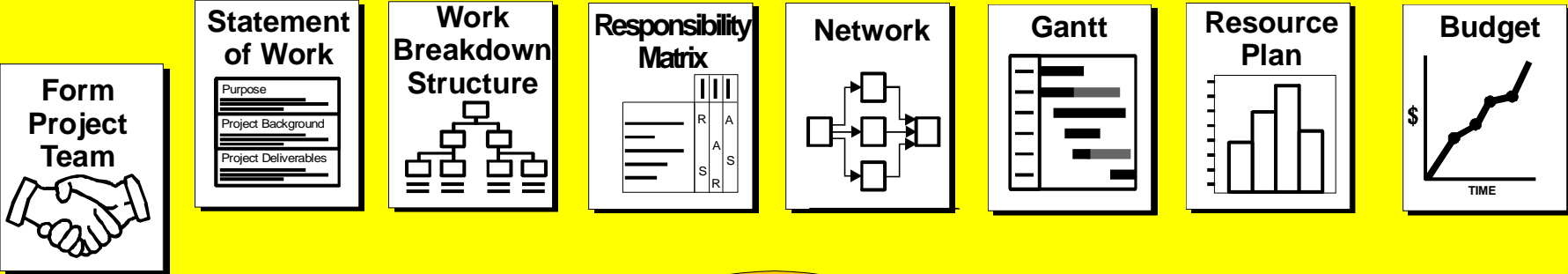
To help guide you through the process you need a roadmap of some type ...



Break Timer

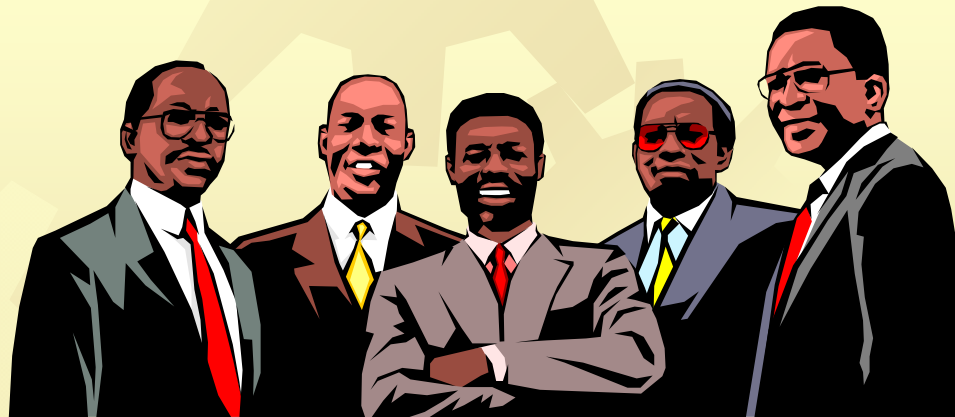


Roadmap to Project Management Success



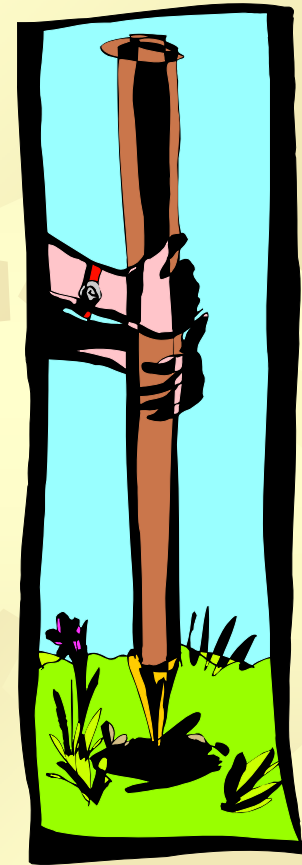
Project Stakeholders

- ✿ What is a project stakeholder?
 - ✿ *If you can gain or lose from the success or failure of a project, you have a “stake” in the project.*



Key Project Stakeholders

- ★ Customer/client
- ★ Project sponsor
- ★ Project manager
- ★ Project team



Break Timer

Project Manager

- Define and manage customer expectations.
- Coordinate development of the project plan.
- Monitor and control project work according to the approved plan.
- Communicate project status by preparing status reports and conducting progress review meetings.
- Establish and follow a change management process.
- Lead the project team and resolve conflicts between team members.
- Maintain the project notebook.
- Conducting project close-out activities.



Project Team Members

- Identify work tasks
- Estimate the duration of work tasks
- Help prepare the project network diagram
- Honestly report work status
- Keep the project manager informed on project issues
- Attend scheduled progress review meetings
- Raise issues important to the project's success
- Keep their functional managers updated
- Participate in the project close-out



Break Timer



Roadmap to Project Management Success

Form Project Team



Statement of Work

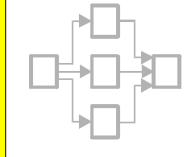
Purpose
Project Back
Project Deliv

Work Breakdown Structure

Responsibility Matrix

	R	A	
S			

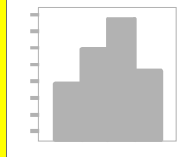
Network



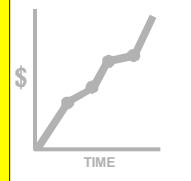
Gantt



Resource Plan

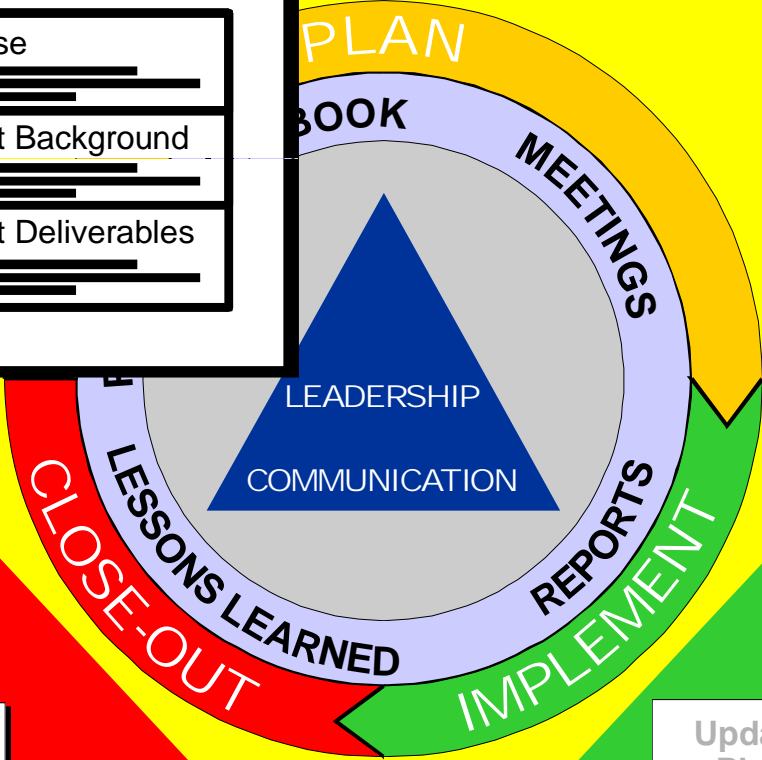


Budget




Statement of Work

Purpose
Project Background
Project Deliverables



Conduct Close-Out Meeting



Perform Tasks



Track Progress



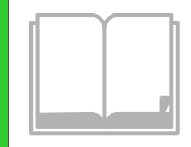
Share Lessons Learned




Evaluate Success



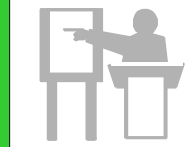
Update Plan



Resolve Issues

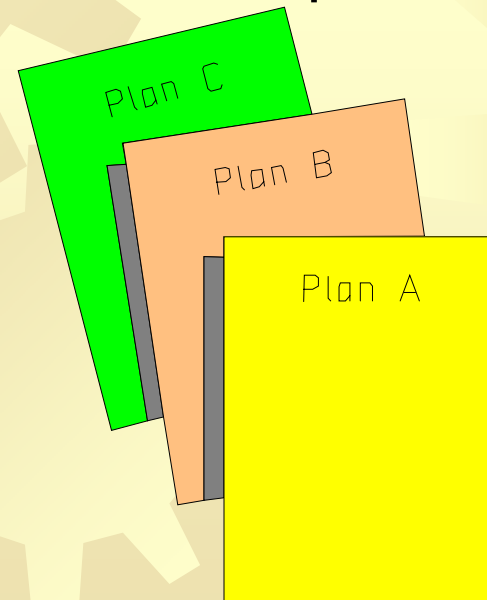


Manage Change



Project Plan Contents

- Statement of work (SOW)
- Work breakdown structures (WBS)
- Responsibility assignment matrices
- Project schedule
- Resource plans/histograms
- Budget
- Risk management plan
- Communications plan
- Quality plan
- Verification and validation plan



Project Plan Benefits

- ✿ Provides an effective communication tool to ensure understanding of project goals and the means to achieve them
- ✿ Defines outcomes and commitments
- ✿ Establishes guidelines and standards
- ✿ Establishes the baseline for evaluating and reporting progress
- ✿ Forms the basis for scope control and change management



Break Timer



Project Notebook

- **Project Pre-plan**
 - Background information
 - Customer data
 - Third-party data (vendors, suppliers, etc.)
- **Project Plan**
 - Statement of Work (SOW)
 - Work Breakdown Structure (WBS)
 - Organization/responsibility charts
 - Schedule data
 - Budget/capital plan
 - Risk management
- **Project Implementation**
 - Meetings (agenda/minutes)
 - Team/management/customer/third party progress reports
 - Customer change requests/decision matrix issue resolution forms/reports
- **Project Close-out**
 - Final evaluation of measurable success indicators
 - Close-out meeting (agenda/minutes)
 - Final project report
 - Reference letters
 - Lessons learned
- **Project Administration**
 - Contractual documents
 - Invoices
 - Expenses
 - Correspondence
 - Contact log



Statement of Work — Purpose

- ✿ Define the scope of the project
- ✿ Establish customer expectations
- ✿ Serve as a “contract” if necessary



Break Timer



A Good SOW will answer ...

- ★ What is the purpose or goal of the project?
- ★ Why is the project being done?
- ★ Who is the initial customer?
- ★ Who is the end user or final customer?
- ★ What are the customer deliverables?
- ★ What technical support is required for the deliverables?



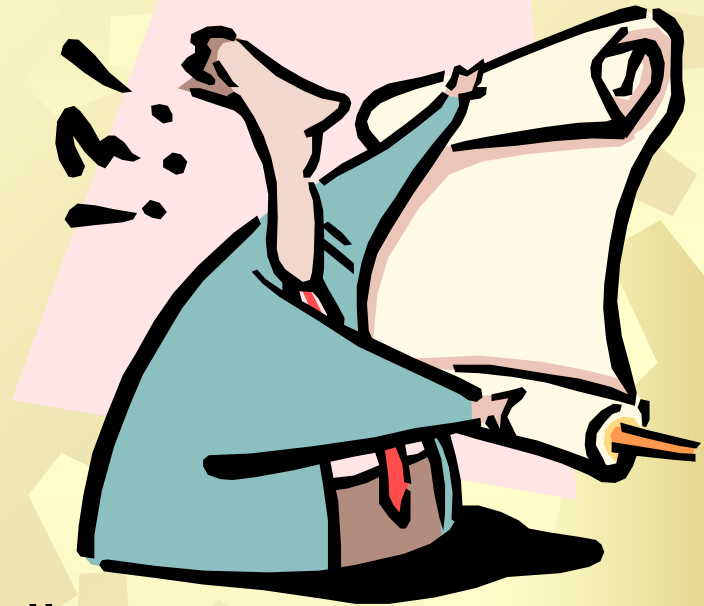
And continue to answer ...

- ★ What is the budget?
- ★ What is the final date for the deliverables?
- ★ What are the measurable success indicators (metrics)?
- ★ What kind of support is required from the customer?
- ★ What contingency plans are in place?



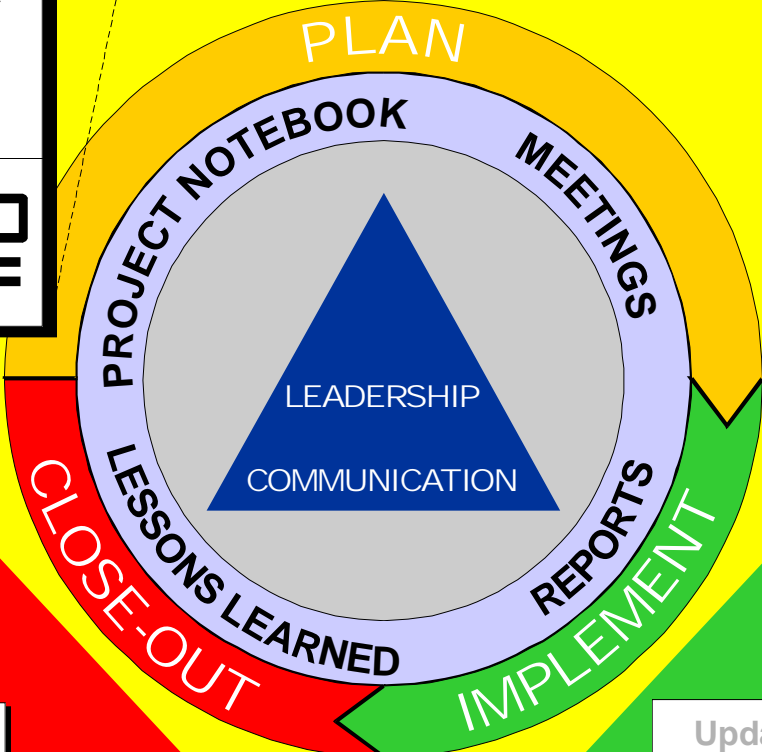
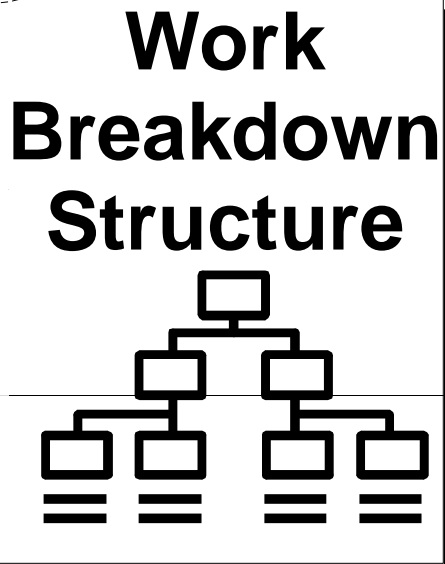
SOW — Generic Contents

- ★ Customer
- ★ Project
- ★ Title
- ★ Purpose
- ★ Background
- ★ Deliverables
- ★ Measurable success indicators
- ★ Customer support
- ★ Risk plans



Roadmap to Project Management Success

Statement of Work Work Breakdown Structure Responsibility Matrix Network Gantt Resource Plan Budget



Conduct Close-Out Meeting

Share Lessons Learned

Evaluate Success

Perform Tasks

Track Progress

Update Plan

Resolve Issues

Manage Change

Work Breakdown Structure— Purpose

- ✿ Identify all of the work that needs to be done to complete the project.
- ✿ Structure the work into logical components and subcomponents.
- ✿ Define the work to a level of detail so individual responsibilities can be assigned.
- ✿ Summarize and report project data.



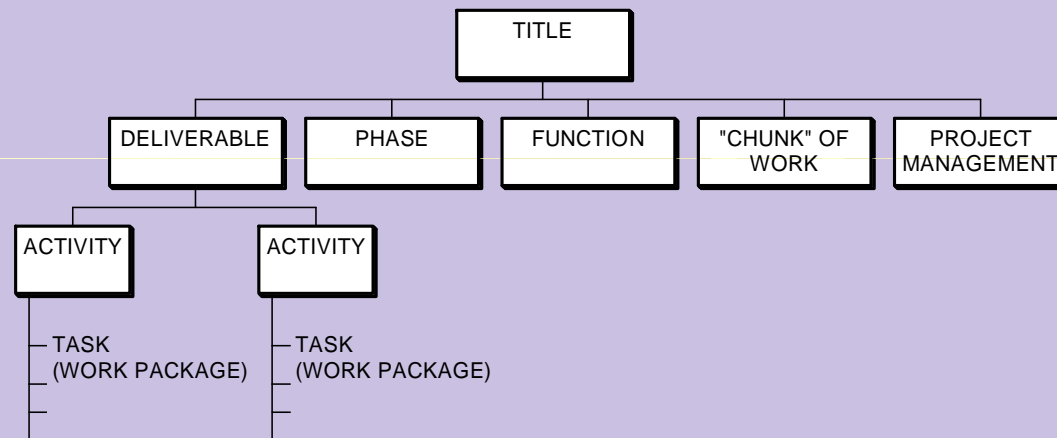
Representative Work Breakdown Structure

Level I
(Noun)

Level II
(Noun)

Level III
(Action Verbs)

Level IV
(Action Verbs)



Break Timer

WBS — Outlining Approach

3-4-10

- I. Main Project Deliverable **Level 1**
 - A. Major Element **Level 2**
 - 1. Activity **Level 3**
 - 2. Activity **Level 3**
 - a. task **Level 4**
 - b. task **Level 4**
 - c. task **Level 4**
 - 3. Activity **Level 3**
 - B. Major Element **Level 2**
 - 1. Activity **Level 3**
 - 2. Activity **Level 3**

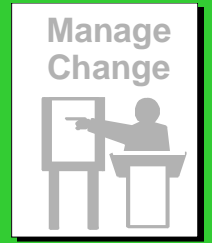
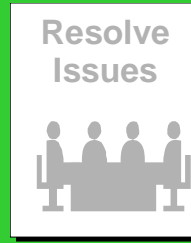
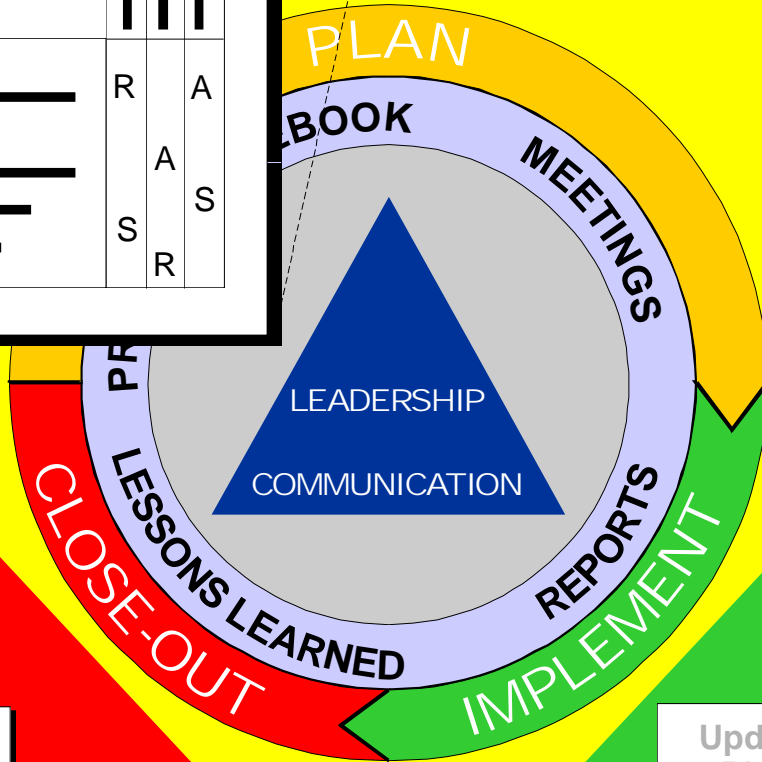
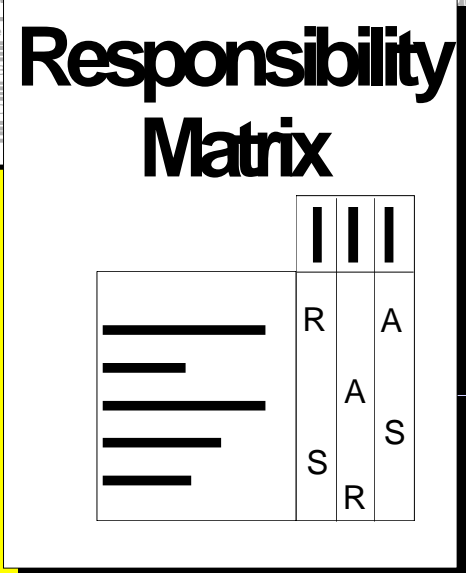
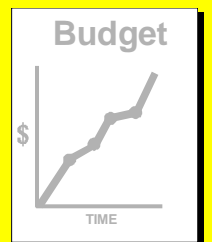
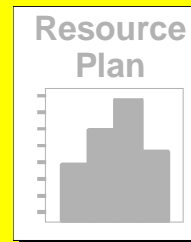
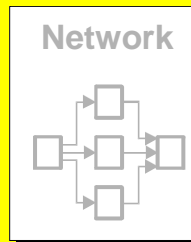
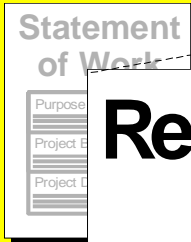
The outline approach is used by Microsoft® Project®



Break Timer



Roadmap to Project Management Success



Responsibility Assignment Matrix (RAM) — Purpose

- ✿ Ensure that all tasks are assigned to people
- ✿ Show levels of involvement of people to work



Break Timer



Responsibility Assignment Matrix

RASIC Method

MARKETING STUDY	PROJECT MANAGER	CUSTOMER	TEAM MEMBER	SENIOR MANAGEMENT	SUPPORT STAFF
IDENTIFY POTENTIAL MARKET	C		S	R	
IDENTIFY SURVEY POPULATION	C	R	S	I	
DEVELOP SURVEY	R	I	S	I	
TEST SURVEY ON SAMPLE	R	I	S		S
FINALIZE SURVEY	R	A	S	I	S
CONDUCT SURVEY	R	I	S	I	S
COLLECT SURVEY	R	I	S		
ANALYZE DATA			R/S		I
REPORT RESULTS AND SUGGESTION	R	A	S	A	S

LEGEND

R - RESPONSIBLE
 A - APPROVE
 S - SUPPORT (DOES THE WORK)
 I - INFORM
 C - CONSULT

RASIC Coding System

- ✱ R – Responsible
 - ✱ Ensures that the assigned work is completed
- ✱ A = Approve
 - ✱ Approves that the work meets all requirements
- ✱ S = Support
 - ✱ Does the work
- ✱ I = Inform
 - ✱ Is kept informed of work status
- ✱ C = Consult
 - ✱ Is consulted on the work



Roadmap to Project Management Success

Form Project Team



Statement of Work

Purpose
Project Background
Project Deliverables


Work Breakdown

Responsibility Matrix

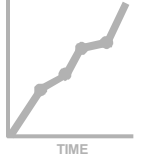
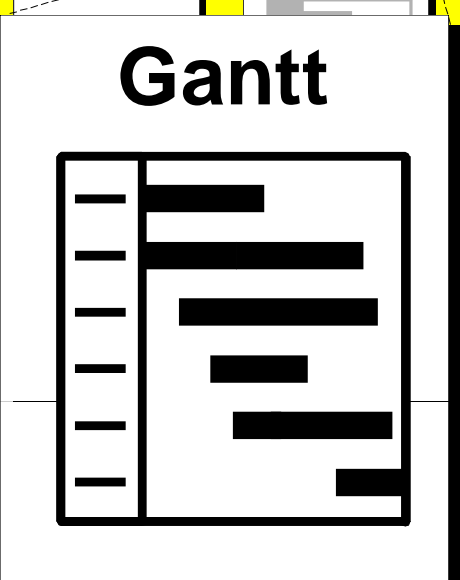
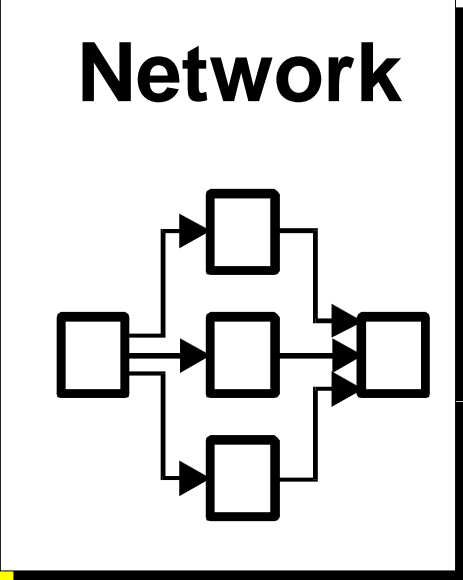
Network

Gantt

Resource Plan



Budget

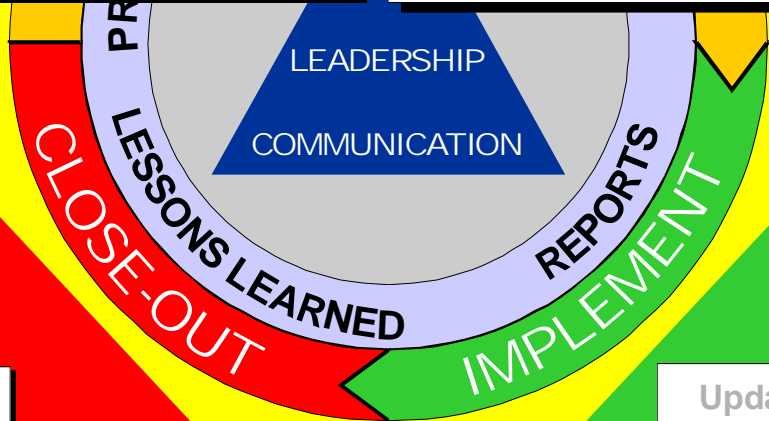
Conduct Close-Out Meeting



Share Lessons Learned



Evaluate Success


Perform Tasks



Track Progress




Update Plan



Resolve Issues



Manage Change



Project Schedule — Purpose

- ✿ Determine if requested completion date is possible.
- ✿ Identify start and completion dates of all work.
- ✿ Determine the controlling sequence of activities.
- ✿ Provide data for resource allocation.
- ✿ Track progress by providing a baseline.



Scheduling

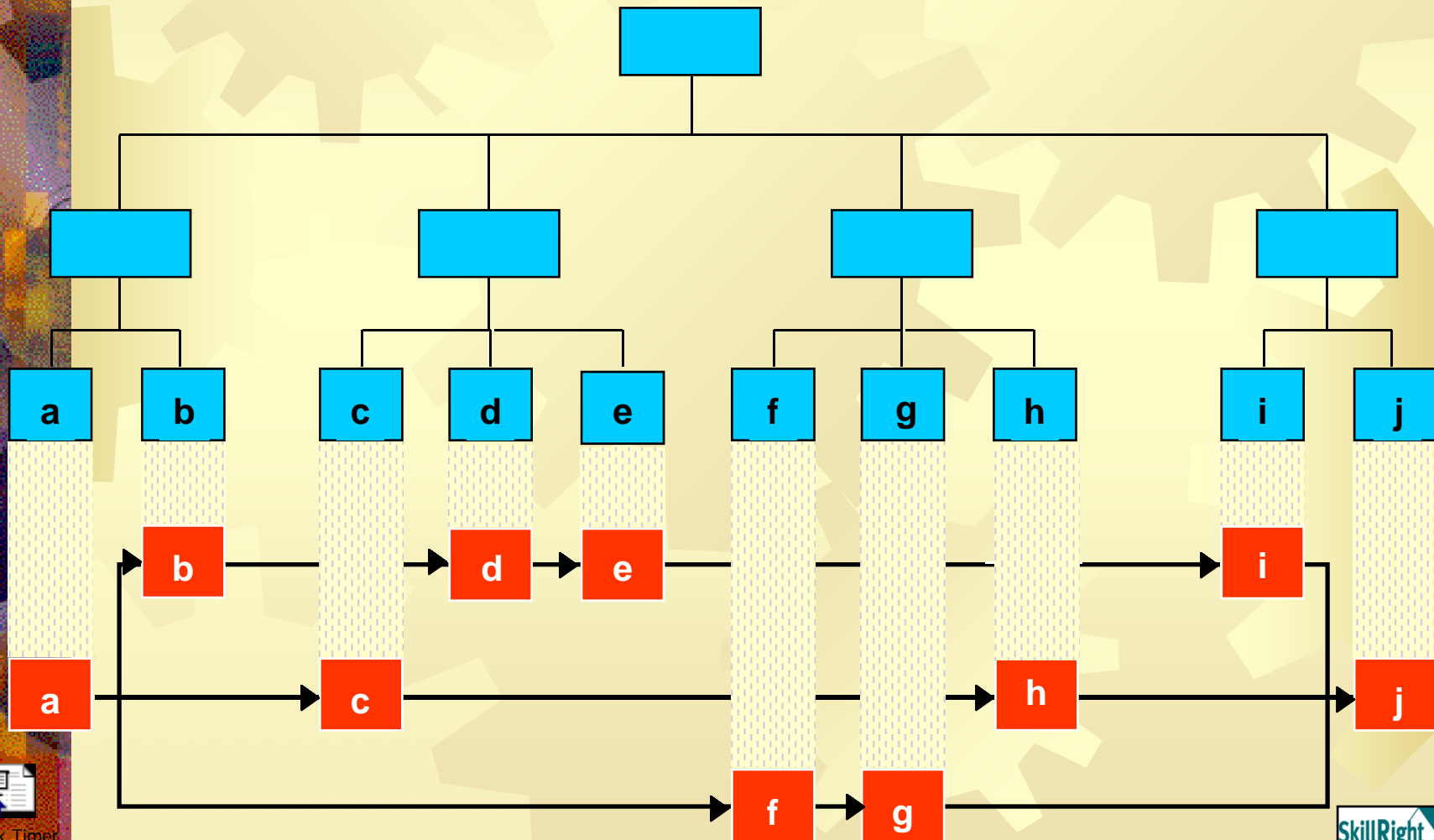
- Step 1:** Estimate Activity Durations
- Step 2:** Determine Activity Sequence By Creating a Network Diagram
- Step 3:** Calculate the Schedule Using Critical Path Method (CPM) Procedures
- Step 4:** Show the Schedule by Drawing Gantt and/or Milestone Charts



Break Timer



WBS/Network Diagram Linkage

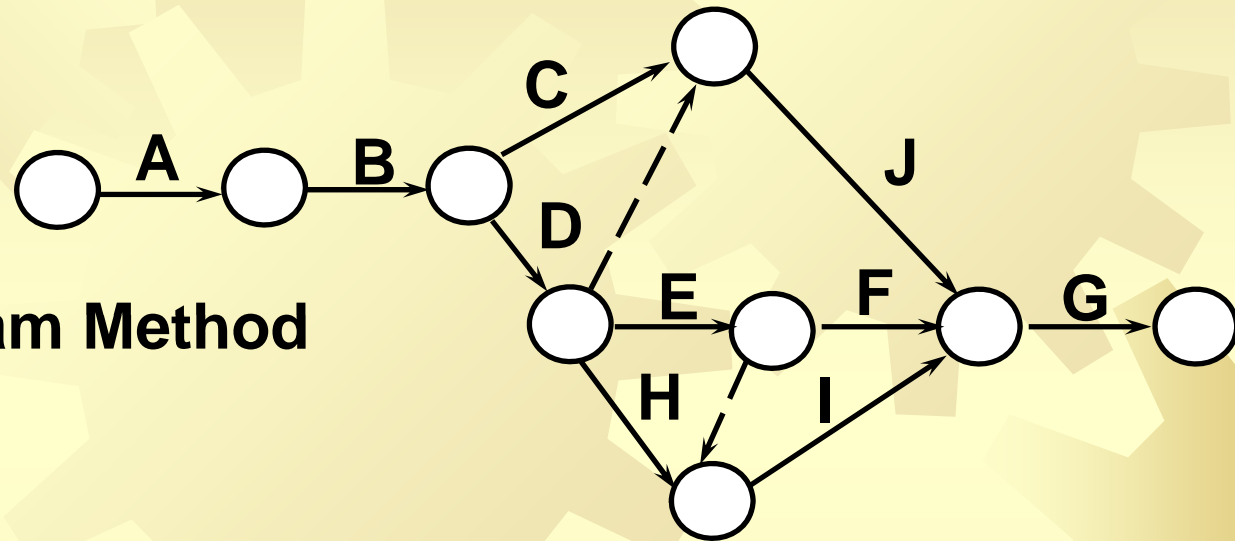


Break Timer

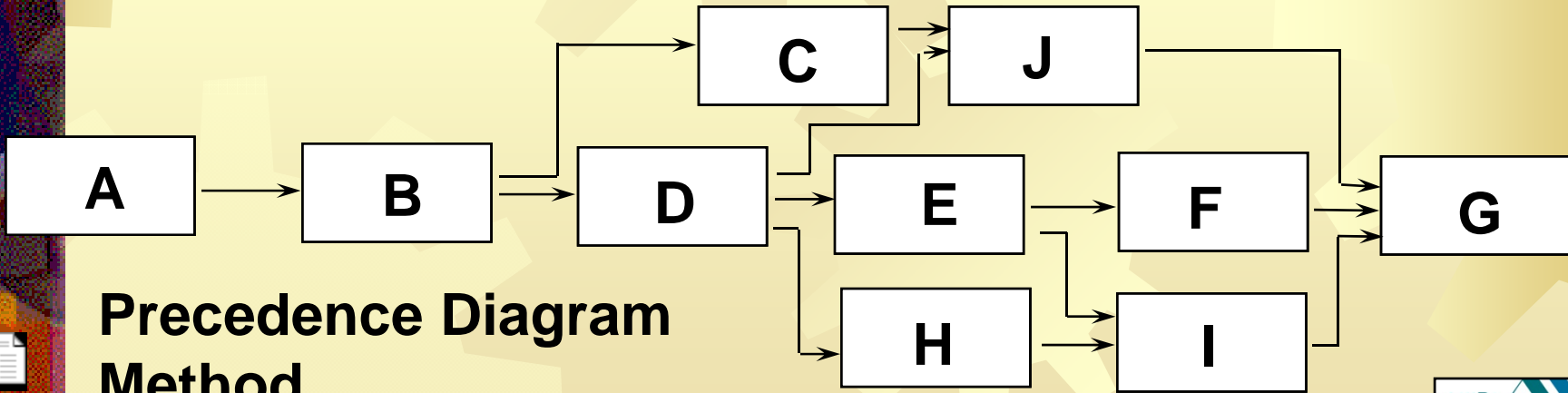


Network Diagram Methods

Arrow Diagram Method



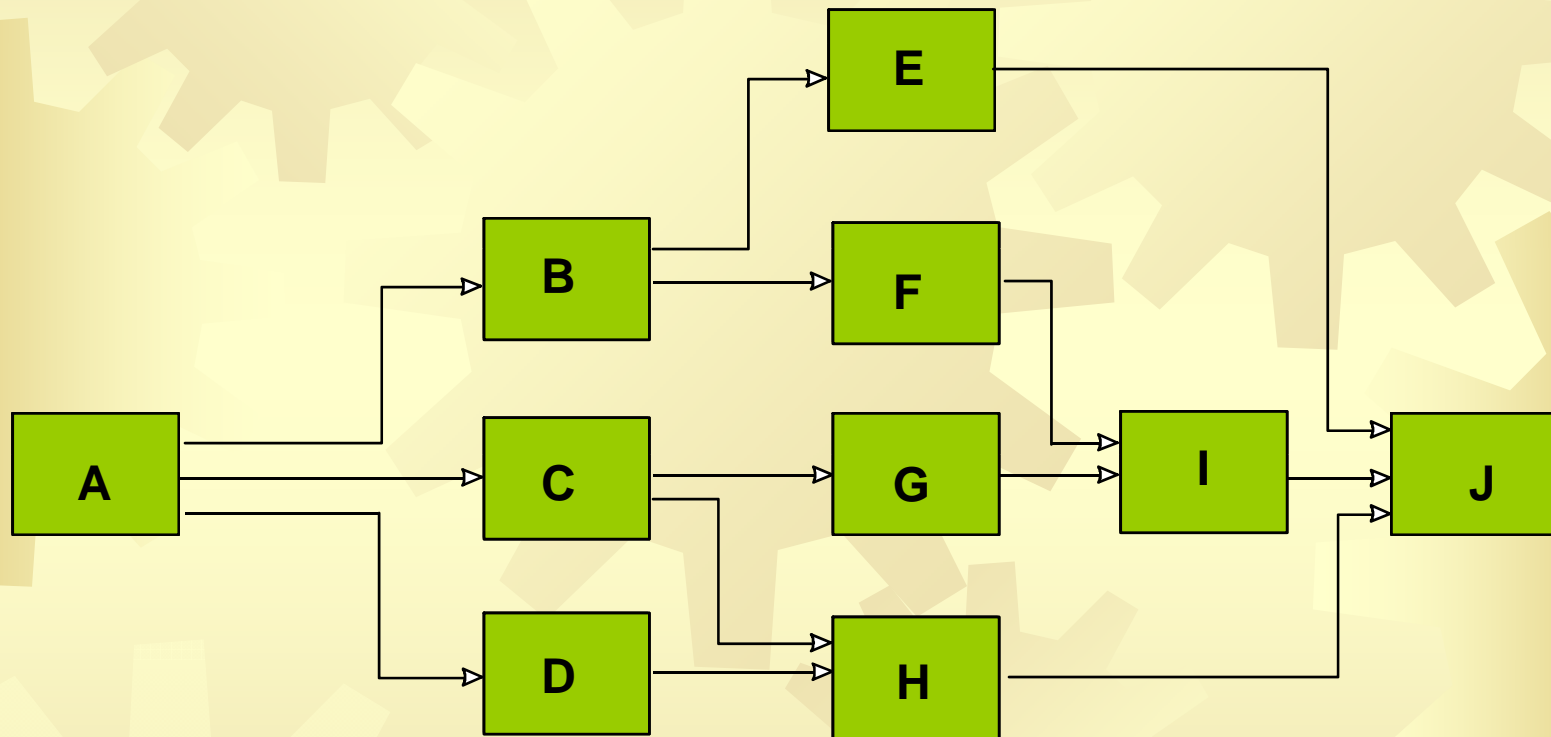
Precedence Diagram Method



Break Timer



Precedence Diagram Method



→ **Logic Connection**

 **Activity**



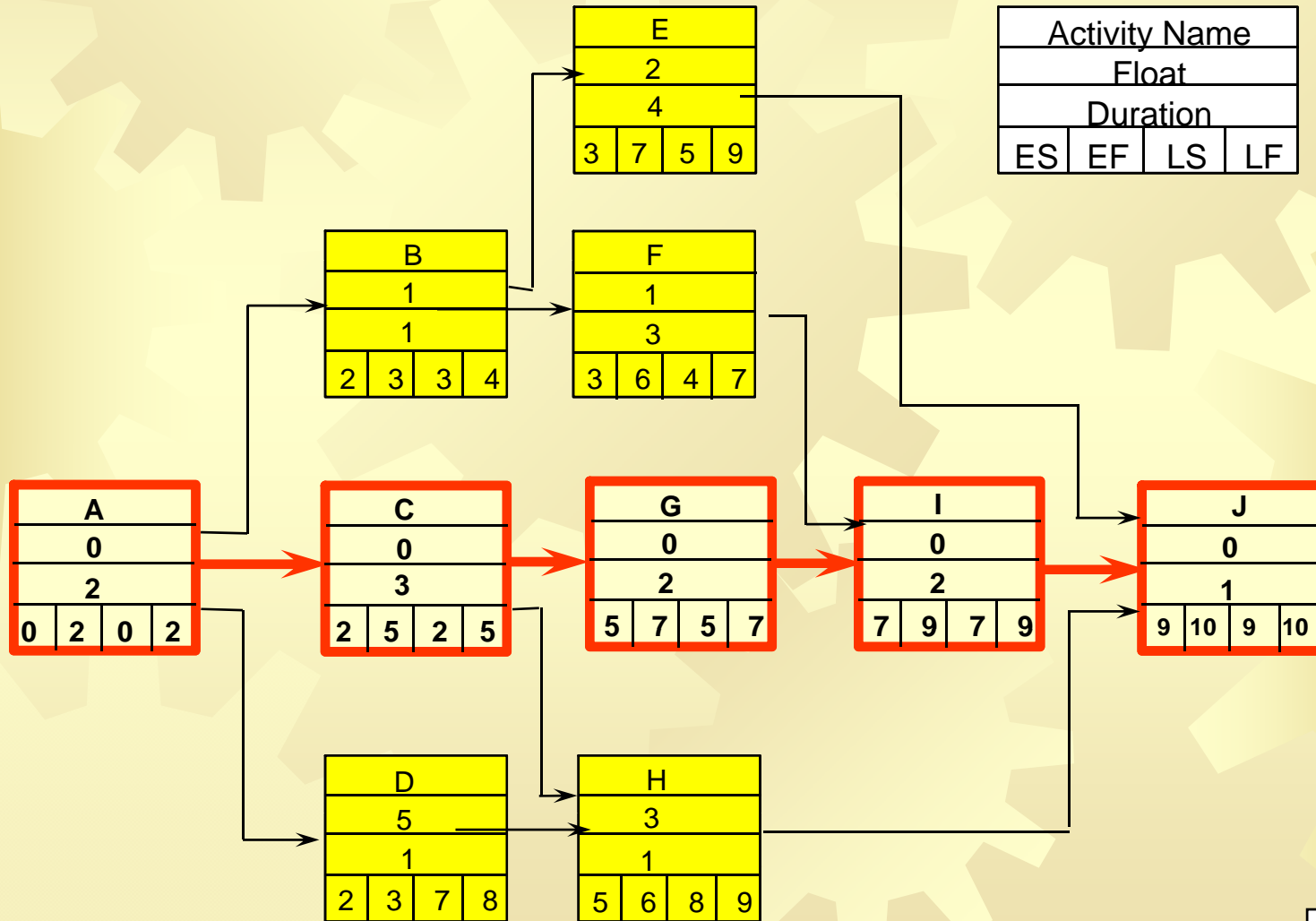
Break Timer

What's is the Critical Path?

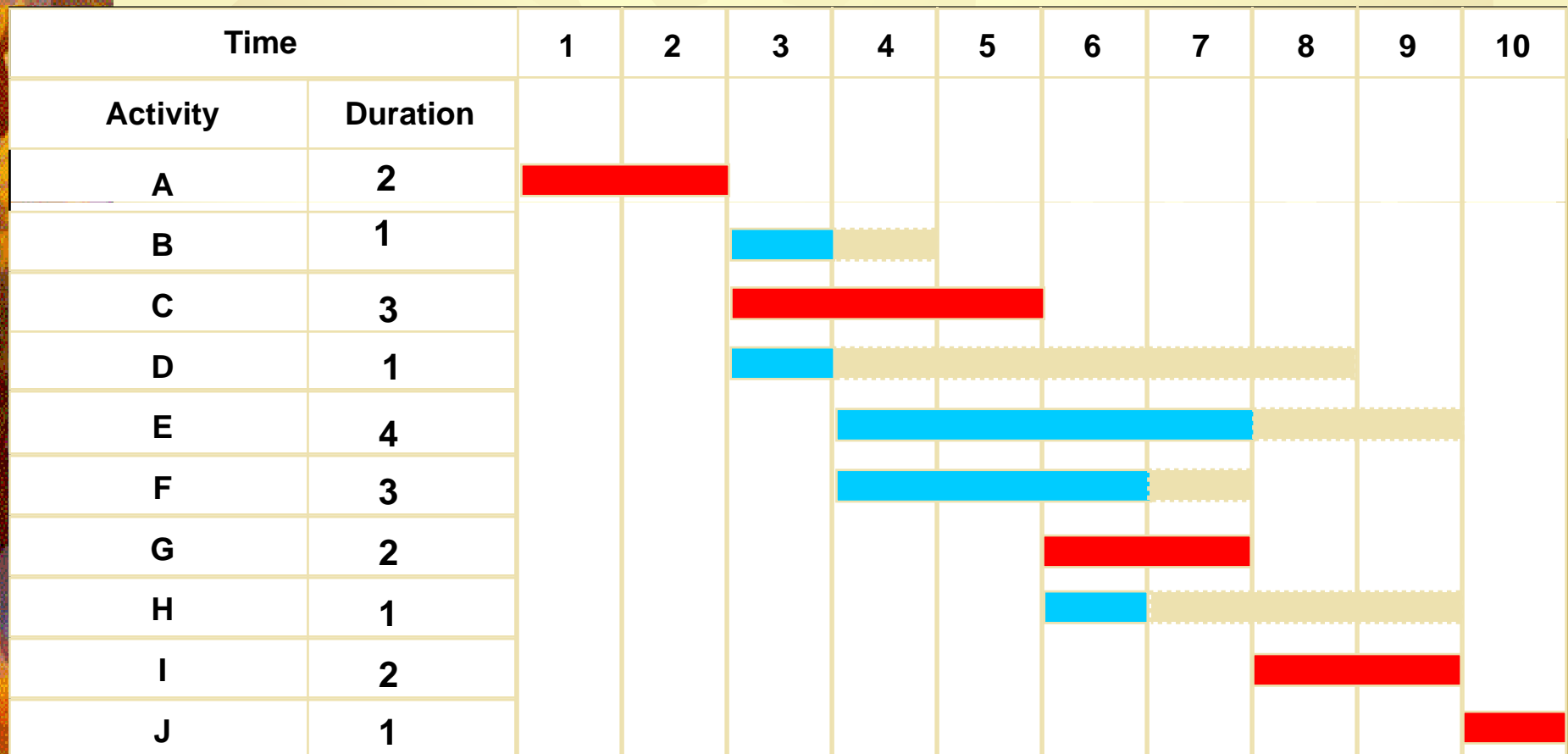
- ✿ Path with least slack
- ✿ Path with longest duration
- ✿ ***Critical Path Method*** is a project management technique that analyzes what activities have the least amount of scheduling flexibility (i.e., are the most mission-critical) and then predicts project duration schedule based on the activities that fall along the “critical path.”
 - ✿ Activities that lie along the critical path cannot be delayed without delaying the finish time for the entire project.



Project X — Critical Path Solution



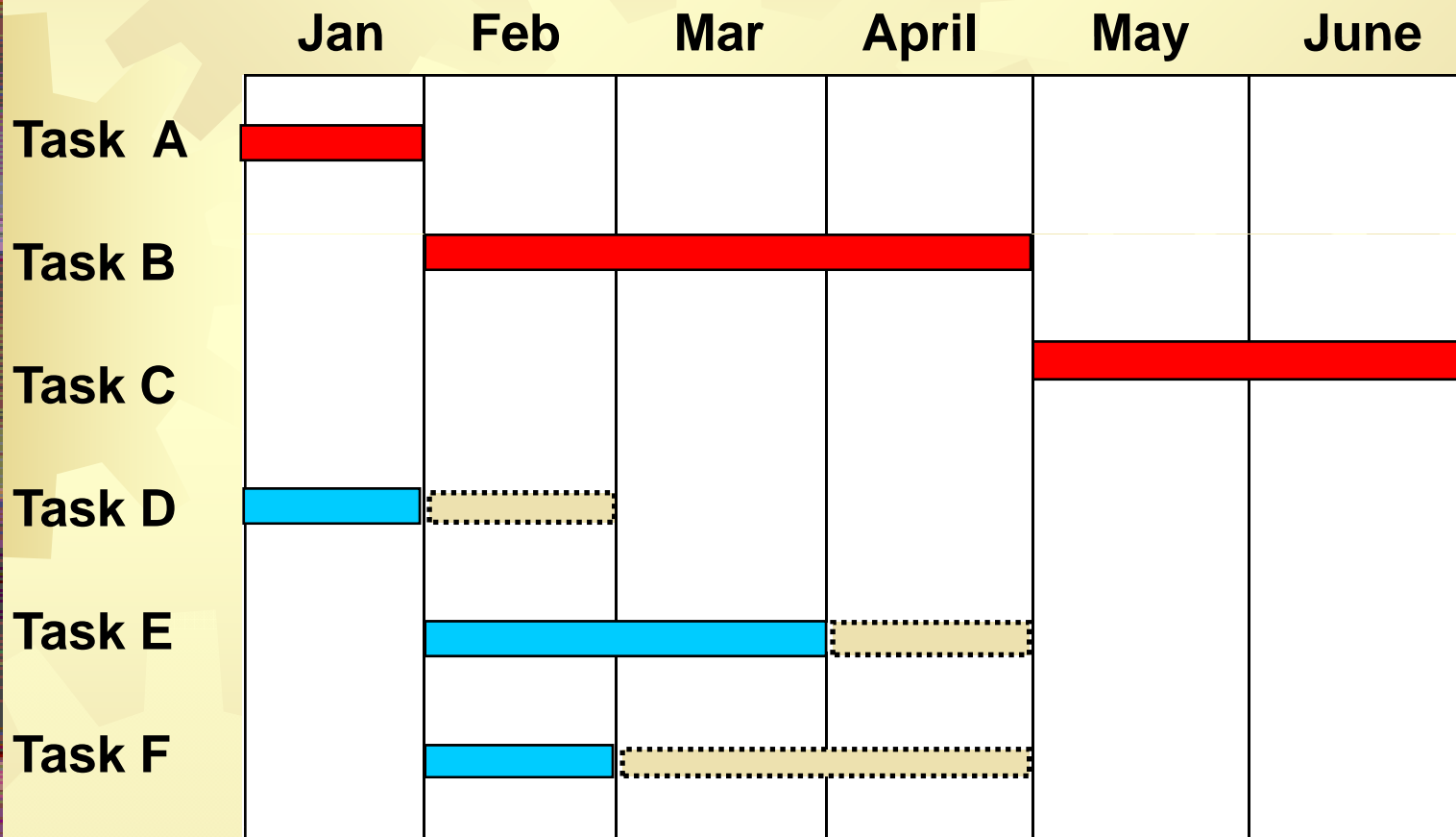
Project X — Gantt Chart Solution



- Critical
 - Non-Critical
 - Slack/Float



Enhanced Gantt Chart



- Critical



- Non-Critical



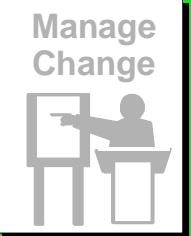
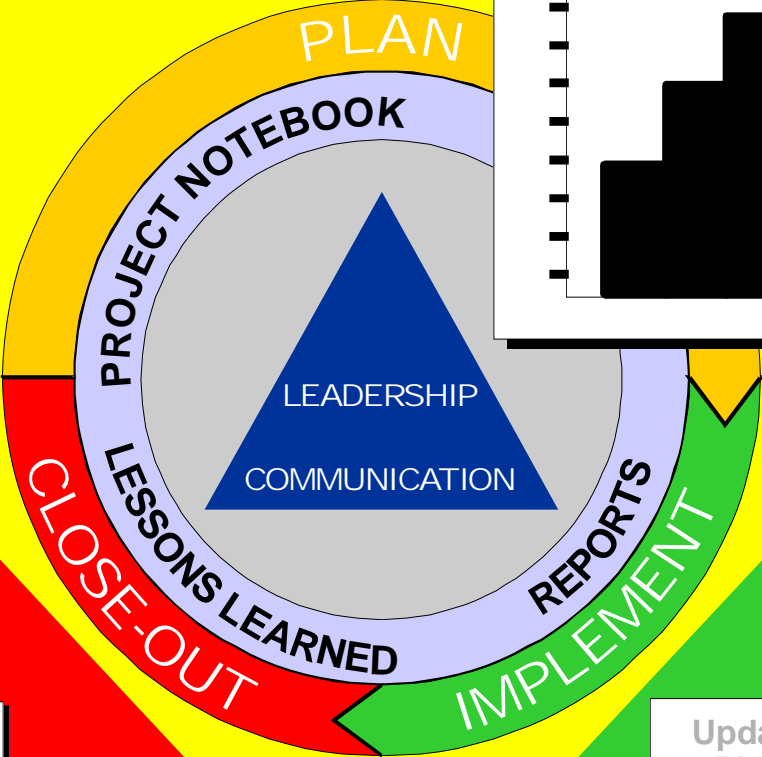
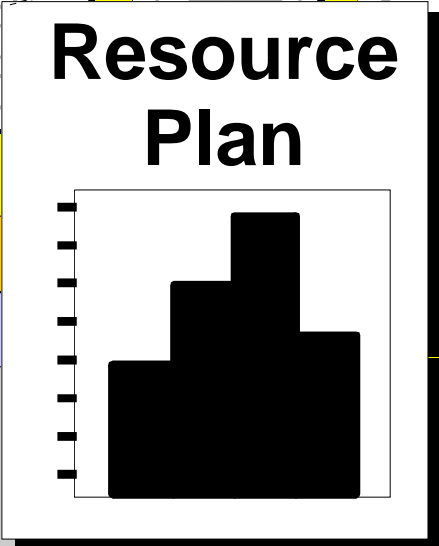
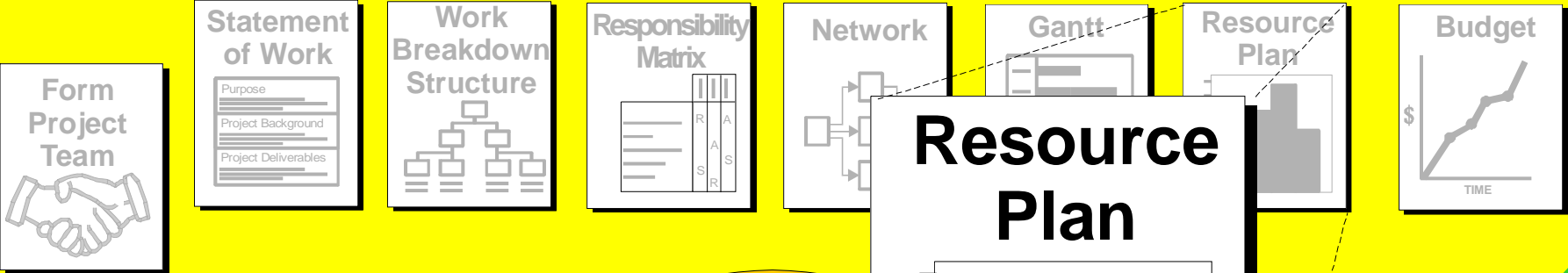
- Slack/Float



Break Timer

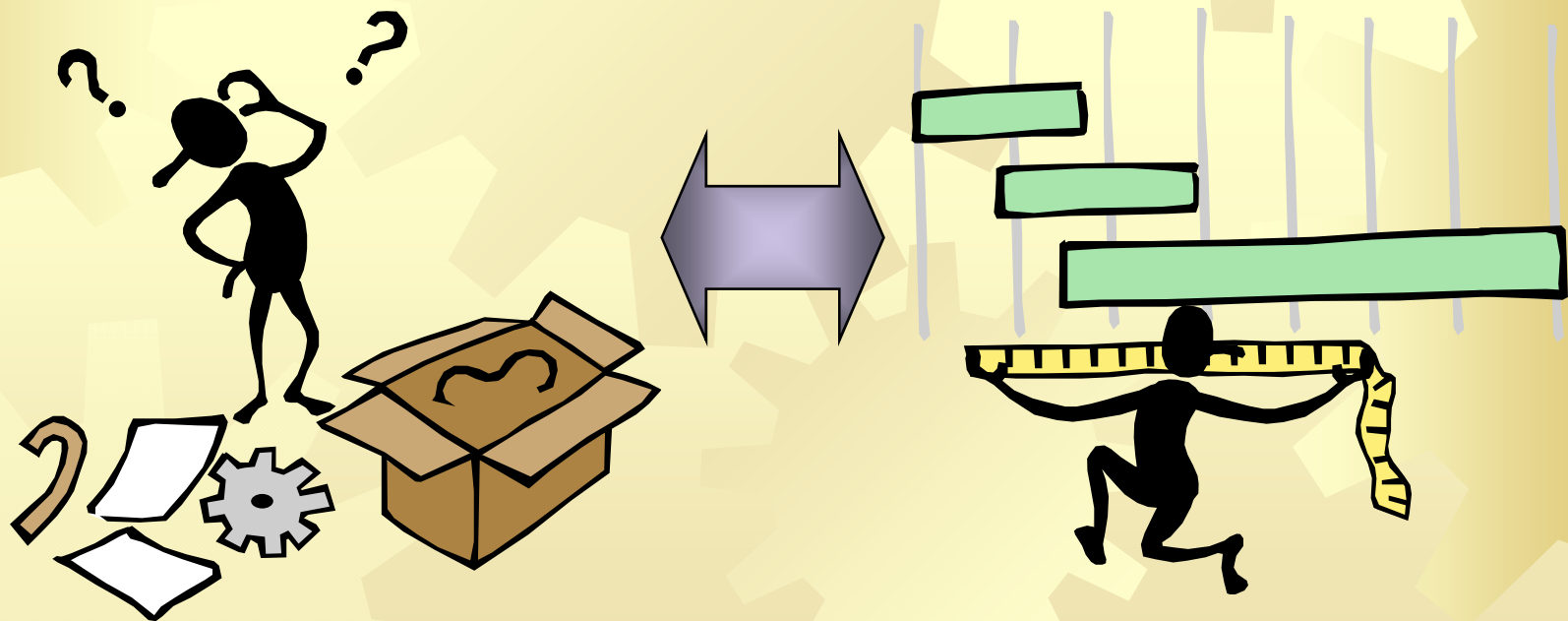


Roadmap to Project Management Success



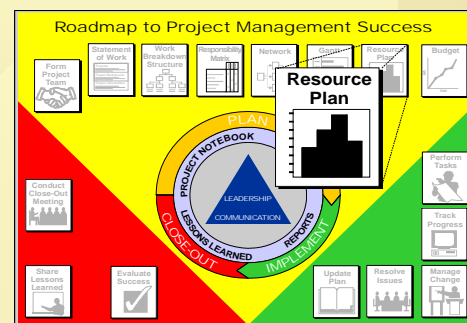
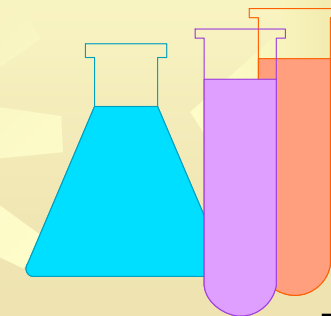
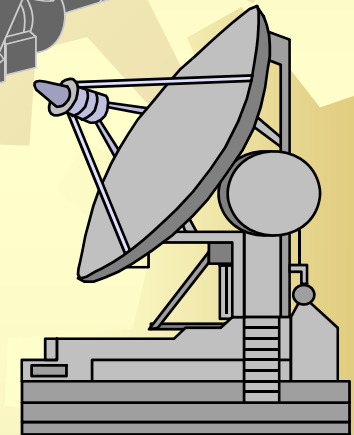
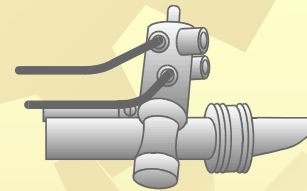
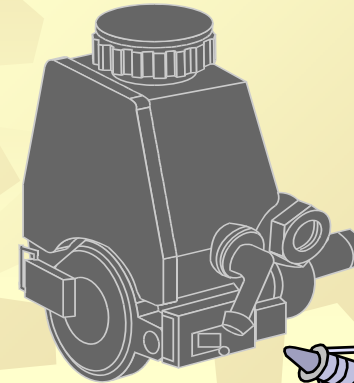
Assigning Resources

A schedule is not complete until all the resources necessary to complete the project have been committed or assigned.



Non-Labor Resources

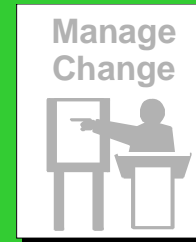
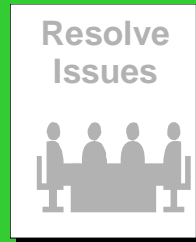
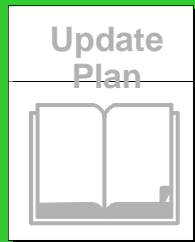
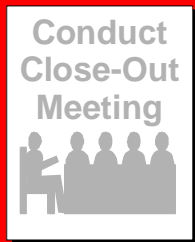
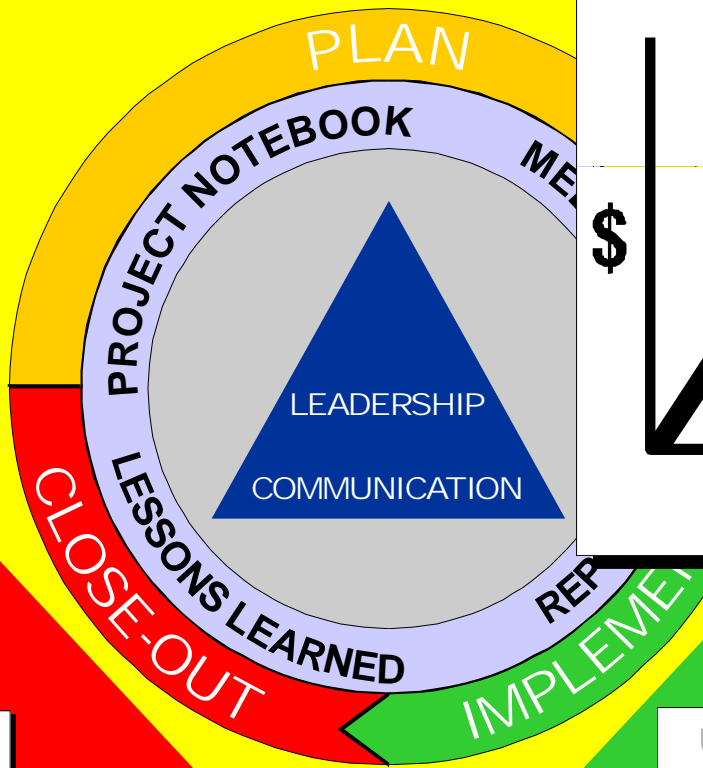
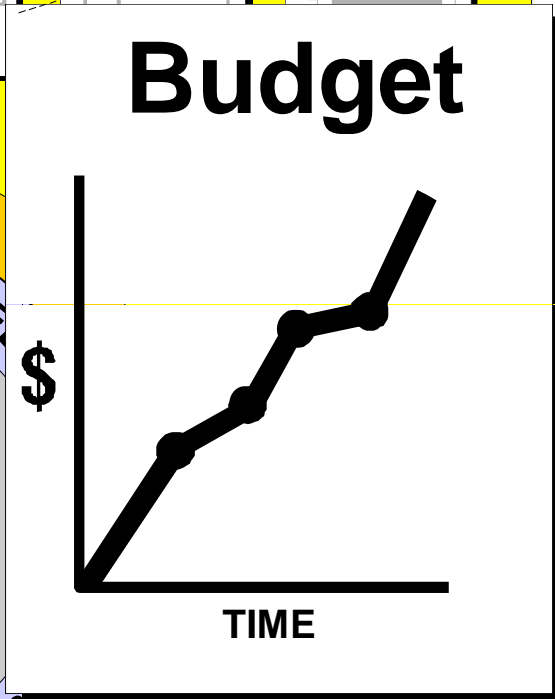
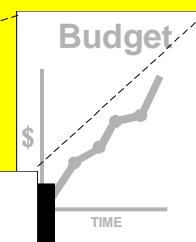
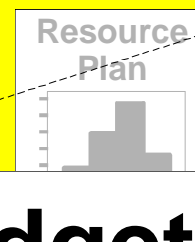
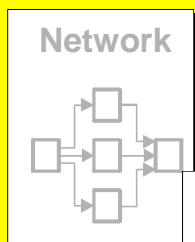
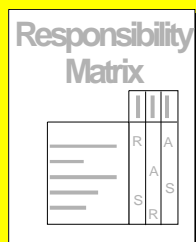
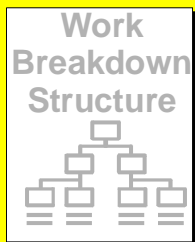
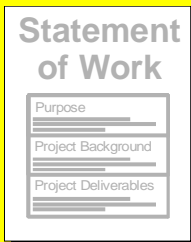
- Lab time
- Facilities
- Prototype parts/systems
- Equipment
- Materials



Break Timer



Roadmap to Project Management Success



Cost Budgeting

- Cost Budgeting involves allocating overall cost estimates to individual work items in order to establish a cost baseline for measuring project performance. Using cost estimates, the WBS, the project schedule, and cost estimating tools, the project team develops a time-phased budget. This budget will be used to measure and monitor cost performance on the project.”

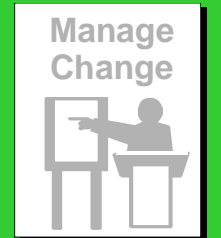
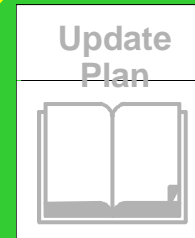
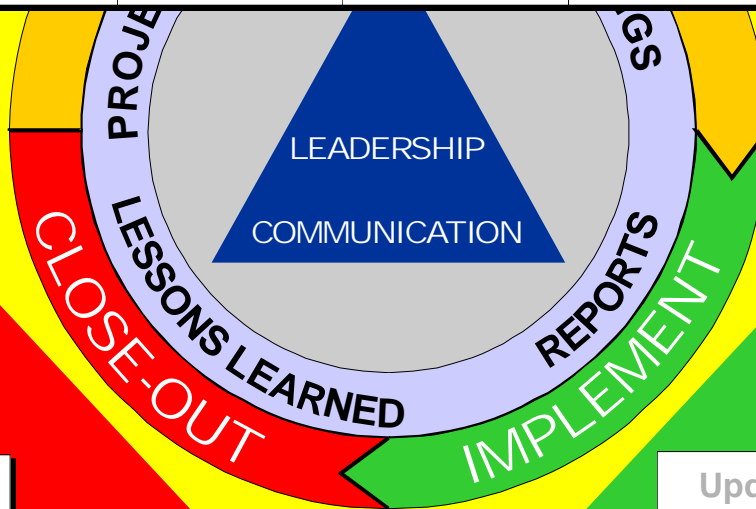
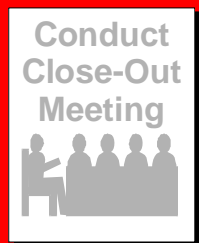
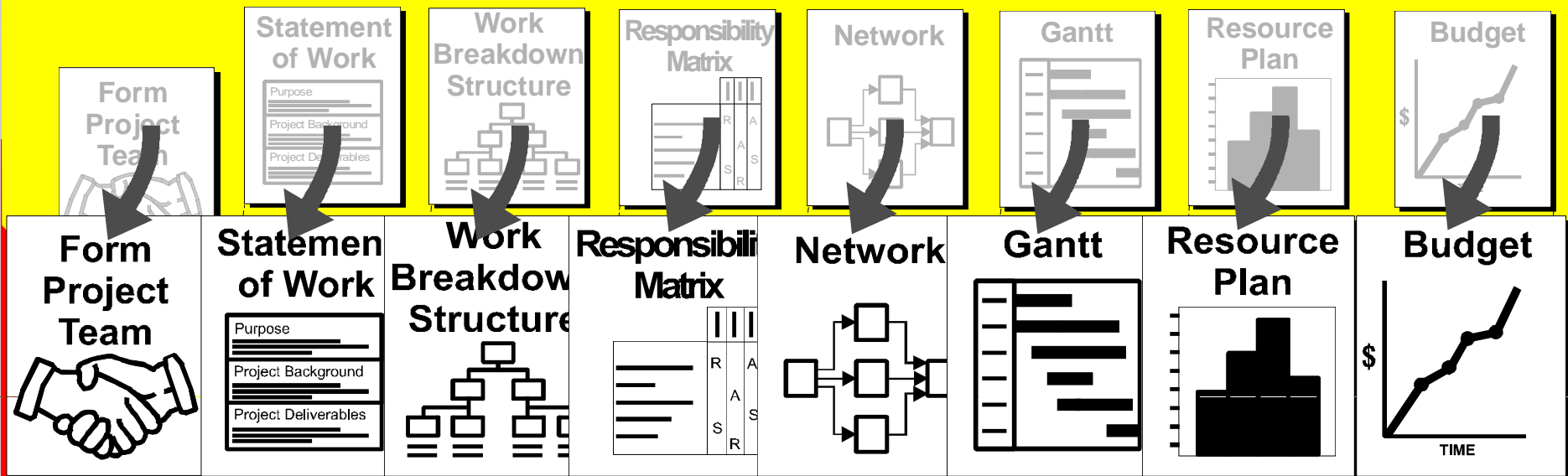
Source: PMI



Break Timer



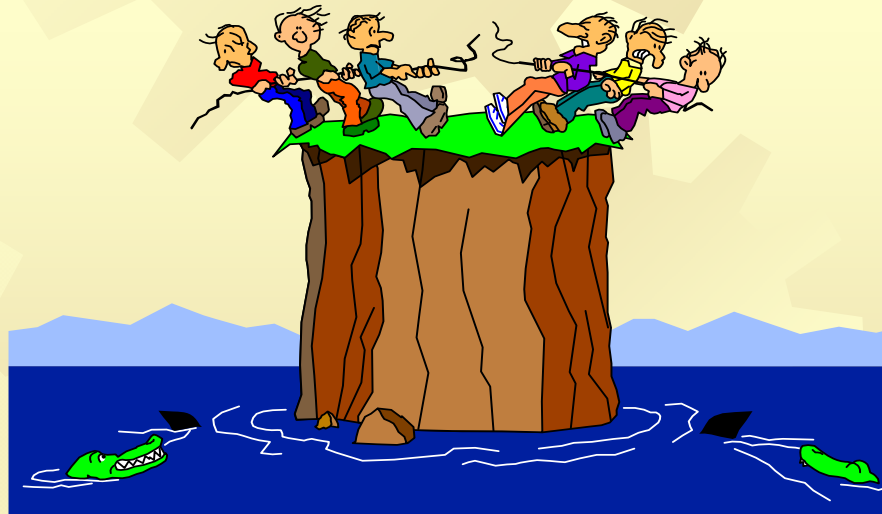
Roadmap to Project Management Success



What Is Risk?

Risk can be defined as:

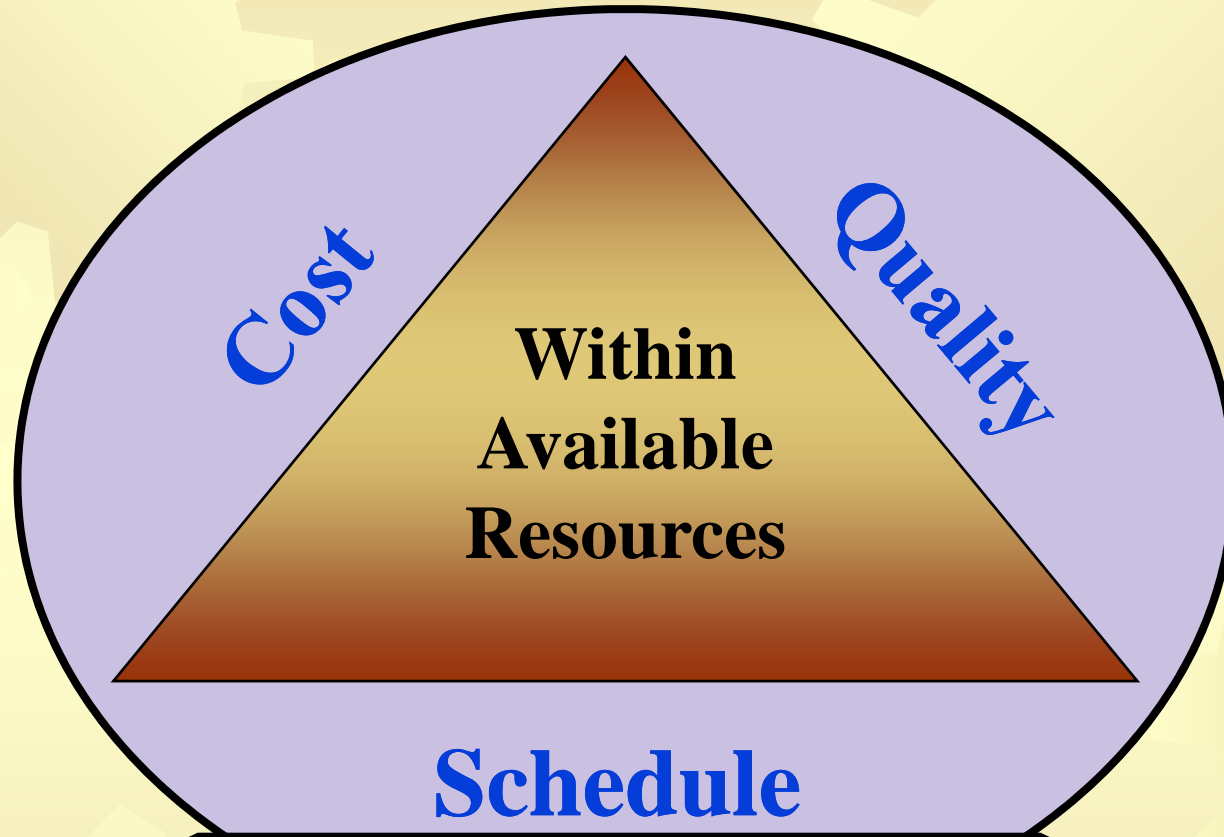
“Any threat to project success.”



Break Timer



Project Scope



Project Risk

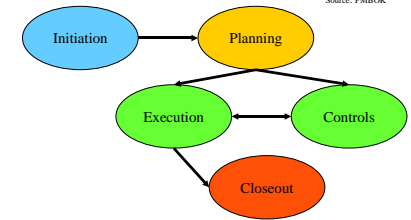


Break Timer



Project Management Process

Source: PMBOK



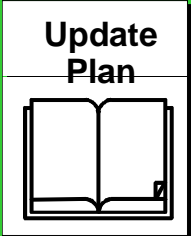
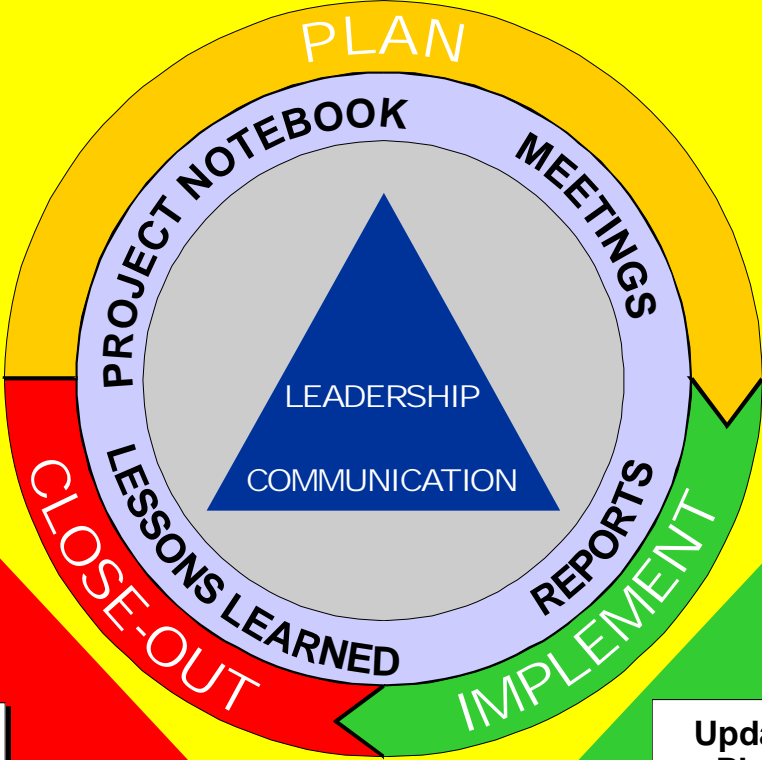
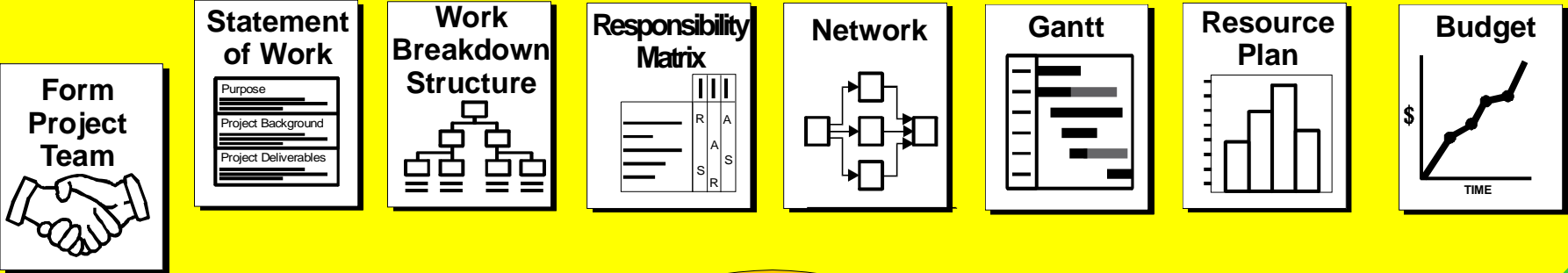
Project Implementation



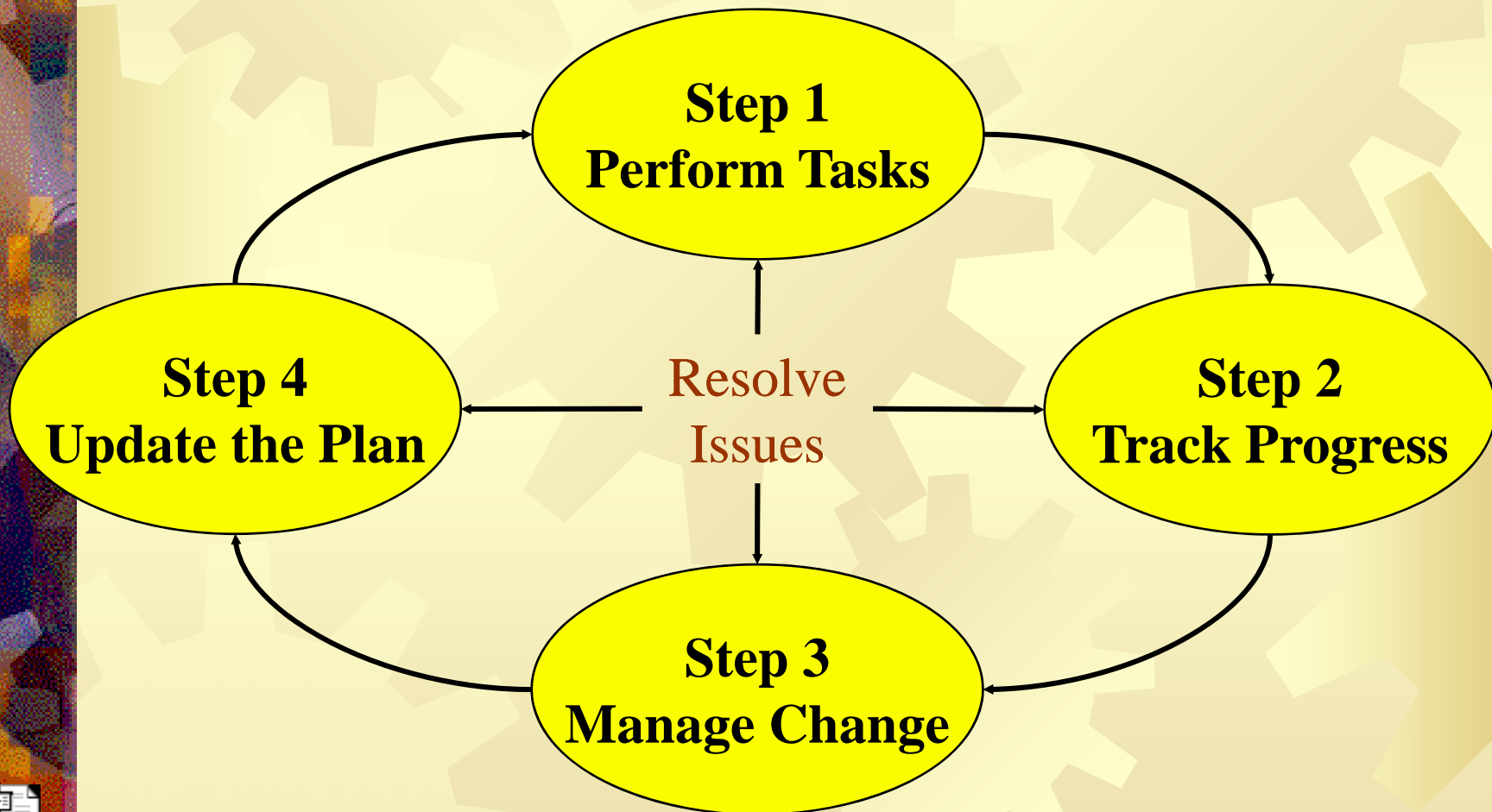
Break Timer



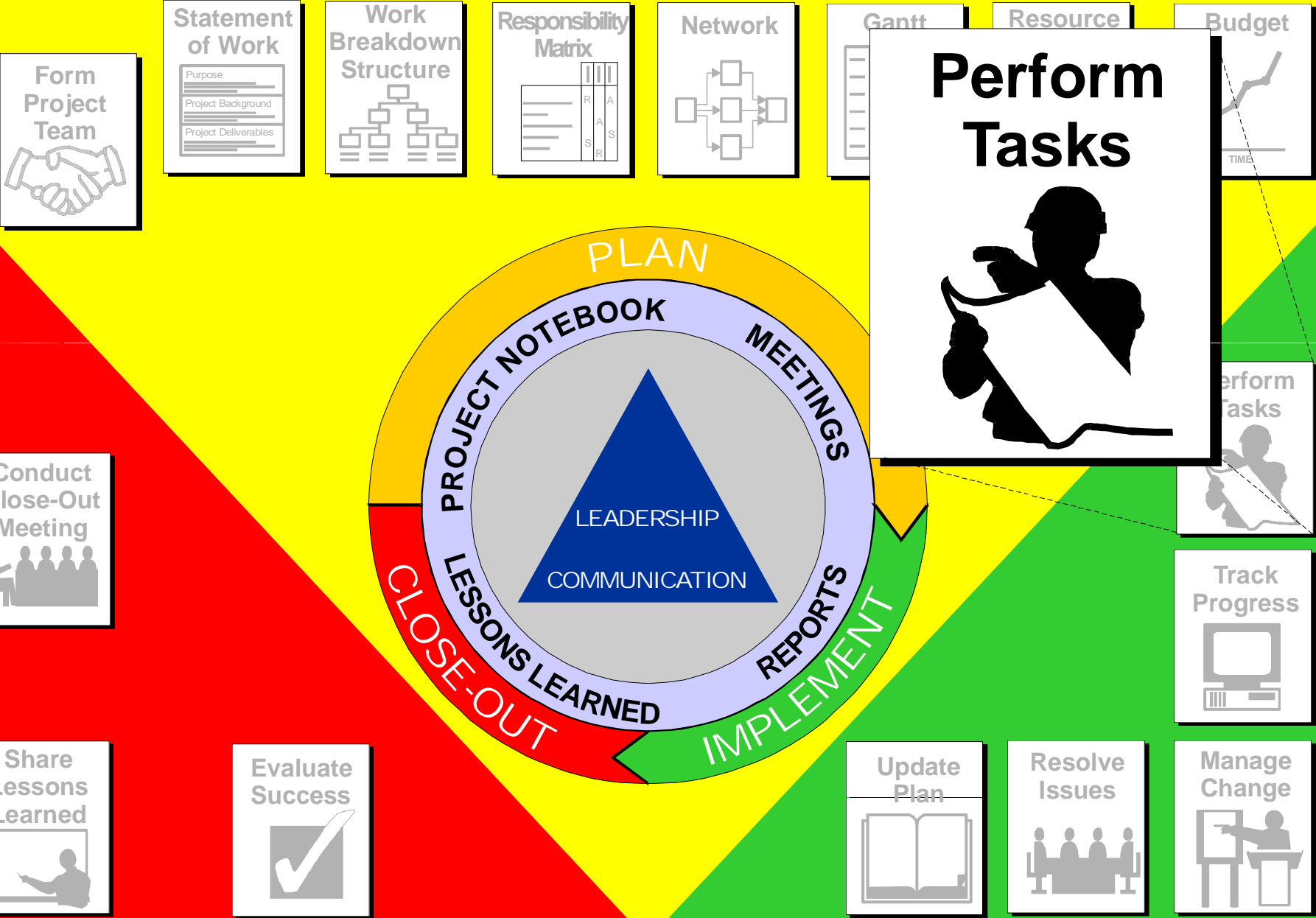
Roadmap to Project Management Success



Implementation Model



Roadmap to Project Management Success



Reporting Project Progress

- ✿ Progress review meeting
- ✿ Project reports



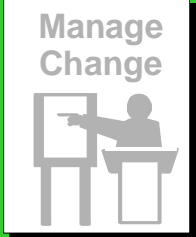
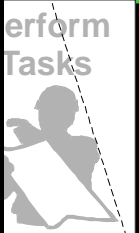
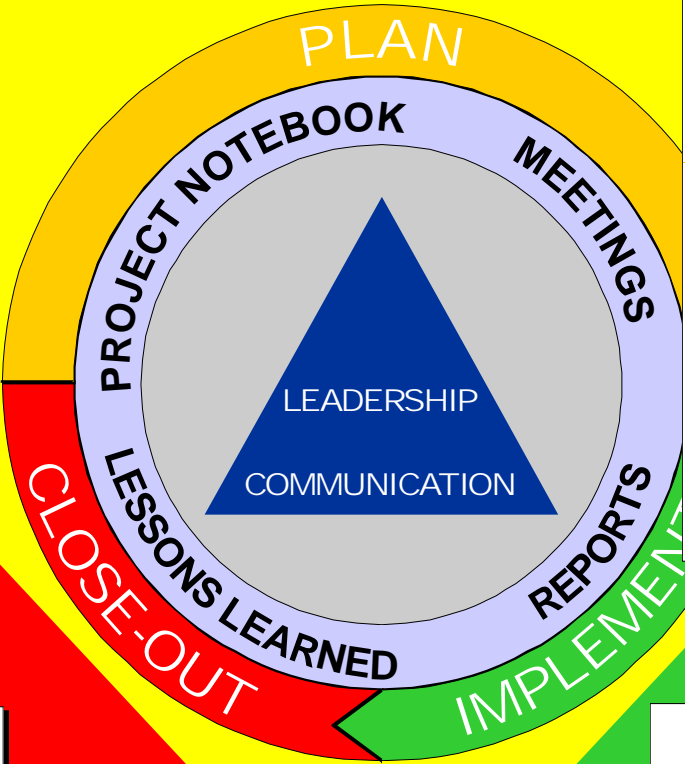
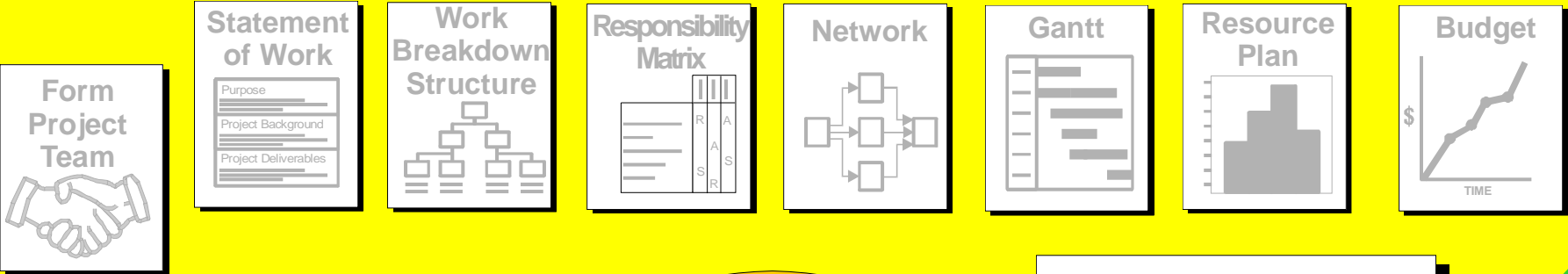
Project Progress Review Meetings

- ★ Review of action items from last meeting
- ★ Update on activities and schedule
- ★ Problem identification and corrective action planned
- ★ Review of issues (closed, open, new)
- ★ Change request status
- ★ Risk status
- ★ Plan for next period

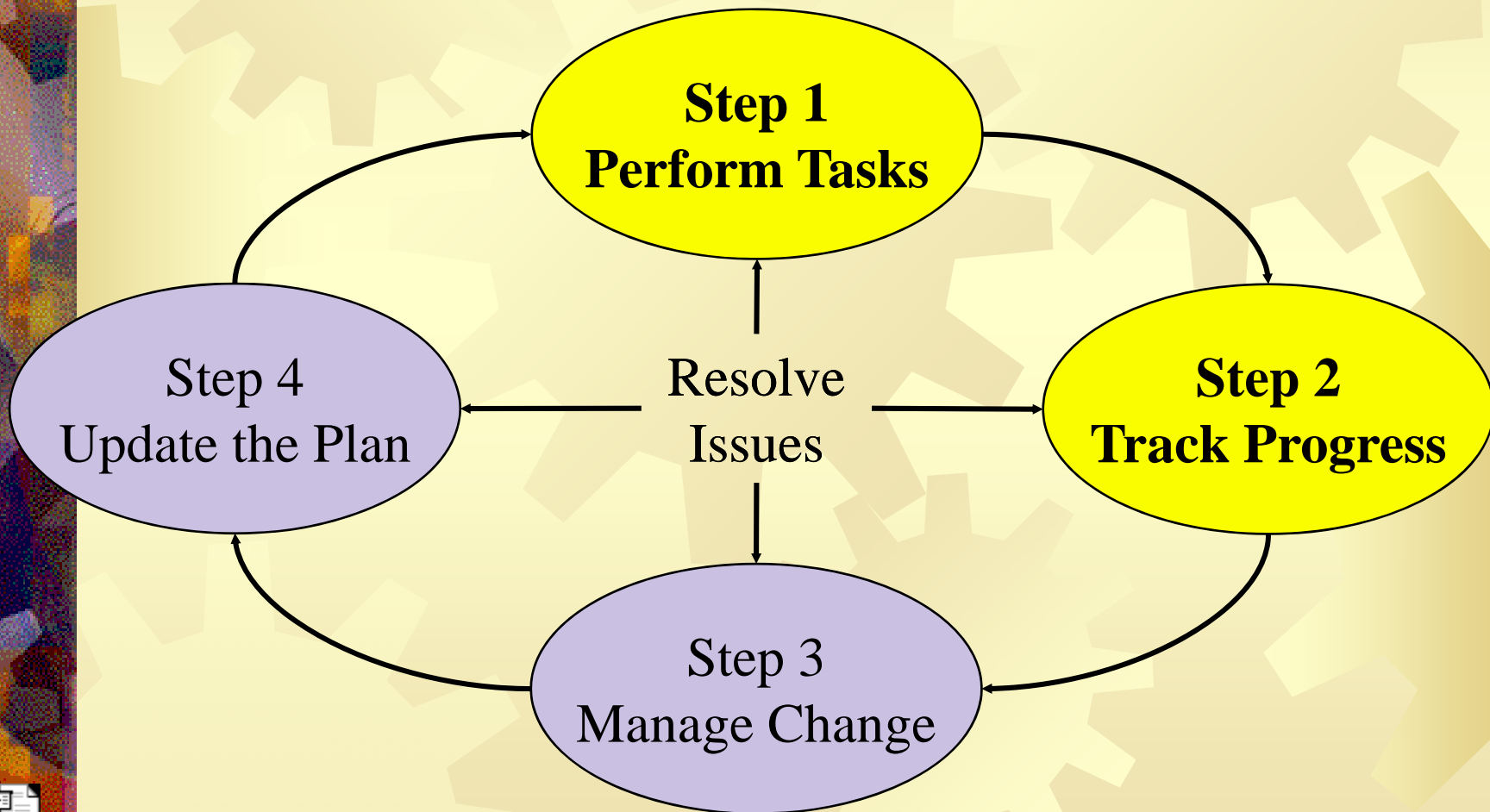


Break Timer

Roadmap to Project Management Success



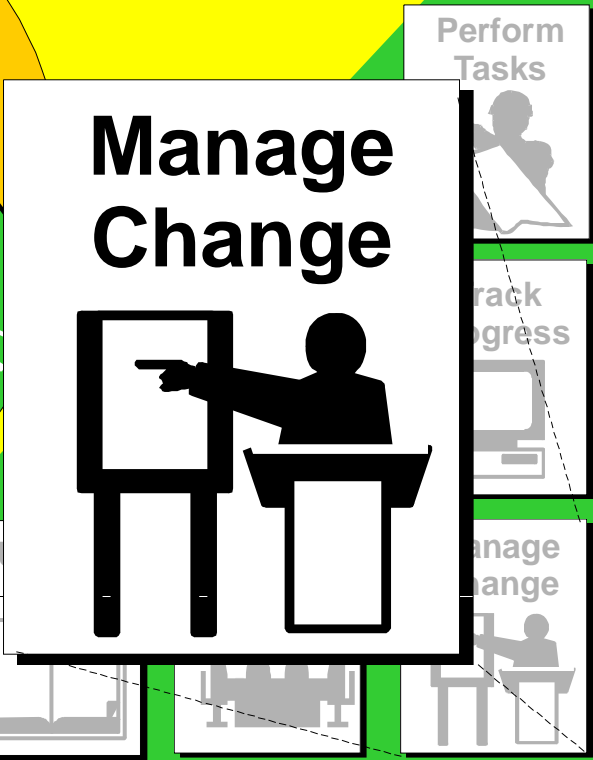
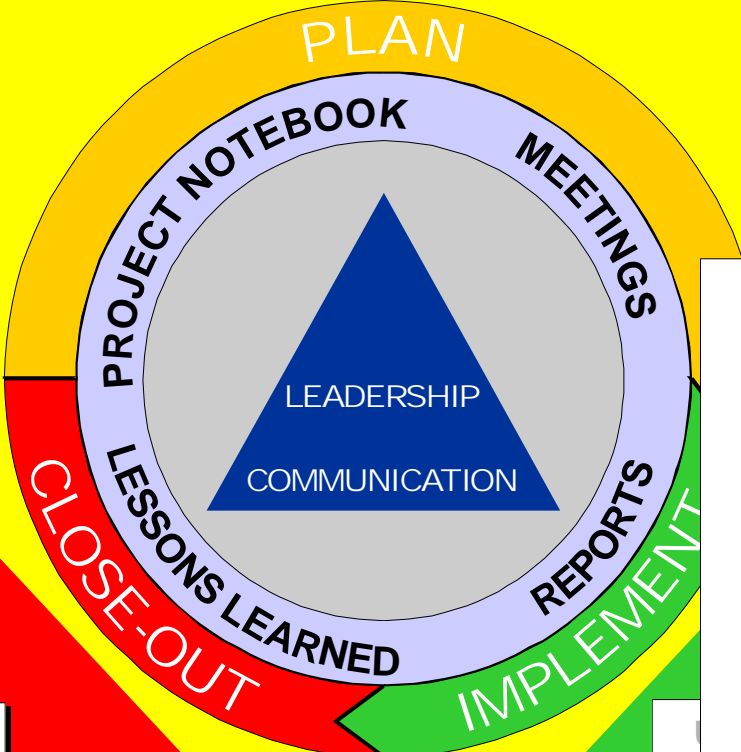
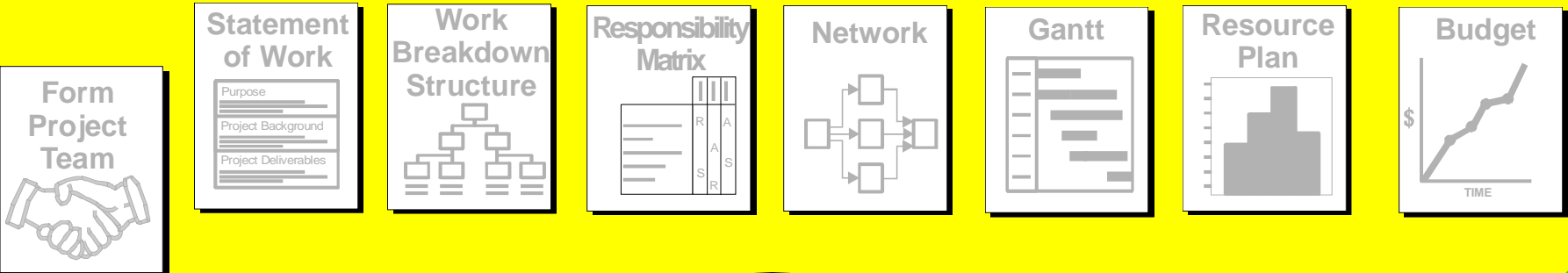
Project Tracking and Control



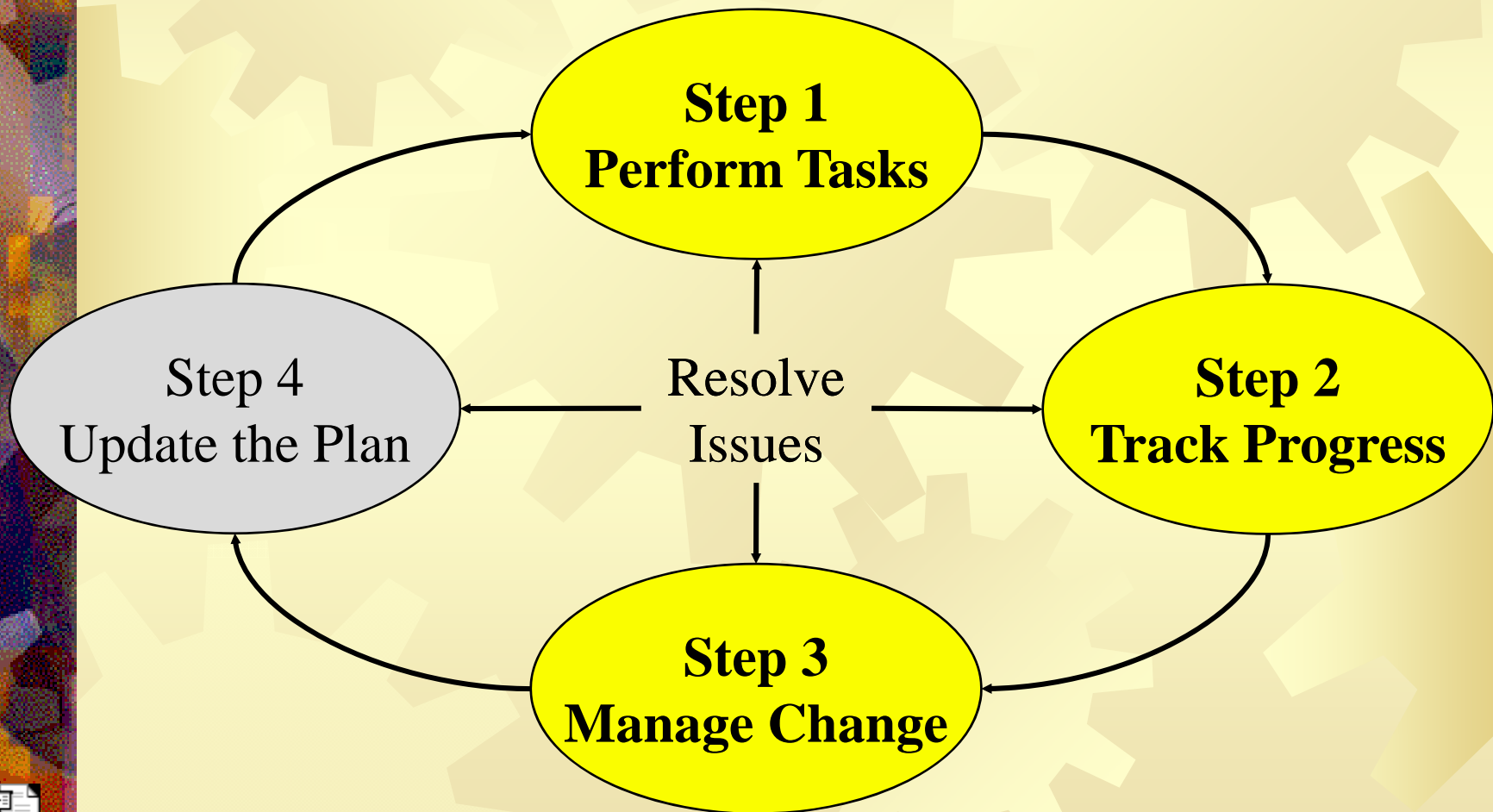
Break Timer



Roadmap to Project Management Success



Managing Project Change



Break Timer

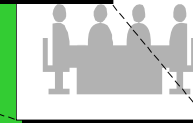
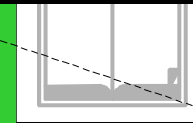
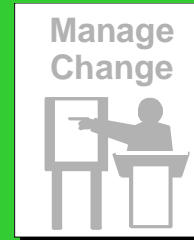
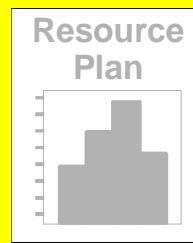
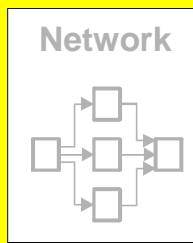
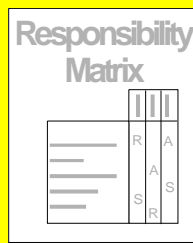
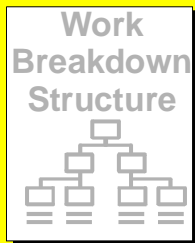
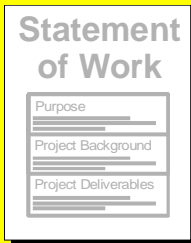
Addressing Project Changes

- ✿ Call a team meeting.
- ✿ Explain what the change is.
- ✿ Obtain feedback from team members.
- ✿ Identify alternative corrective options.
- ✿ Prepare a decision matrix.
- ✿ Select a recommended option(s).
- ✿ Present information to upper management/customer.
- ✿ Implement the approved course of action.



Break Timer

Roadmap to Project Management Success

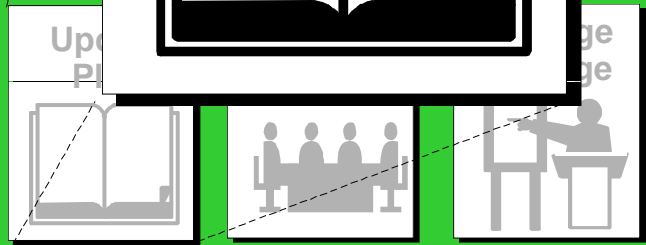
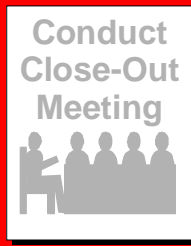
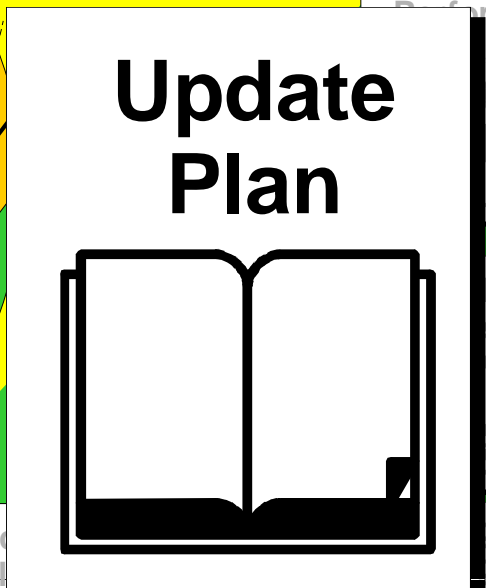
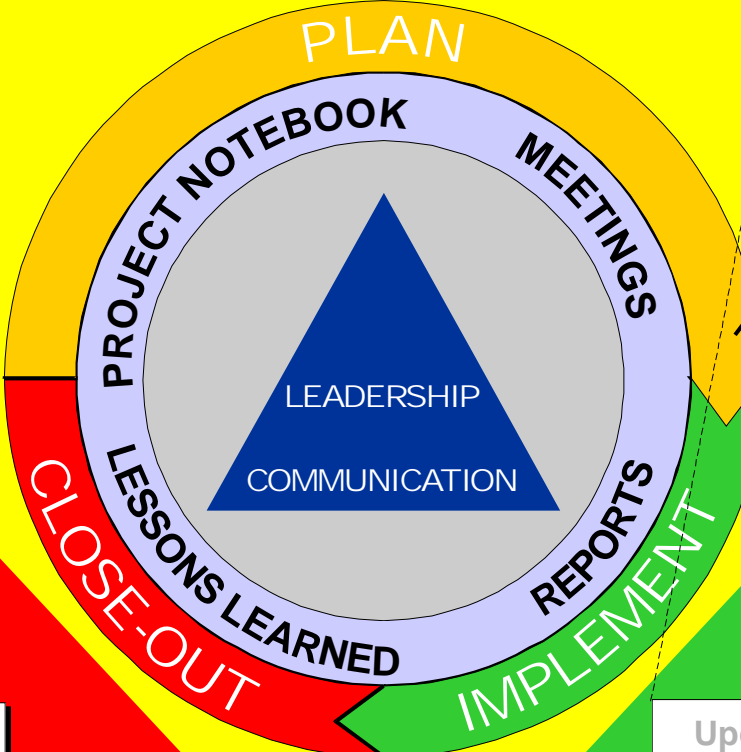
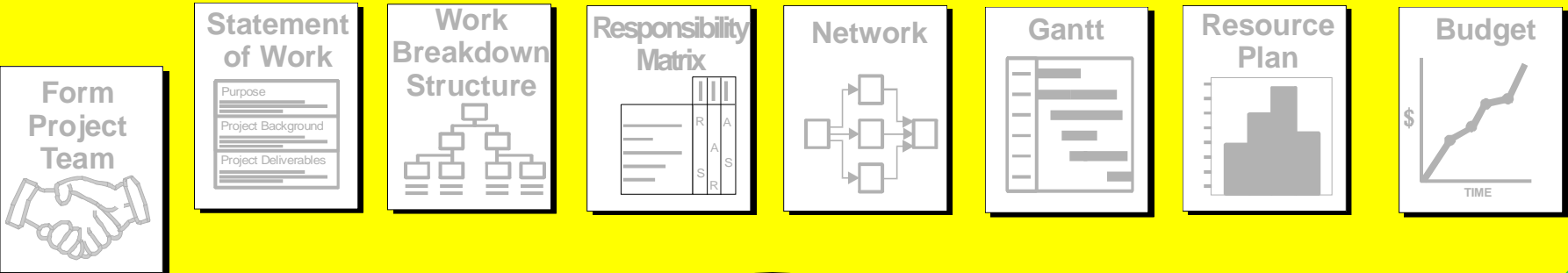


Issue Resolution

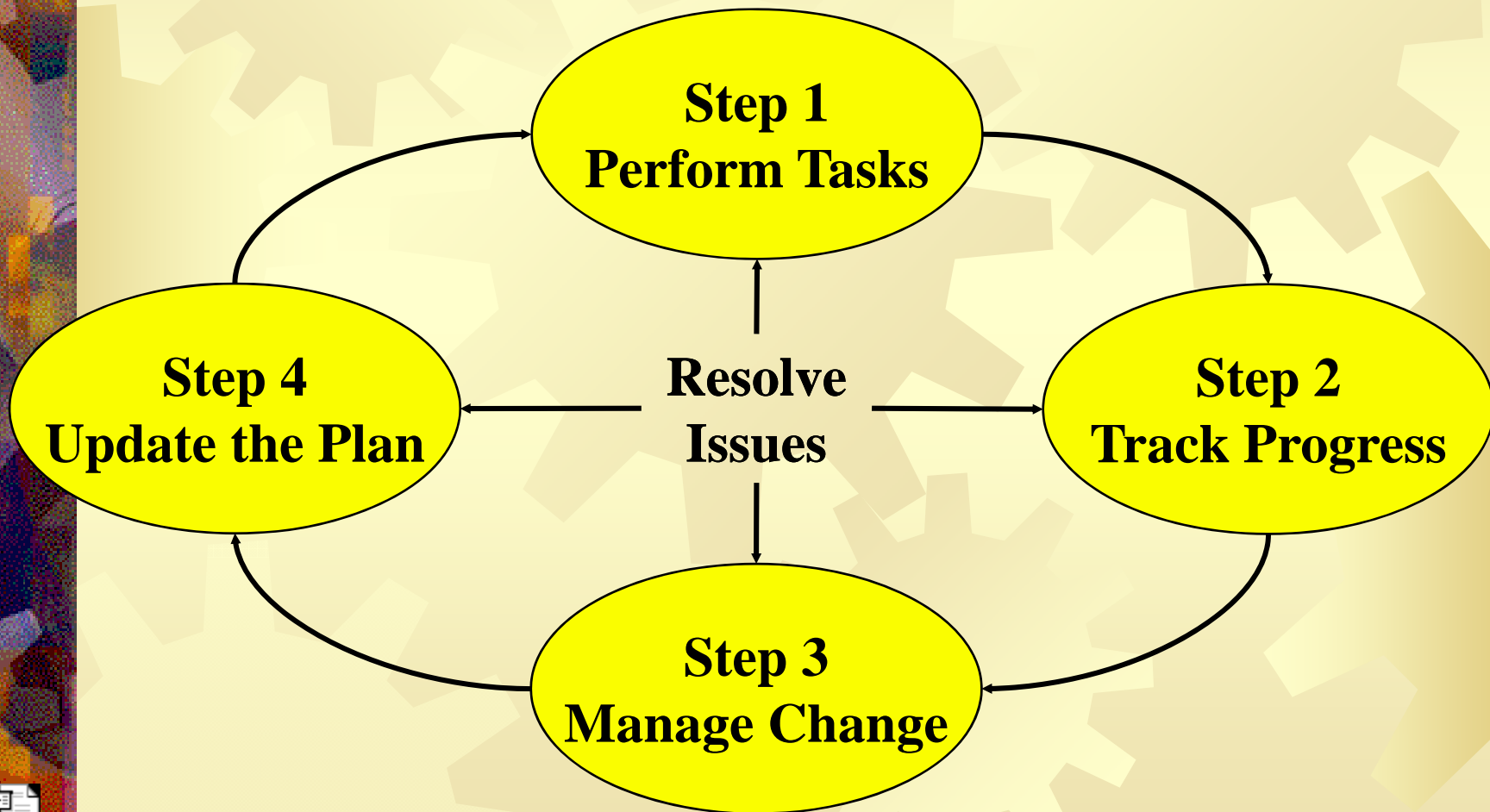
- ✿ Disagreements that should be ...
 - ✿ Documented
 - ✿ Assigned
 - ✿ Scheduled
 - ✿ Tracked
 - ✿ Escalated
 - ✿ Resolved



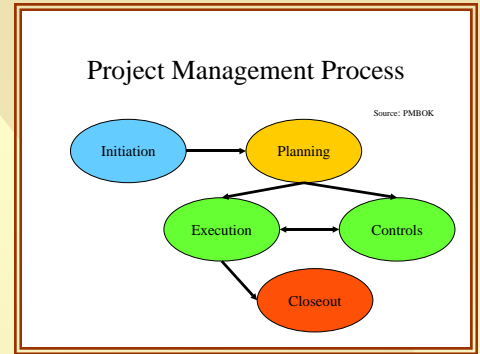
Roadmap to Project Management Success



Plan Updates



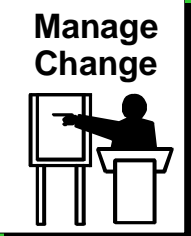
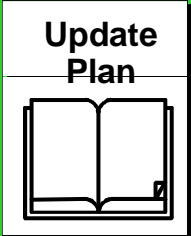
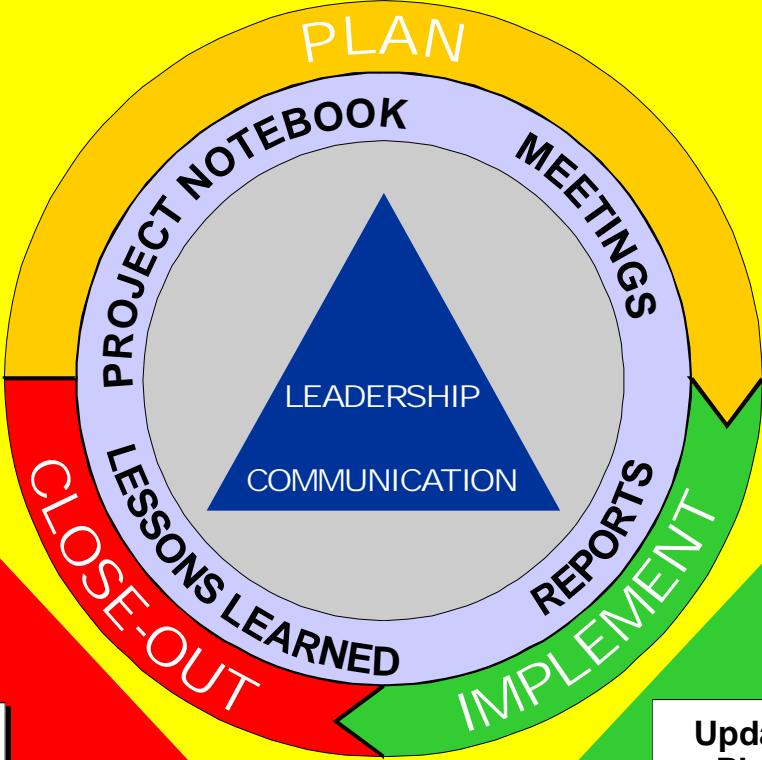
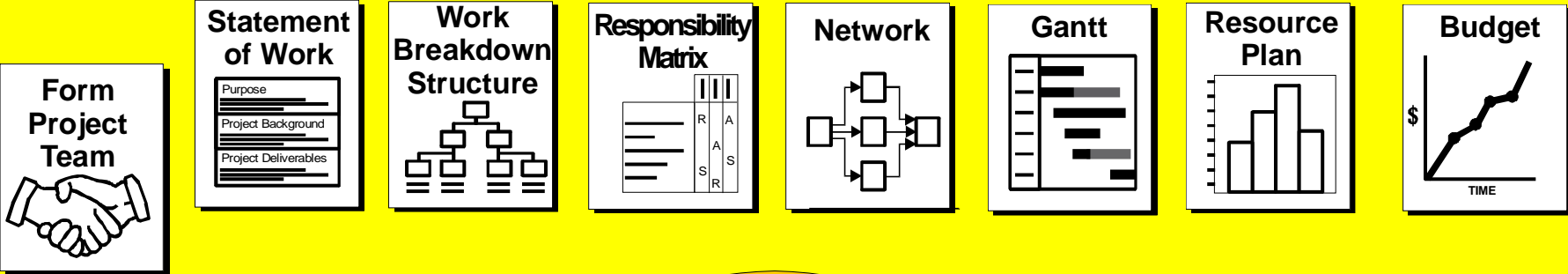
Closeout



Break Timer



Roadmap to Project Management Success



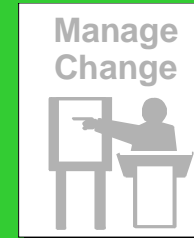
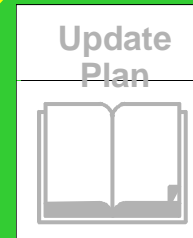
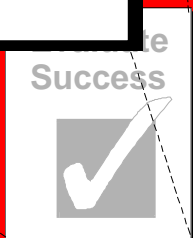
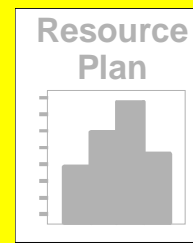
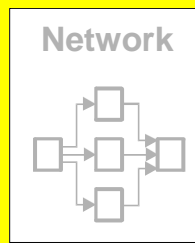
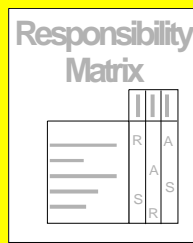
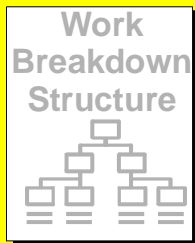
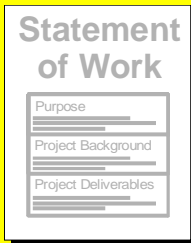
Project Manager's Role During Project Close-Out

- ✿ Ensure that all project deliverables have been completed and formally accepted by the customer.
- ✿ Determine if the measurable success indicators were achieved.
- ✿ Conduct project close-out meetings, both internal and external.
- ✿ Write the final project report.
- ✿ Document and share lessons learned.



Break Timer

Roadmap to Project Management Success

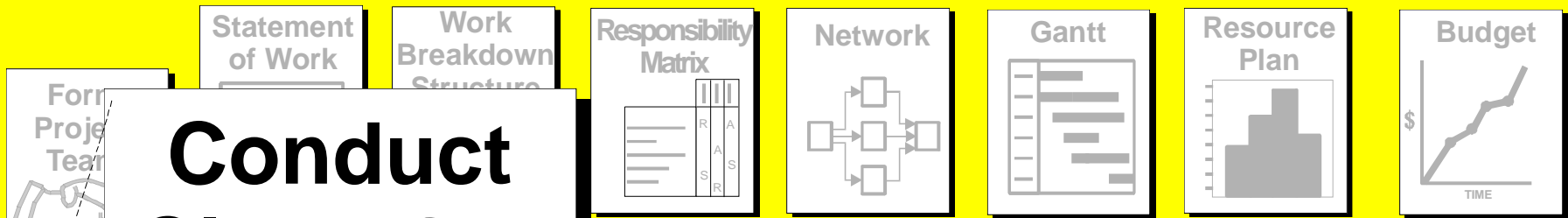


Evaluating Project Success

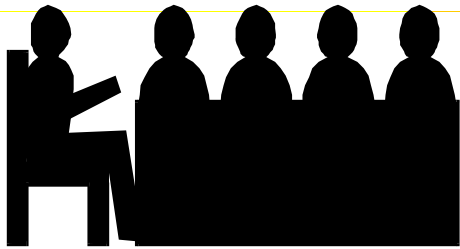
- ✿ Project purpose
- ✿ Deliverables
- ✿ Measurable success indicators
 - ✿ Quality
 - ✿ Schedule
 - ✿ Cost



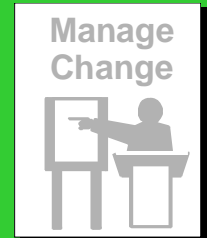
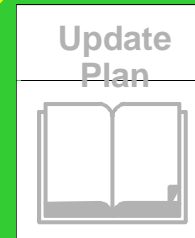
Roadmap to Project Management Success



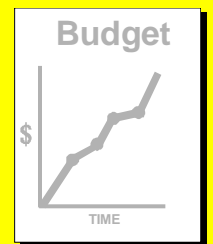
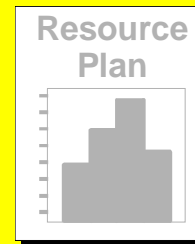
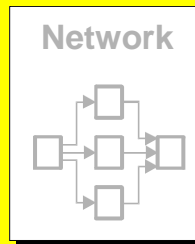
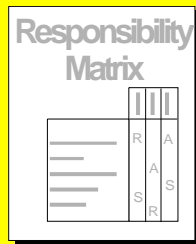
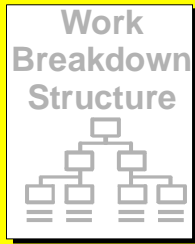
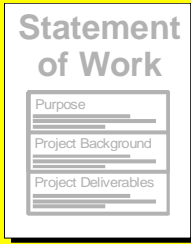
Conduct Close-Out Meeting



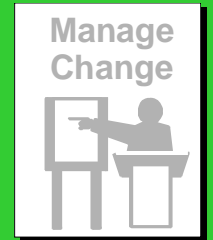
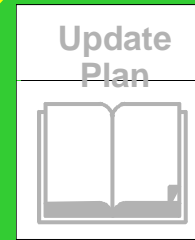
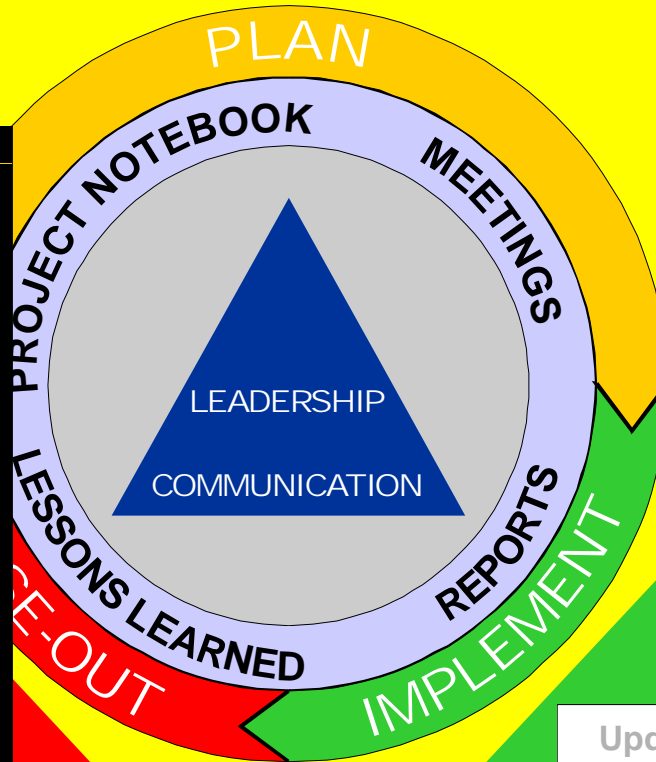
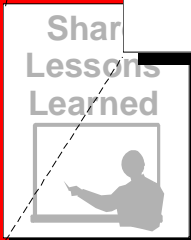
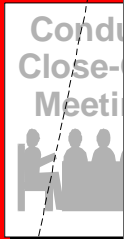
Conduct Close-Out Meeting



Roadmap to Project Management Success



Share Lessons Learned



Sharing Lessons Learned

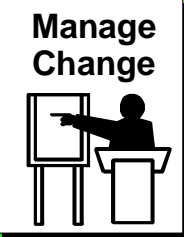
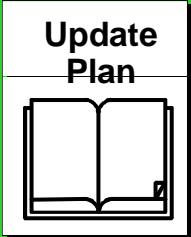
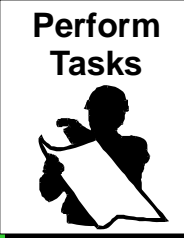
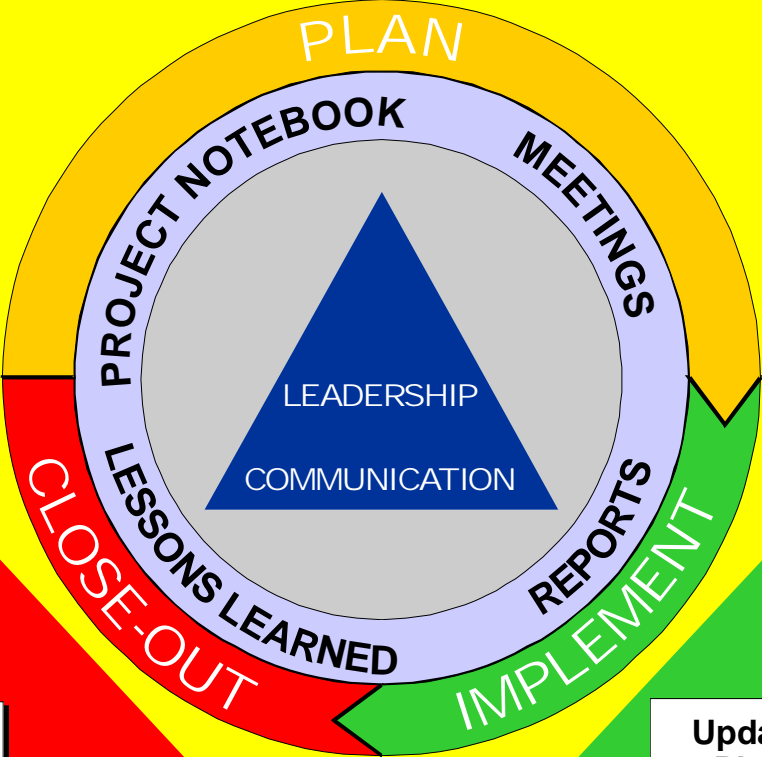
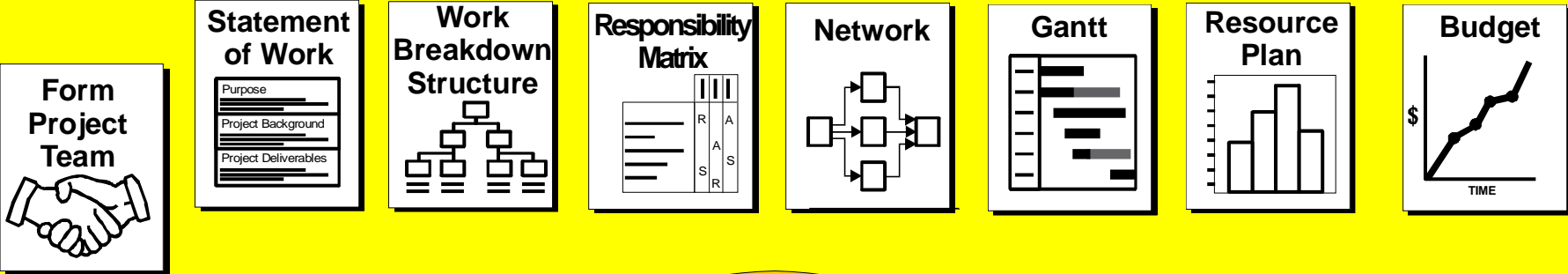
- ★ Lessons Learned Database
 - ★ Categorized electronic project information database
- ★ Continuous Improvement Recommendations
 - ★ Project Management Process
 - ★ Forms
 - ★ Standards



Break Timer



Roadmap to Project Management Success



Thank You!!!!



Break Timer

