Introduction to Project Management

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Kristin's Background

- BS Behavioral Neuroscience Lehigh University
- MBA Monmouth University
- Merck Career
- PMP Certification



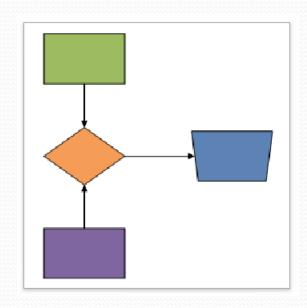
Learning Objectives



- Distinguish between Operations, Processes, and Projects
- ◆ Define Project and Project Management
- ◆ Describe the phases of project management
- ◆ Practice Critical Path Analysis
- ♦ Provide Resources for future use

Processes

- A set of interrelated actions and activities that are performed to achieve a pre-specified set of products, results, or services
- Process steps may become part of your project plan.



Operations

- Routine
- Day in day out
- Examples
 - A customer service center is an example of an operation
 - Creating a customer service center is an example of a project
 - Running an assembly line is an operation
 - Modifying the line is project





What is a project?

 A temporary endeavor undertaken to create a unique product, service or result

Has the following:

- a clearly defined start and finish
- dependencies
- defined scope (the work that must be performed to deliver a product, service, or result with the specified features and functions)



Project Management Triangle

- Three Main Interdependent Constraints
 - Time
 - Cost
 - Scope



A successful project manager needs to keep a balance between the triple constraints so that the quality of the project or outcome is not compromised



Constraints PMs may face

Schedule

- > Are there any time constraints
- > What are the milestones we need to achieve?

Scope

- What is it you want to accomplish?
- > Are there technical, functional or performance specs?
- Are there standard requirements?



Constraints PMs may face

Resources

- ➤ Who else is involved in decision-making?
- ➤ Is there permission to use outside resources?
- > Are there budget constraints?



What does a Project Manager need to do?

- Define the project and split the tasks amongst team members.
 - needs to obtain key resources and build teamwork
 - The ability to allocate resources to achieve a goal is the hallmark of project management.
- Set the objectives required for the project and work towards meeting these objectives
- Keep stakeholders informed on the progress of the project
- Assess and carefully monitor risks of the project



Project Management is...

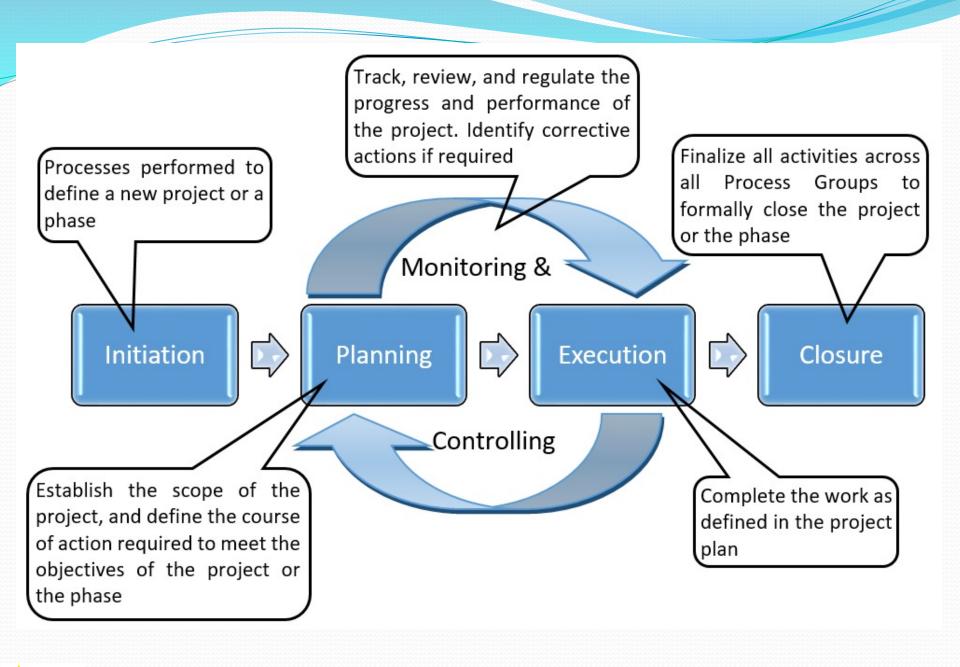
- The process for achieving project objectives (time, budget, and performance)
 - Through activities that start and end at certain points in time
 and
 - Produce quantifiable and qualifiable deliverables
 - Means planning the work and then working the plan



Project Management Processes









Initiation

- Define the project
- Establish the project manager's role
- Identify stakeholders and expectations
- Assemble team
- Deliverable is the Project Charter



Initiation

- Includes all activities related to identifying customer needs or problem and development of a solution for the need or problem.
 - Conduct needs assessment
 - Collect requirements
 - High level project charter
 - Define project deliverables
 - Define high level risks
 - Create budget estimates (how big is it in terms of \$ and FTE)
 - Define high level milestones

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Define the Project

- Try to obtain data from similar projects
- Try to find out what was tried in the past
- Determine the costs to the company if the project is not initiated
- Ask, "what is the cost of failure"
 - Knowing the cost of failure can give cause to increase the budget if your projects get in trouble
- Create a list of deliverables via a Work Breakdown Structure



Identify stakeholders

- Project stakeholder, a person, group, or organization with an interest in a project
- What names do you use to describe stakeholders?
 - ♦ Team or program leads
 - ♦ Governance committees
 - Project team members
 - ♦ Subject matter experts
 - **♦** Influencers
 - ♦ Finance
 - ♦ Human resources
 - ♦ Project Sponsor

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Project Stakeholders

- Individuals actively involved in the project, are impacted by its execution or completion, and may exert influence
- Has a vested interest in the project

Project Manager

Sponsor

Customer

Performing Organization

Project Team Members



Why get customer's requirements?



How the customer explained it



How the Project Leader understood it



How the Analyst designed it



How the Programmer wrote it



How the Business Consultant described it



was documented



What operations installed



was billed

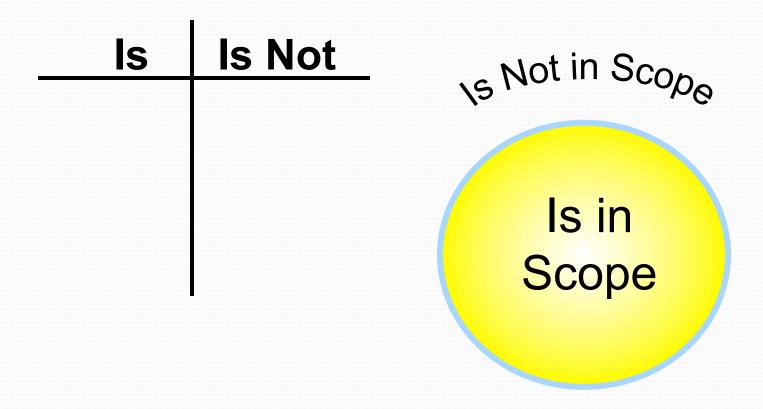


How it was supported



really needed

Tools Used to Help You Identify What the Customer Wants: Is - Is NOT Tool





Identify What the Customer Wants

- ♦ Human Factors Does it make sense?
- Reverse engineering Go see and make it better
- ♦ Interview the end users
- Voice of the customer
- Customer feedback it is not always negative
- Benchmarking what has been done before



Capturing Requirements

Expressed – What did they tell you?

Implicit or implied – What did they not tell you that they assumed you knew?

Wow or Sizzle – What goes beyond the customers expectations



How to Capture Expressed Requirements

- ◆Brainstorming
- ♦ Focus groups
- ◆Service level agreements



How to Capture Implied Requirements

- Benchmarking
- Ask the client
- Look at other projects
- Look at journals that have templates or case studies
- Service level agreements (SLAs)
- Obtain historical information



Rank Order Requirements

Once you have gathered your requirements you need to rank them.

- Must have
- Like to have
- Nice to have



Project vision statement – business case

- For whom are we doing the project? (the sponsor, the end user)
- Why should we do this? What is the benefit?
- Why is it important? What strategic objective does the project support?
- What is the quantified value of the project (\$\$\$)?



Knowledge check

What questions do you have to ask before you go forward on these projects?

- The new web site has to be revised by the end of the second fiscal quarter and it needs to be user friendly.
- 2. The new project management software needs to have buy in from both departments: Engineering and Testing.
- 3. All process improvements must be completed by the 25th.



Project Charter

- Formally authorizes the existence of a project, and provides the project manager with the authority to apply organizational resources to project activities A Guide to the Project Management Body of Knowledge (PMBOK Guide)
- Includes: vision, values, and team members



High level project charter

- Vision How does this tie in with the strategic vision of the client?
- Problem/Opportunity What is the need, problem, or opportunity to be addressed?
- Solution/Goal How do we resolve the need, problem, or opportunity?
- Scope What's in scope and what is out of scope?
- Criteria for evaluation How do we know we are successful? This comes from the sponsor or client.
- High level risks and risk mitigation plans.



OPPORTUNITY		CORE TEAM MEMBERS		STAKEHOLDERS			
Currently, Facebook's user interface is deficient in customized profile pages for its users. This project proposes to offer a solution to the problem is by offering a profile upgrade at a fee that would allow additional features for profile design, layout, and additional user options. Users have the option of having a free basic profile, or upgrade to a "premium" profile for a flat one-time fee.		Name	Role	Name	Role		
		Monica	Project Manager	Mark Zuckerberg CEC			
		Nina	Spokesperson	Investors Shareh		olders	
		Tala	Graphic Designer	er Users U			
GOAL							
The goal of the project is to increase user satisfaction and attract new users by allowing profile upgrades at fee. The new options will allow users to upgrade to a premium profile that will feature background layouts, graphic design, various media							
uploads, and enhanced secu	rity and privacy settings.						
OBJECTIVES		SUMMARY PROJECT STATUS					
 In addition to the basic profile, introduce a premium profile for a one-time fee, which will include additional features. Allow more profile customization and layout design options. Increase user privacy and security options. 			Project Start Date:				
		,			12/04/2012		
			Process Impacted:				
		P	otential Financial Impact:				
IN SCOPE	BUSINESS CASE	MILESTONES		Status DUE DO		DON	
The scope is profile design, customization and user options only.	 This improvement is important because we are receiving a high number of inquiries regarding customization options and enhanced security settings. 						
		Project Concept	t		09/05/12	09/051	
		Current Business Process Analysis		•	9/27/12	9/27/12	
CONSTRAINTS	ASSUMPTIONS	Project Presentation		0	10/18/12	10/18/1	
Time constraint Budget constraint Labor constraint	 We assume that the user base is constantly growing. We assume that users are interested in continuously upgrading their profiles. 	Future Business	s Process Analysis		10/25/12		
		Performance Dimension Analysis		0	12/04/12		
		Submit Final Paper			12/04/12		
DELIVERABLES		CDONICOD A				D.4.T	
 Design department will create 1,000+ layout designs. Media department will install various media usage options. Accounting and Finance will manage fees and expenses. IT Department will test new security and privacy settings. Marketing department will begin to promote and create public awareness of the new and improved Facebook. 		SPONSOR APPROVAL				DAT	
		Elizabeth Donahey			10/18/		



Completed





Create a Problem and Solution/Goal Statement

- Problem/Opportunity
 - What is occurring?
 - When did the problem start?
 - **Where** is the occurrence?
 - Extent (Gap) of the problem or opportunity
- Example:

For 2006-2007 (When), 40 (~30%) (Extent) of 147 Clinical Bioanalytical Reports (What) required by FDA and EMEA regulations were not written by PPDM (Where) within the required timeline (3 months of study completion).



Create a Problem and Solution/Goal Statement

- Solution/Goal
 - What specific outcomes are required? What level of performance will satisfy the customer and/or business needs?
 - Visualize what success will look like draw a picture of this.
- Needs to be SMART
 - Specific
 - Measurable
 - Achievable
 - Relevant to the business/customer
 - Time bound by when



Communication plan

- Created by the PM
- "Most project manager's spend approximately 90% of their working hours engaged in some form of communication." *
- What should you include in your communications plan?
 - Means of communications, how often, norms
 - Project team directory
 - ADI Logs (Actions, Decisions, Issues) will they be used?
 - Risk log
 - Standard status reporting
 - Documentation management (SharePoint team site, shared drive)
 - Escalation processes



Why projects fail

- Ambiguous requirements or undefined deliverables
- Scope creep or changing scope in later project phases
- Gold plating or adding enhancements that the customer never asked for
- Thinking you can read the mind of the customer
- Insufficient user involvement resulting in incomplete requirements
- Neglecting to incorporate implied requirements



What next?

- Before we can move to the planning phase we need to get the approval of the sponsor or client
 - Do they approve the charter?
 - Do they agree with your assumptions about the project?
- Do we have the right people for the project?
 - Availability is not a skill set
 - If they are new or do not have the skills, assign a mentor/coach
 - If you use mentors/coaches make sure they have time to act in this capacity





"If you don't know where you are going. How can you expect to get there?" ~ Basil S. Walsh



Planning

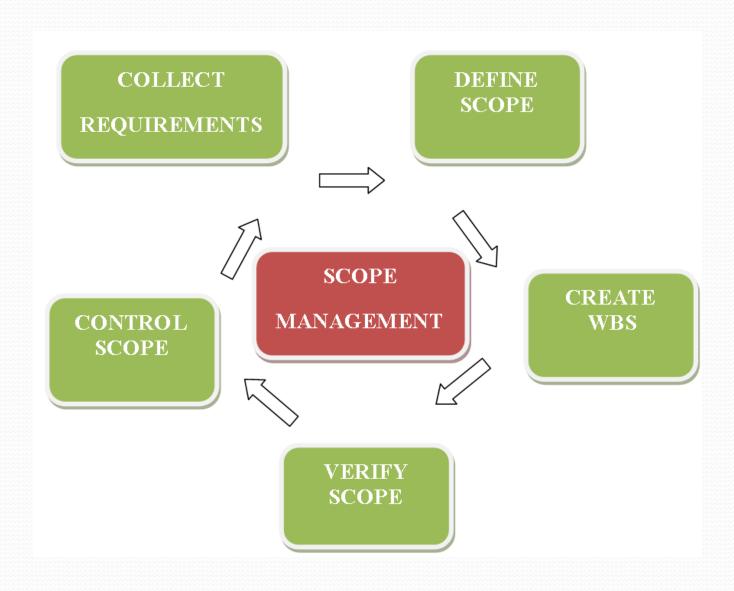
- Consists of those processes required to establish the scope of the project, refine the objectives and define the course of action required to attain the objectives that the project was undertaken to achieve. A Guide to the Project Management Body of Knowledge (PMBOK Guide)
- Main goal is to prepare Project Management Plan



Scope

- Managing the scope is defining and controlling what is and is not included in the project
- The work that must be done to deliver the features and functions of the product or service
- For example, the scope of a pharma development team includes the safety and efficacy of the drug or vaccine.







Project Management Plan

 Becomes the primary source of info for how the project will be planned, executed, monitored and controlled, and closed



Purpose of a WBS (Work Breakdown Structure)

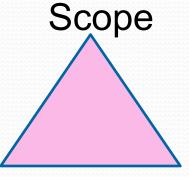
Define and organize the scope of the project



 Help assign responsibilities and monitor and control project execution







Time



PMI definitions

- WBS: A deliverable-oriented hierarchical decomposition of the work to be executed by the project team to accomplish the project objectives and create the desired deliverables. *
- Deliverable: Any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project.
- Work Package: The work defined at the lowest level of the work breakdown structure for which cost and duration can be estimated and managed.

* PMBOK Guide 5th Edition 2013



WBS Principles

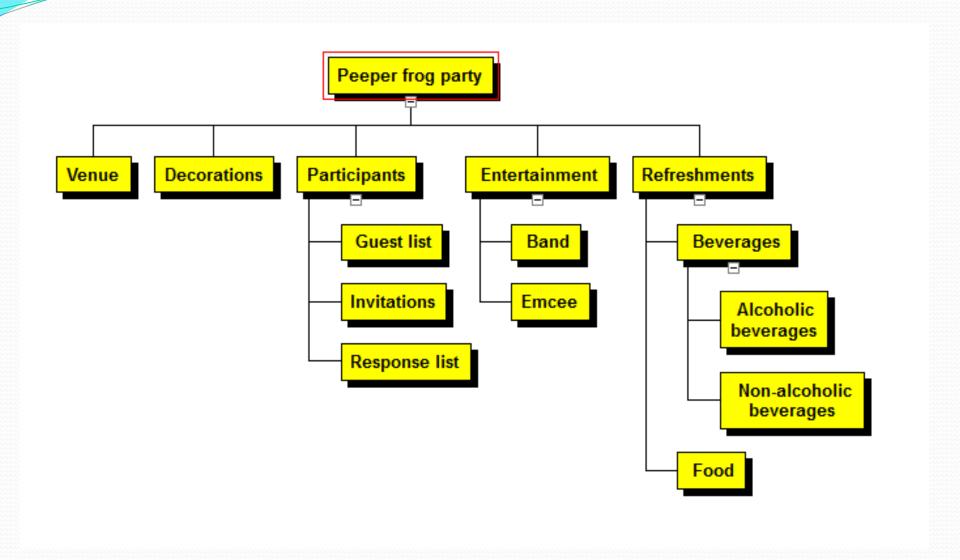
- ♦ A WBS is made up of nouns
- WBS should be mutually exclusive No overlap between two work packages
- ♦ WBS must follow the 100% rule
 - The sum of all work packages at the lowest level must include all the work specified in the scope
 - WBS should not include anything that is not included in the scope of work
- Know when enough is enough
 - Work Package must allow for accurate estimates
 - Only one type of resource is required for a given work package
 - Rule of thumb work package should be 80-150 hours of effort



WBS Principles (continued)

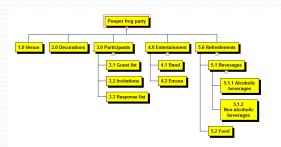
- PMI says that your WBS should only include work packages (nouns) and not activities or tasks (verbs).
- Other authorities propose that you break your work into work packages and then into activities moving from nouns to verbs.
- ◆ The further down you go the better your estimates of time, resources, and costs will be but beware if you go down too far you could be creating work for yourself that is not value added this all depends on the size of your project.







Responsibility Matrix



- ONLY one owner for each deliverable
- Ownership is assigned at the lowest level



		RESPONSIBILITY MATRIX					
Project	Name:						
	Manager:						
Revision							
Code of	Deliverable	Project Ov	Project Owners				
Account		Bill Schutte	Dan Hicks	Malene Velek	Ron Koenig	Louise Davidson	
1.0	Venue	х					
2.0	Decorations		Х				
3.0	Participants						
3.1	Guest List		Х				
3.2	Invitations			х			
3.3	Response list			х			
4.0	Entertainment						
4.1	Band				х		
4.2	Emcee				х		
5.0	Refreshments						
5.1	Beverages						
5.1.1	Alcoholic beverages	Х					
5.1.2	Non-alcoholic beverages					х	
5.2	Food					х	



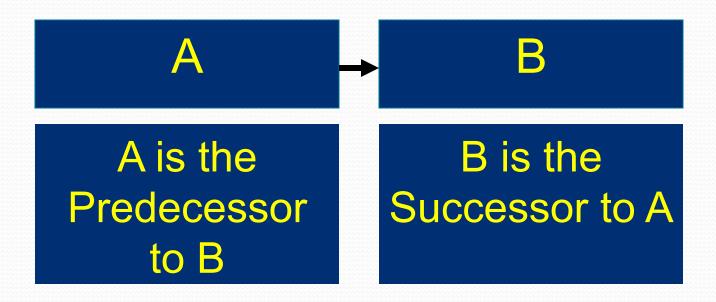
RACI

- **Responsible** Doer. Individual who performs a task. They take action. R's can be shared.
- Accountable designates the function that is ultimately "accountable" for the completion of the activity. There can be only one "A."
- Consulted identifies the functions that must be "consulted" before a decision or activity is finalized. This is a two-way communication.
- **Informed** identifies the functions that must be notified about the completion or output of the decision or activity.



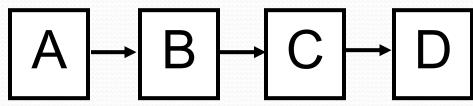
Network diagram

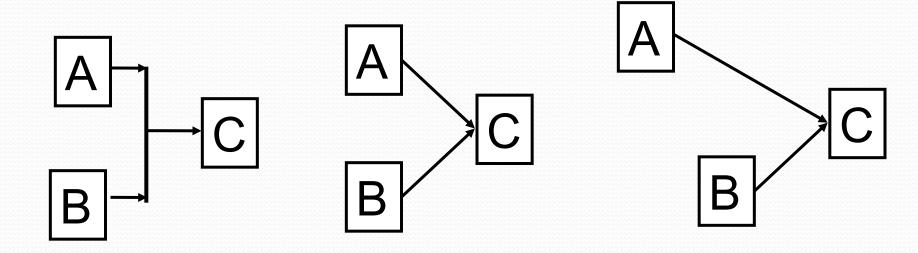
- The predecessor is the **from** activity
- The successor is the to activity
- The predecessor drives the successor
- An arrow shows the relationship





What is the predecessor of D? of

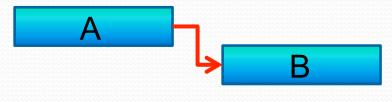




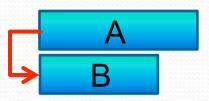


Types of dependencies

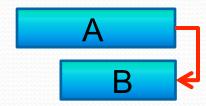
• Finish - Start



• Start – Start



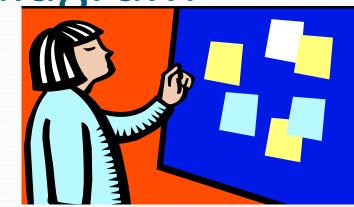
Finish – Finish



Finish – Start is the most common dependency and should be used as often as possible

Creating a network diagram

- Create a Post-It Note [®] for each Activity or Task
- 2. Create Start and Finish
- 3. Place the Post-It Notes® on a wall in a logical order
- 4. Connect the tasks with arrows
- 5. Show concurrent tasks in parallel



Critical path - Learning objectives

- Define Critical Path
- Calculate a Forward Pass and Reverse Pass
- Determine Critical Path
- Determine Project Duration
- List relationships used in scheduling



Where are we in the PM Process?

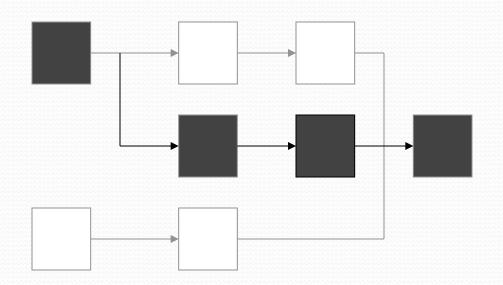


Determine Critical Path

Deliverable: Estimate the Duration of the Project and Critical Path Steps

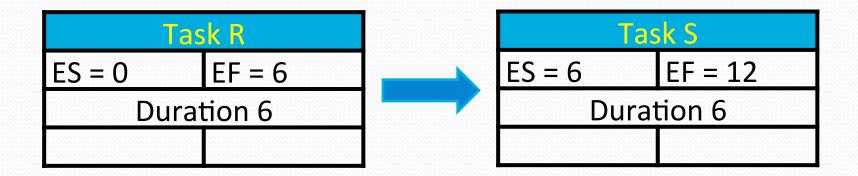
Critical Path

The longest path through a project determines the end date of the project.

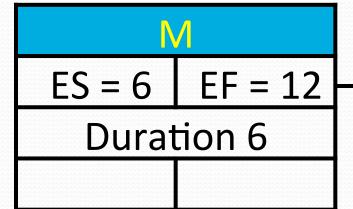


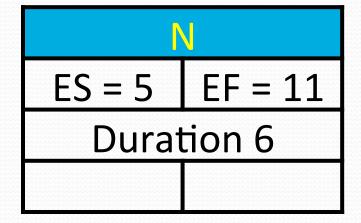
Forward pass

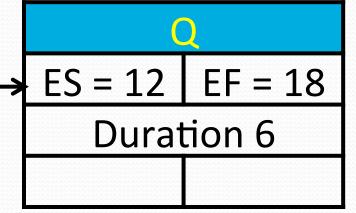
- Provides project end date
- ◆ ES Earliest start
- ◆ EF Earliest finish = ES + Duration



Forward pass







Always use the largest number

Backward pass

- Calculates the float for those tasks not on the critical path
- Tasks with zero float are on the critical path
- ◆ LS Latest start = LF Duration
- ◆ LF Latest finish
- ♦ Float = LF- EF

Backward pass

V	1
UV	•

$$ES = 6$$

Duration 6

$$LS = 6$$

$$ES = 5 \mid E$$

Duration 6

Float = 0 daysCritical path

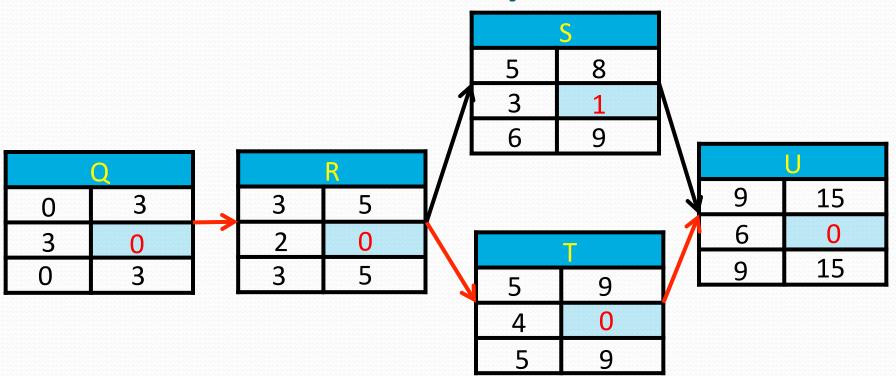
$$EF = 18$$

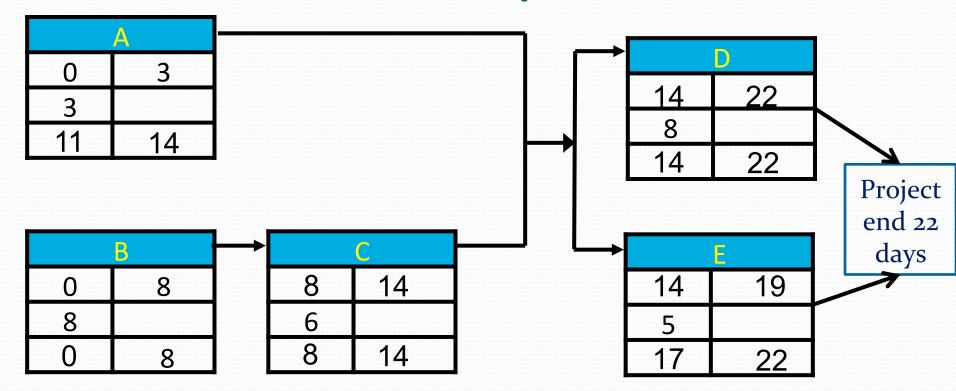
Duration 6

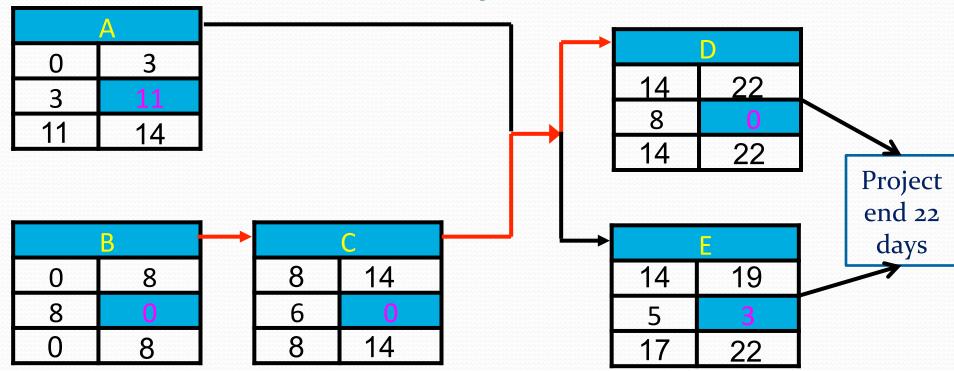
If multiple paths always use the lowest LS

Float =
$$1 \text{ day}$$

Task				
ES	EF			
Duration	Float			
LS	LF			

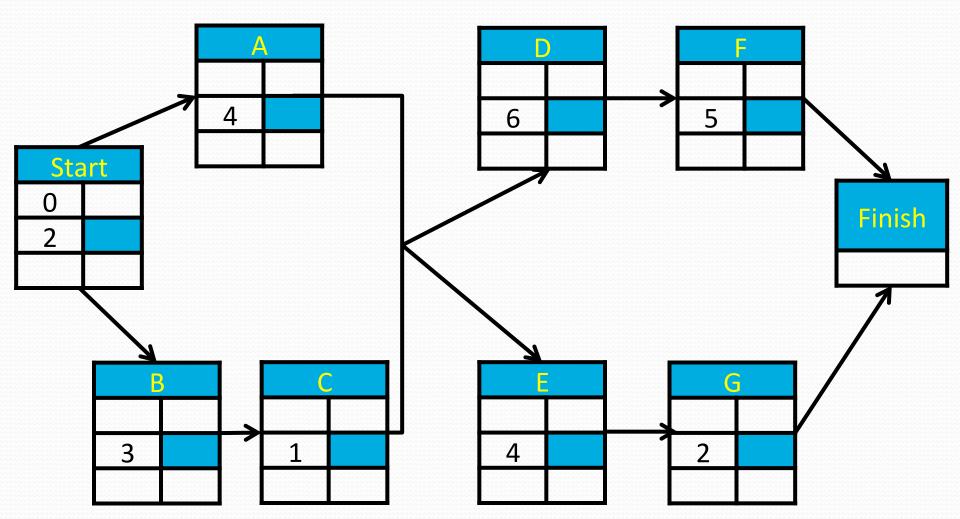




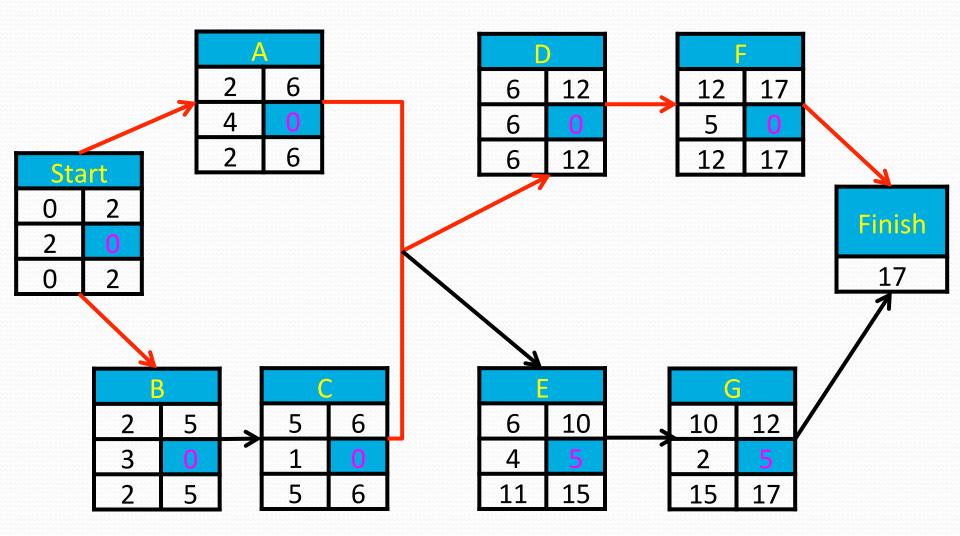


Process to identify critical path

- Write the duration for each task
- Perform a forward pass
- Perform a reverse pass
- Calculate the float
- Mark the critical path in red



What is the Critical Path?





Crashing your schedule

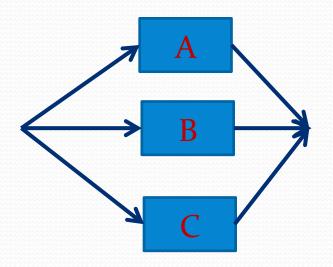
- Shorten tasks on the critical path
 - Add resources
 - Include overtime
 - Advanced skills sets
- Look at the critical path and prioritize these tasks
 - Begin by shortening the highest priority task
 - Verify critical path
 - Repeat
- Usually results in increased costs and increased risks



Fast tracking

- Perform tasks in parallel that normally would be sequenced in a series
 - May require more resources
 - Often involves rework
 - Impacts risk
 - Increases costs







Building a schedule

- There are many tools available for scheduling purposes
- A schedule must include tasks, start and finish dates, durations, and dependencies
- A Gantt chart provides a graphical illustration of a schedule that helps to plan, coordinate, and track specific tasks in a project
- At Merck the tool of choice for the most part is Microsoft Project. What you use will depend on what you have, your skill set, and the complexity of your project
- Google "Gantt Chart" and you will find many templates that can be used with Excel and other tools.



Project Risk Management Philosophy

- Risk Management is an integral part of project management.
- The purpose of Risk Management is to maximize positive outcomes and minimize negative outcomes.
- Risk Management asks these basic questions:
 - What should I be concerned about?
 - What should I do about the risks?



Risk

A risk is an uncertain event or condition that, if it occurs, has a positive or a negative effect on at least one project objective, such as schedule, cost, scope, or quality. [PMBOK® Guide, 4th ed]

- An uncertain event or condition can be a
 - Threat (negative risk)
 - Opportunity (positive risk)
- A cause or several causes create a risk
 - Direct cause-effect relationship leading to risk
 - Part of a system with several conditions required to create a risk
- A risk has a likelihood of occurrence, or probability, and a measurable impact or effect if it does occur



Why Perform Project Risk Management?

- To be proactive in:
 - Reducing cost and time
 - Improving the rate of success
- To employ best practices
 - Reduces subjectivity data driven and systematic
 - Improves decision making and communication
 - Provides a documented rational for decisions
 - Allows prioritization
- To improve the rate of success
- To meet customer needs
- To eliminate delays caused by ignoring known risks



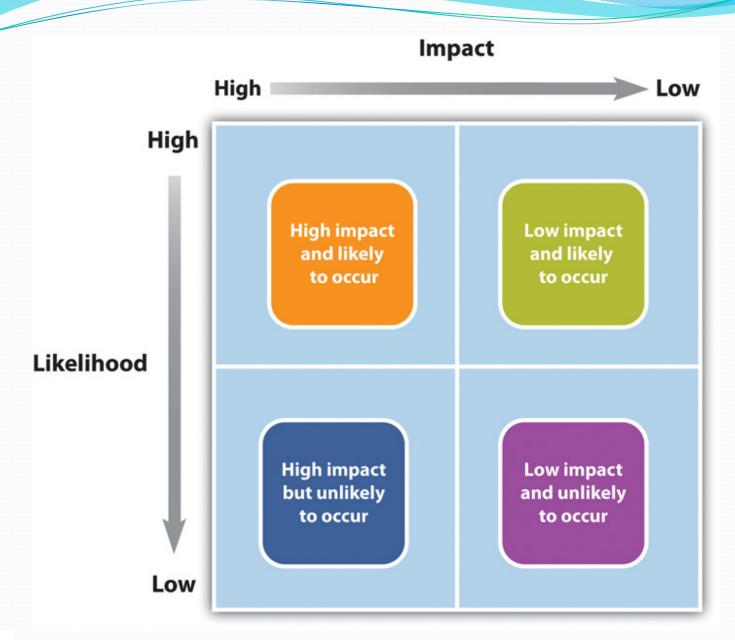
The Problem with Risks

Denial is not a river in Egypt, but it often flows through our buildings.

- There are three types of denial:
 - "This is not a risk."
 - "Not serious."
 - "Can't do anything about it."









Risk vs Issue

- An *issue* is an item that will have a known or certain impact to the project scope, time, or cost if not resolved by a certain date
 - A current problem that needs immediate attention
- A *risk* is an <u>uncertain event or condition</u> that, <u>if</u> it occurs, has a positive or a negative effect on at least one project objective, such as time, cost, scope, or quality
 - A risk is something that <u>may</u> occur in the future
 - Plans can be developed to maximize the opportunity or minimize the threat
- Risks that occur usually become issues



Risk Types

Known

- Controllable
 - Risks that can be controlled or influenced (e.g., Minimize free text in data collection tools)
 - Can be accepted or managed
- Uncontrollable
 - Risks that cannot be controlled or influenced (e.g., Clinical Trial results)
 - Must be accepted

Unknown or New

Risks that have not occurred or have not been documented



Risk Management

- Initially done in the planning phase
- Should be revisited when you enter a new phase
- At least once a year depending on the length of your project
- Risk management is an ongoing task
- ♦ There are many tools to help with Risk management
 - Failure Modes Effects Analysis (FMEA)
 - Interviewing
 - Root cause identification
 - Risk Log





Executing

- Consists of those processes performed to complete the work defined in the project management plan to satisfy the project specifications. - A Guide to the Project Management Body of Knowledge (PMBOK Guide)
- Main goal is to direct and manage project work



What do we do in the Execute phase?

- Manage deliverables how are they proceeding
- Look at work performance
- Handle change requests through a change request process
- Make updates to the project plan
- Review staff assignments and needs
- Manage the project team what type of enterprise environmental factors have occurred? Have there been an organizational changes?
- Managing stakeholders expectations communicating, addressing issues, escalating when appropriate



How do you track your projects?

How do you know the work is being done?

How do you know you are on track?

- What is tracked on your projects?
- How are your projects tracked?
- What is reported on your projects?





Things you should typically track

- Schedule
- Progress Reports
- Budget FTE and Spending
- Deliverables % completed
- Risk past and upcoming
- Resources key skills needed, availability
- Issues Items that need resolved
- Action Items Assignments to people and date due
- Decisions made What and logic behind the decision
- Watch List put items here that apply to the next phase of the project so that you do not forget them



Status reporting

- Use a dashboard
- Make it clear what you want up front
- Requirements reporting weekly/biweekly depending upon the size of the project
- Focused meetings are to the point Every topic needs to have a desired outcome!



Managing change on projects

- Manage change, don't let it just happen!
- Have a Change Control Process
- Some companies even have a Change Control Review Board for large scale projects.



Typical change request process

- A customer fills out a change request form.
- 2. A check is made to see if it is in or out of scope by referring to the WBS.
- The request is evaluated for its impact on budget and schedule.
- 4. A cost benefit analysis is done.
- 5. A business decision is made to agree, reject or postpone the request.
- 6. If agreed to, the project plan is updated to reflect the new deliverables.
- 7. The Project Team is informed of the changes.



Why does change happen?

- Incomplete initial requirements
- Legal requirements
- Technology changes
- Marketplace Changes
- Change in sponsor

Why Else?



Managing expectations

- Develop prototypes. Show them the final product
- Communicate with your sponsor. Let them know what is happening. They cannot help if they do not know there is a problem.
- Discuss with the sponsor how often they want to meet, and then ask the question – "Are these meetings meeting your expectations?" Are they often enough?



Status reports

- Why do a status report?
- What is in a status report?
 - Current status
 - Significant accomplishments for the period
 - Scheduled activities
 - Issues and Remediation Plans



Universal Project Status Criteria

Green

On Yellow

At Risk

Critical Problems

- On Time
- Issues with clear resolution in progress
- Risk Assessment completed; mitigation strategies in place

If any of these occur

- Non-critical path item late
- Issues project can handle but without resolution at this time
- Risk Assessment completed; no mitigation strategies in place
- No Project Plan

If any of these occur

Red

- Critical path item late
- Issues with no clear resolution; escalation required
- No Risk Assessment completed; no mitigation strategies in place

Proactively raising an alert by reporting red or yellow status is best practice. Determine the Project Status by using the criteria which indicates most severe problems. (For example No issues, on budget and 4 weeks late: status = Red/Critical Problems.)

Monitoring and Controlling

• Consists of track, reviewing and regulating the progress and performance of the project; identifying any areas in which changes to the plan are required; and initiating the corresponding changes. -A Guide to the Project Management Body of Knowledge (PMBOK Guide)

 Main goal is to monitor and control work and perform integrated change control



Closing

 Consists of those processes performed to finalize all activities across all the Process Groups to formally close the project or phase. - A Guide to the Project Management Body of Knowledge (PMBOK Guide)

 Main goal is to complete and closeout the project and CELEBRATE!!





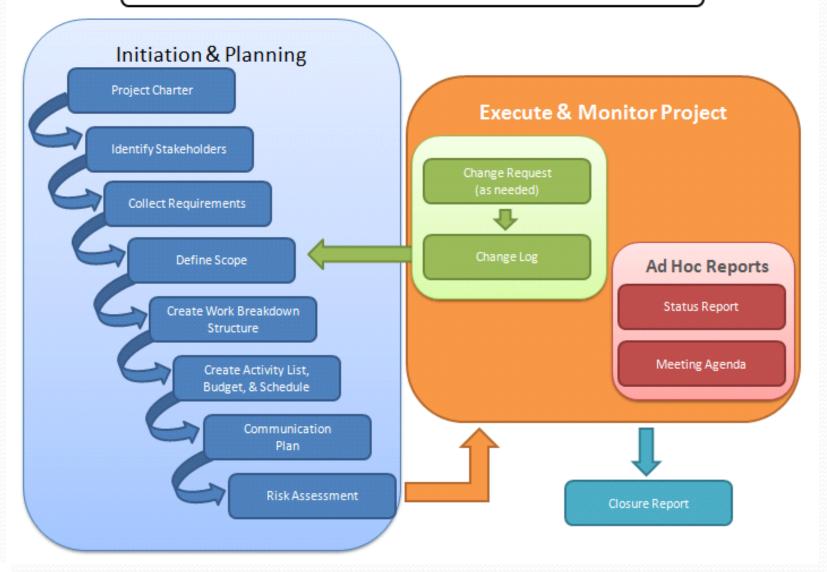
Benefits of close out

- Verify that all the work was completed
 validate and signoff
- Complete the paperwork to fulfill any legal requirements

 Capture lessons learned for future teams and leave a clear roadmap for future project teams



Project Management Document Flow Chart





Course Key Points

- Communicate early and often with stakeholders
- Obtain agreement on deliverables early
- Have project team involved in estimates and work flow planning

PMBOK

- A Guide to the Project Management Body of Knowledge (PMBOK)
- Recognized standard for the project management profession
- Provides and promotes a common vocabulary within the project management profession



Resources

Project Management Institute (PMI)

- Project Management Professional Certification (PMP): global certification most industry-recognized
- Provides significant advantage when it comes to salary and earning potential
- To gain and maintain your PMP:
 - The certification exam has 200 multiple-choice questions (based on PMBOK), and you have four hours to complete it.
 - To maintain your PMP, you must earn 60 professional development units (PDUs) every three years.



Prerequisites for PMP

- Secondary degree (high school diploma, associate's degree or the global equivalent)
- 7,500 hours leading and directing projects
- 35 hours of project management education

OR

- Four-year degree
- 4,500 hours leading and directing projects
- 35 hours of project management education



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