



# INTRODUCTION TO PROJECT MANAGEMENT

Prepared for Carleton  
University

Dec 1, 2017

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**BOMBARDIER**

Training material adapted utilizing Bombardier Q-Series Basic Project Management Training developed by Lidia Jovanovic, PMP and Milica Micic, PMP

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# 1. INTRODUCTION TO PROJECT MANAGEMENT

# **1.1 PROJECT MANAGEMENT DEFINITION**

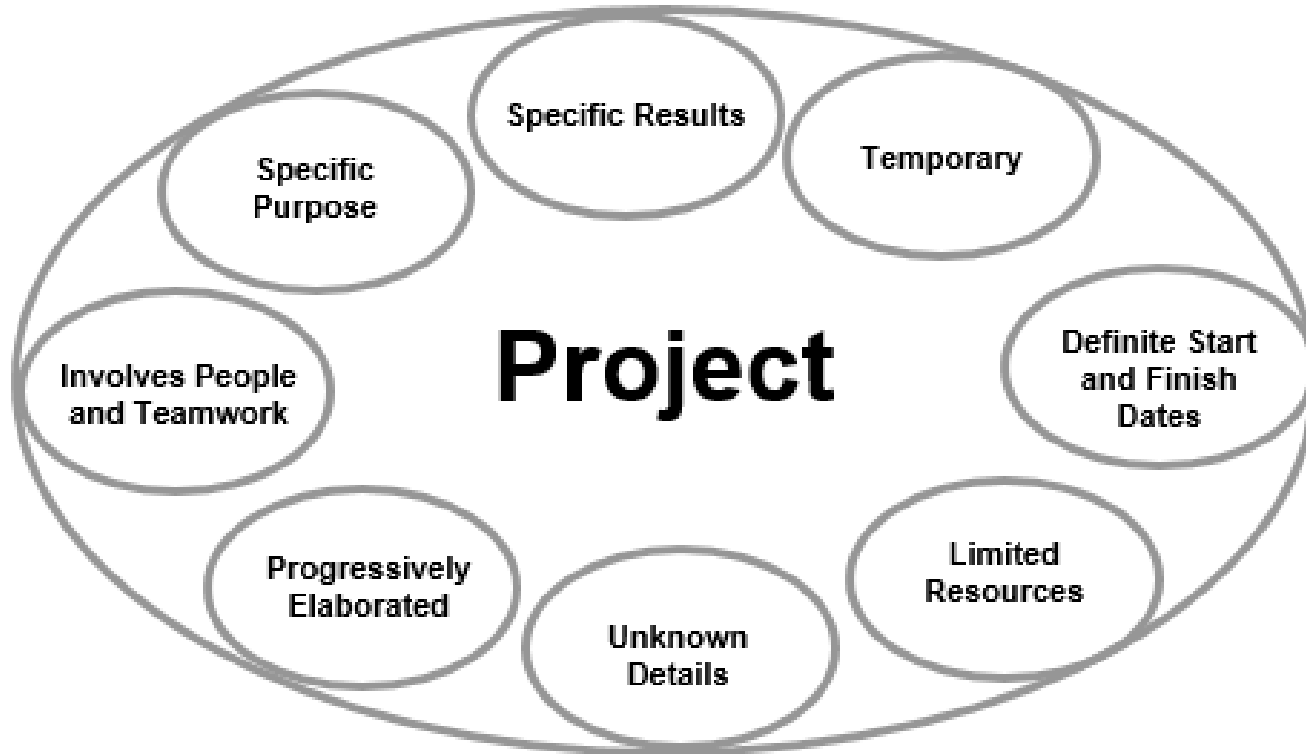
# **1.1 Project Management Definition – Learning Goals**

**At the end of this module you will understand:**

- What is Project Management**
- What is the role of Project Manager**
- What are 10 Project Management knowledge areas**
- What are the Project Management process groups**

# 1.1 Project Management Definition

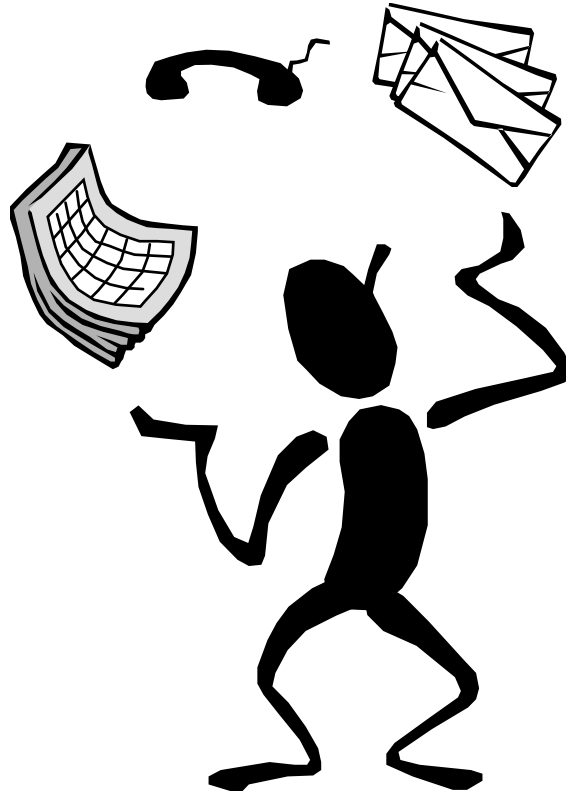
- What is a Project?



*Project is a temporary endeavour undertaken to create a unique product, service or result. (PMI)*

# 1.1 Project Management Definition

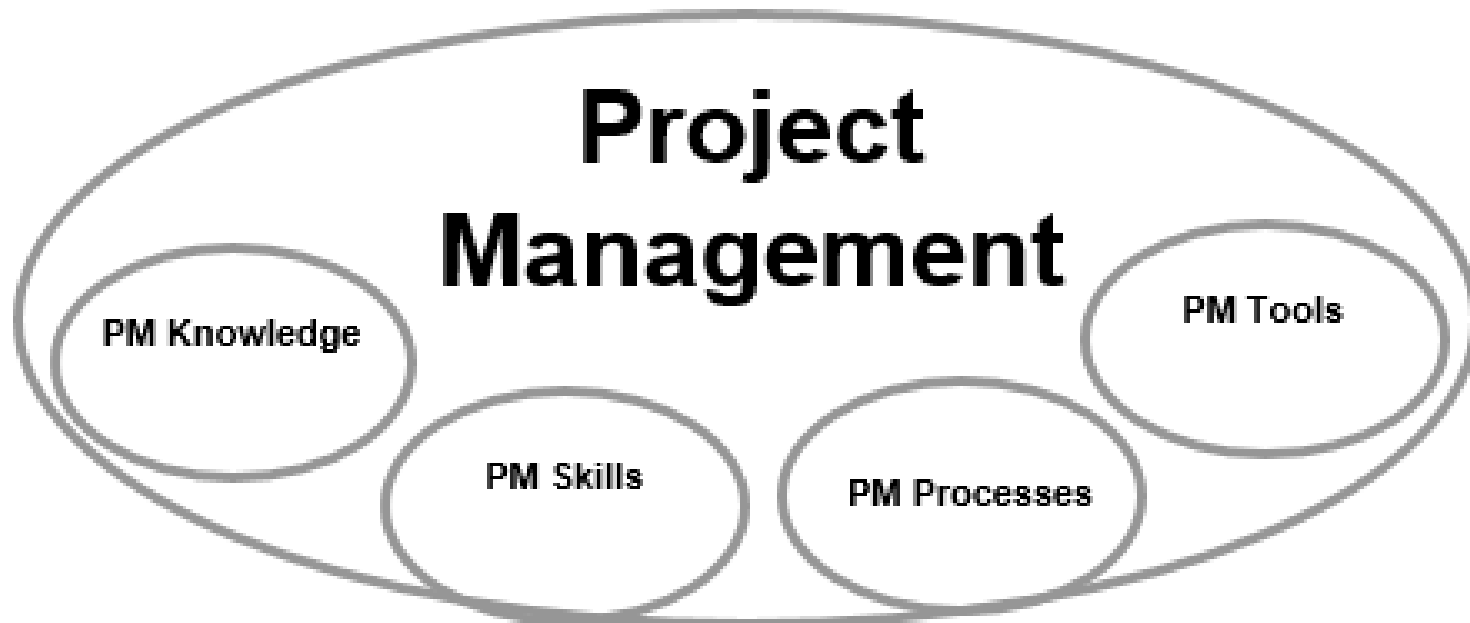
- Do We Need Project Management?
- Why?





# 1.1 Project Management Definition

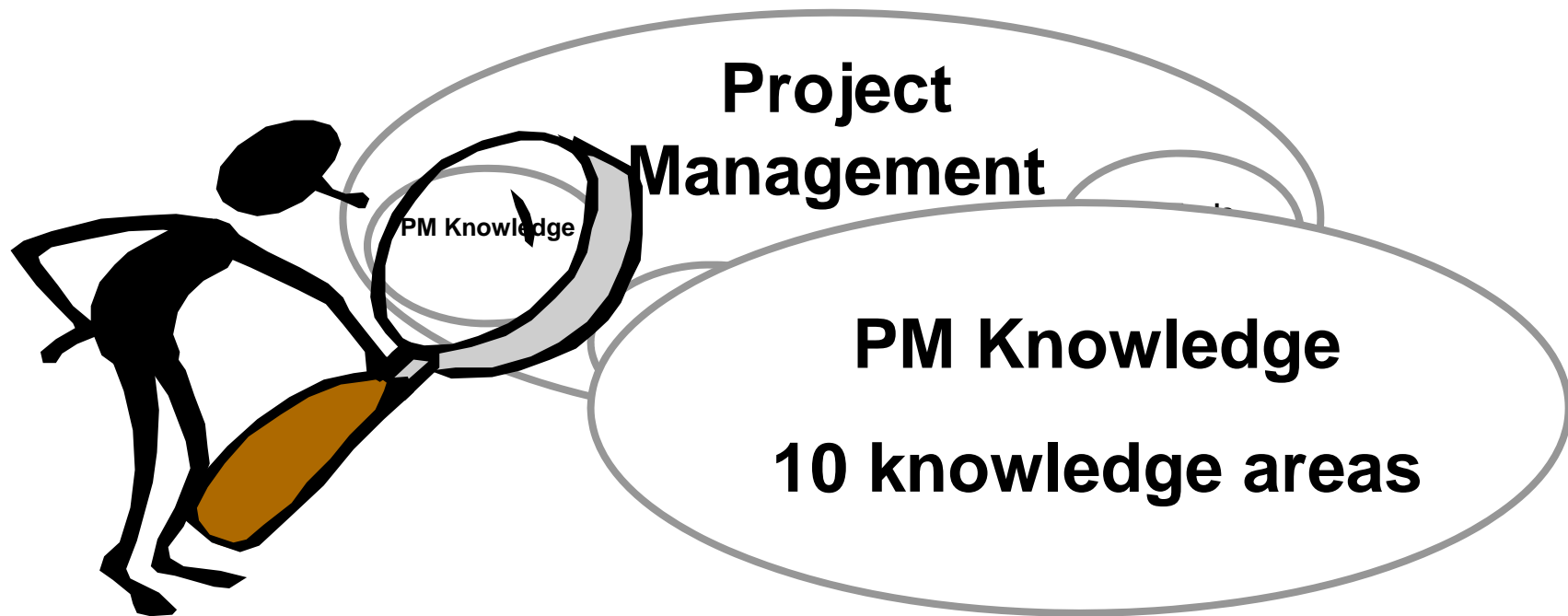
- What is Project Management?



*Project management is the application of knowledge, skills, tools and techniques to project activities to meet project requirements (PMI)*

# 1.1 Project Management Definition

- What is Project Management?



*Project management is the application of knowledge, skills, tools and techniques to project activities to meet project requirements (PMI)*

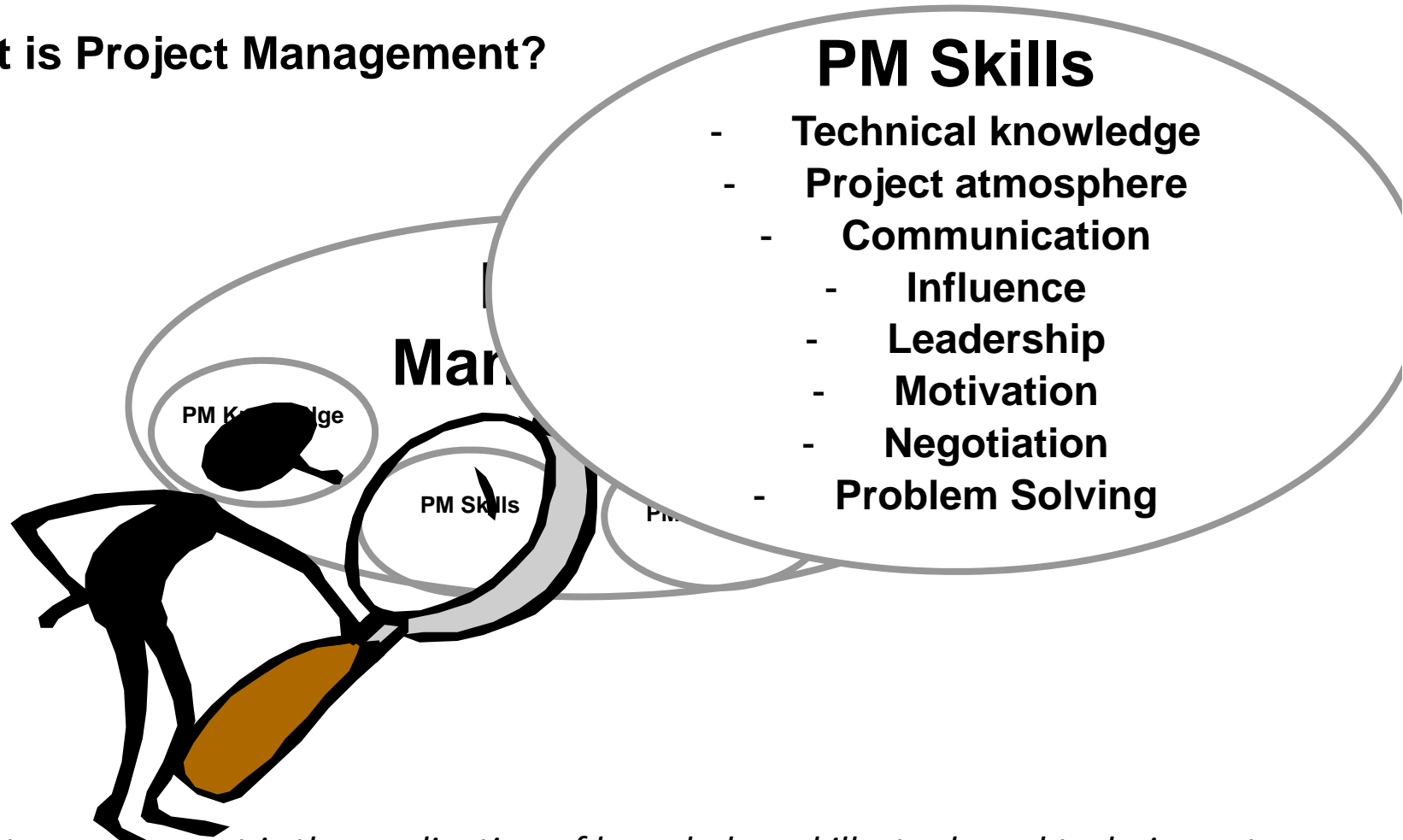
# 1.1 Project Management Definition

10 Areas of Knowledge (must be addressed to manage any project)



# 1.1 Project Management Definition

- What is Project Management?



## PM Skills

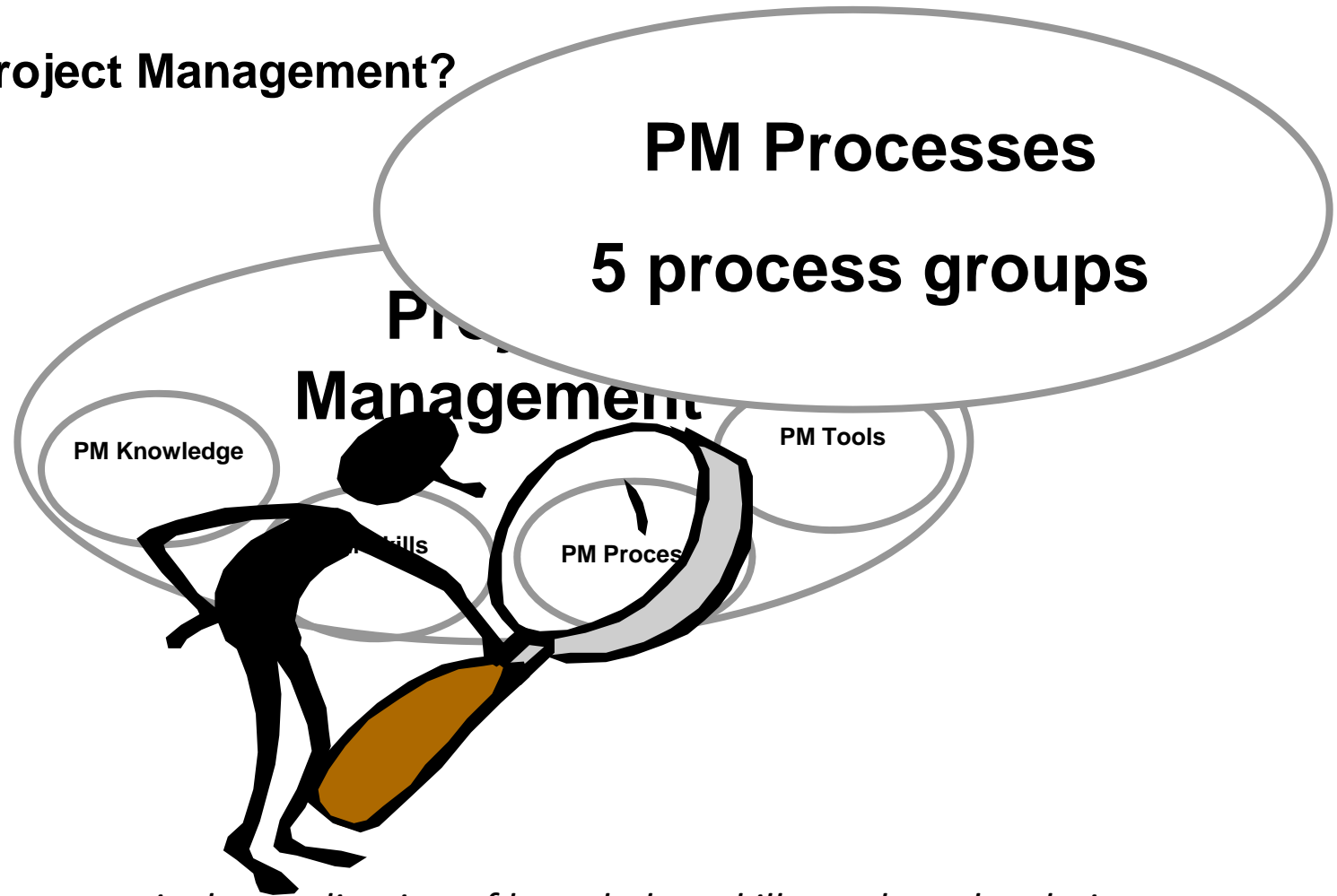
- Technical knowledge
- Project atmosphere
- Communication
  - Influence
  - Leadership
  - Motivation
- Negotiation
- Problem Solving



*Project management is the application of knowledge, skills, tools and techniques to project activities to meet project requirements (PMI)*

# 1.1 Project Management Definition

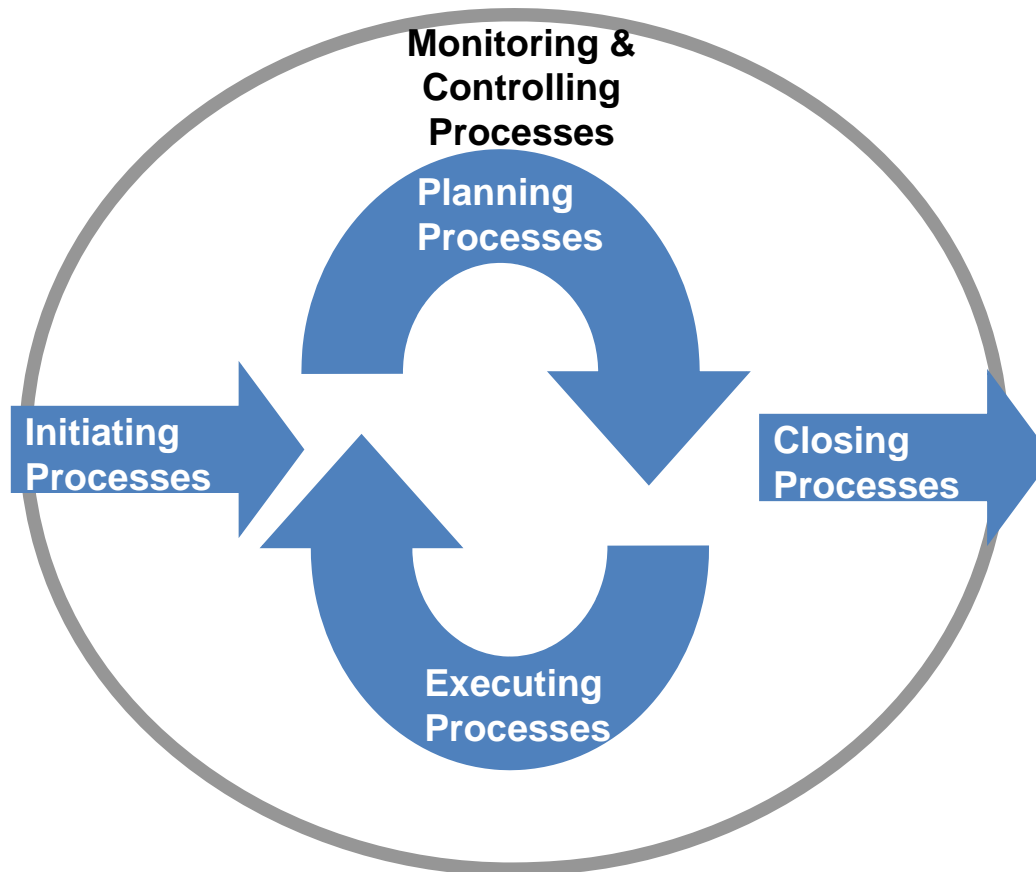
- What is Project Management?



*Project management is the application of knowledge, skills, tools and techniques to project activities to meet project requirements (PMI)*

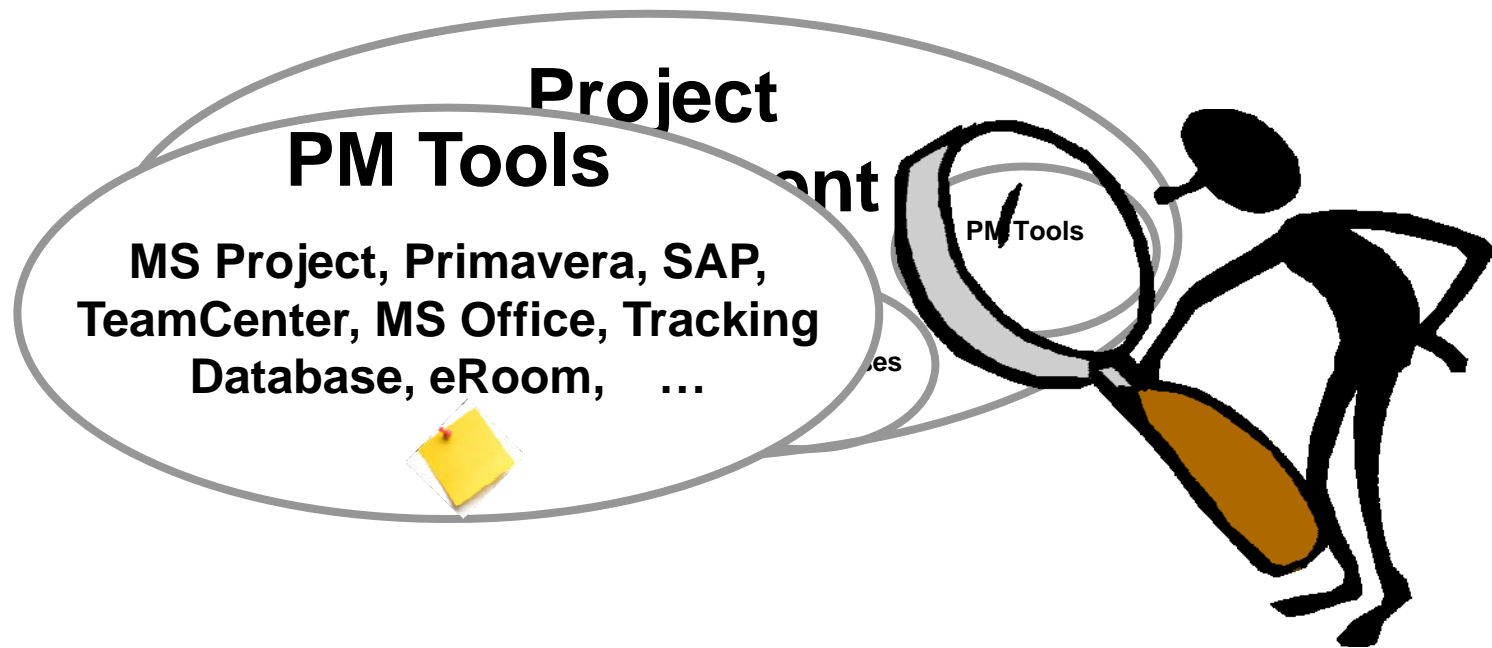
# 1.1 Project Management Definition

## 5 Project Management Process Groups



# 1.1 Project Management Definition

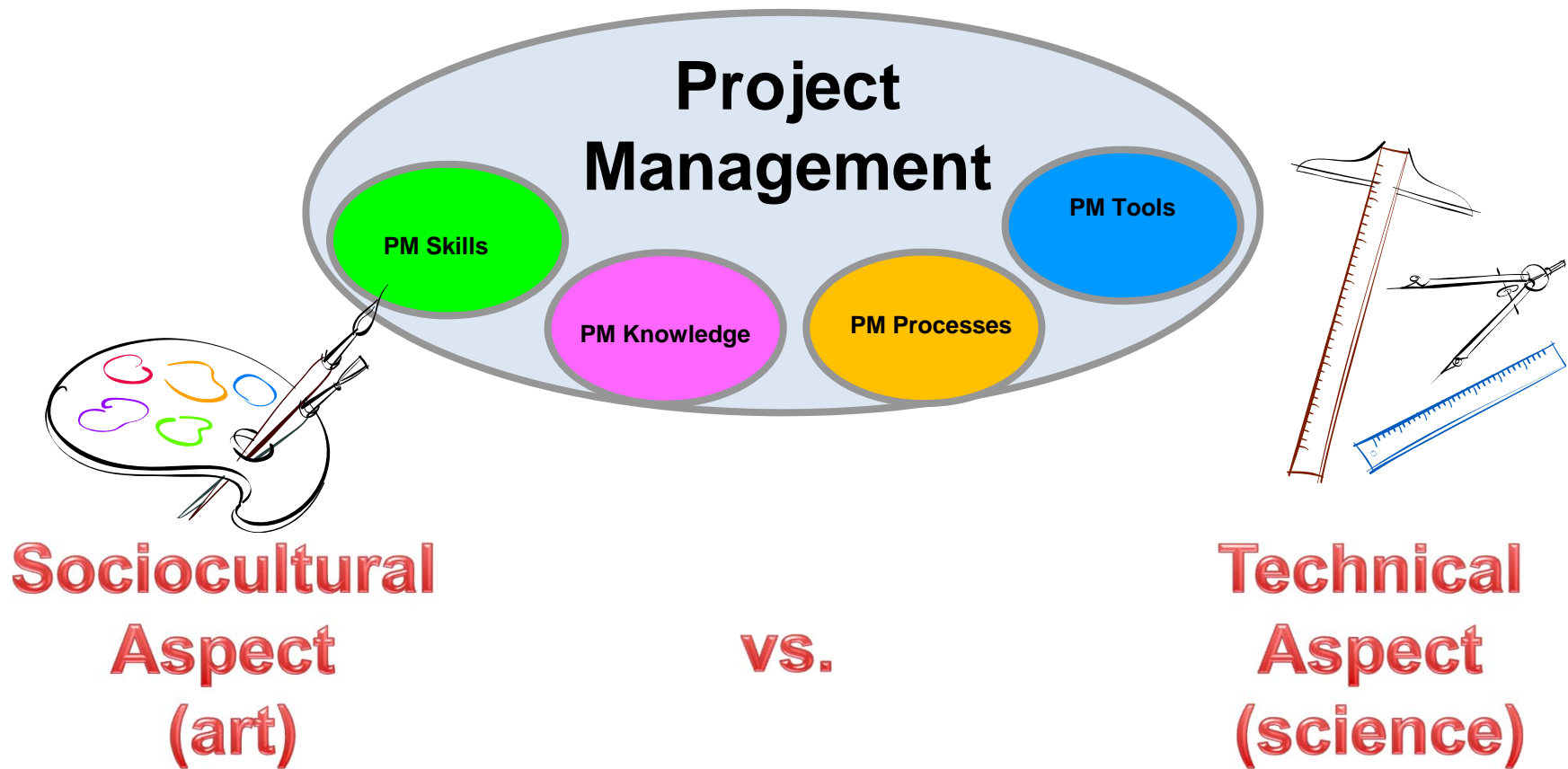
- What is Project Management?



*Project management is the application of knowledge, skills, tools and techniques to project activities to meet project requirements (PMI)*

# 1.1 Project Management Definition

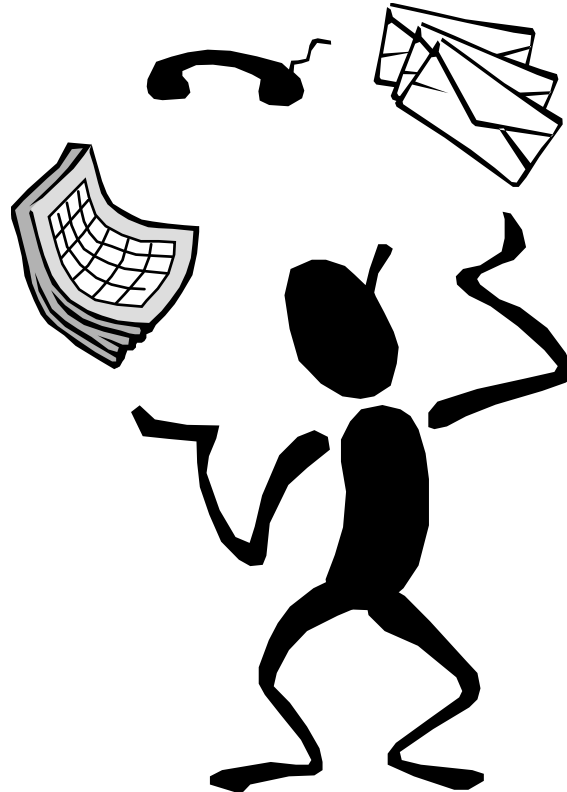
- What is Project Management?





# 1.1 Project Management Definition

- Do We Need Project Managers?
- Why?



# 1.1 Project Management Definition

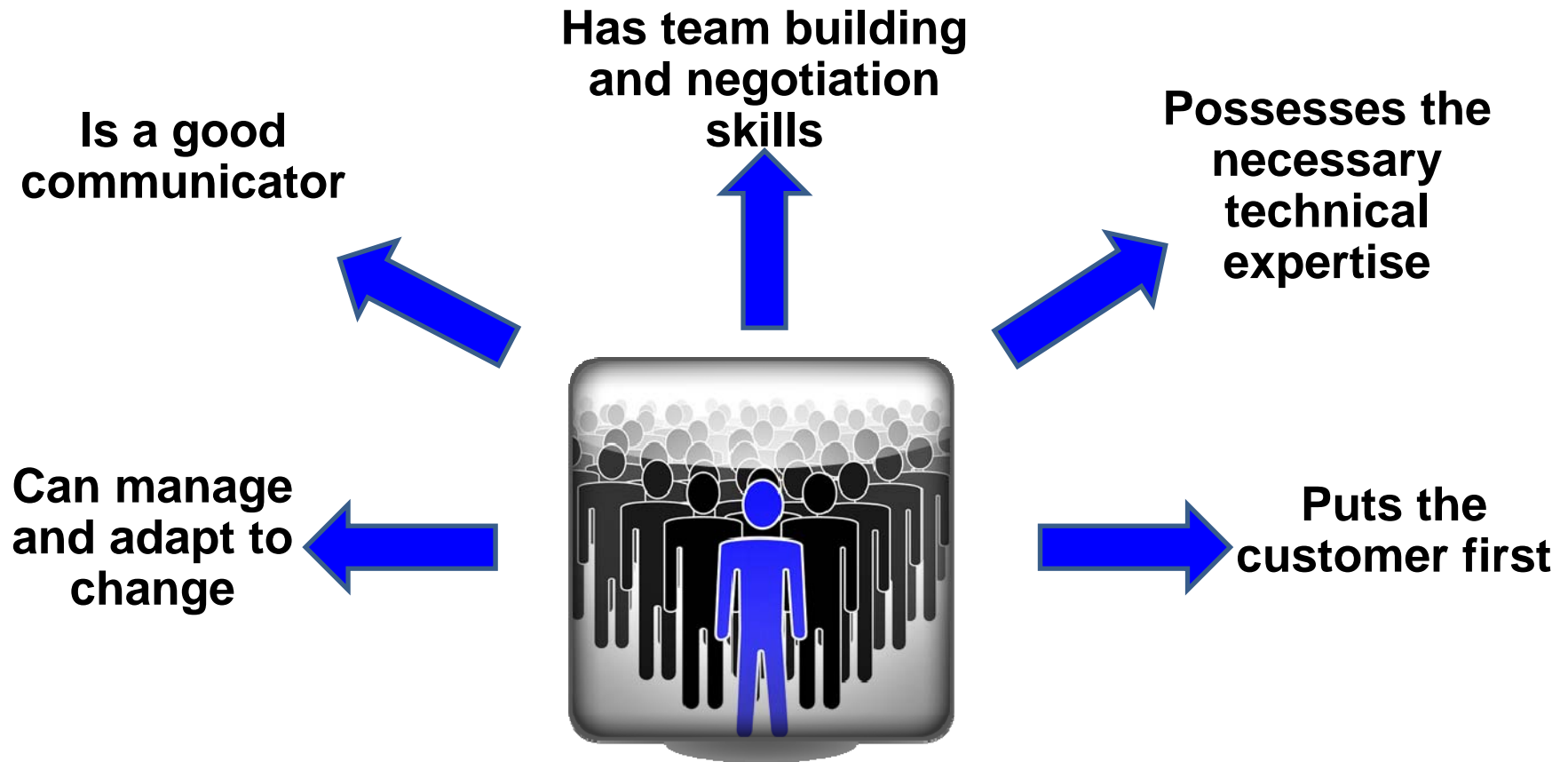
- **Some of Project Manager's responsibilities:**
  - Identify project **requirements**
  - Determine the best order of activities and create **schedule**
  - Define what is in and what is out of project **scope**
  - Collect impacts and request adequate project **budget**
  - Identify all **stakeholders** and build good relationships with them
  - Ensure adequate **communication** between stakeholders
  - **Motivate** and focus the team on objectives
  - **Integration** of all project activities
  - Project status **reporting**
  - Document **opportunities** for improvement
  - **Deliver** the project



*Project Manager is a person assigned by the performing organization to achieve the project objectives (PMI)*

# 1.1 Project Management Definition

A good Project Manager ...



*These skills are good to have even for the people on the technical path.*

# 1.1 Project Management Definition



*“PMI appears to believe that the essential goal and aim of project management is to eliminate chance and accidents... While it is a good idea to tame what can usefully and practically be tamed, most of the project world lives where the wild things are...*



*You have to sail the turbulent seas toward a destination that often shifts.”  
from Creative Project Management by Michael S.Dobson and Ted Leemann (2010)*

# 1.1 Project Management Definition

## 1.1.1 Project Management Need

- Sampoong Department Store ([삼풍백화점](#); [三豊百貨店](#))



1990

# 1.1 Project Management Definition

## 1.1.1 Project Management Need

- Sampoong Department Store ([삼풍백화점](#); [三豊百貨店](#)) collapse



1990

(b) Before collapse



1995

(c) After collapse



# 1.1 Project Management Definition

## 1.1.2 Project Management Statistics



Our latest *Pulse of the Profession*® research suggests a positive change in the way organizations are managing projects and programs. For the first time in five years, more projects are meeting original goals and business intent and being completed within budget. There has also been a significant decline in dollars lost: Organizations are wasting an average of \$97 million for every \$1 billion invested, due to poor project performance—that's a 20 percent decline from one year ago.\*

Link to full PMI report: <https://www.pmi.org/-/media/pmi/documents/public/pdf/learning/thought-leadership/pulse/pulse-of-the-profession-2017.pdf>

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# 1.1 Project Management Definition

## 1.1.3 Project Management Institute

- Not-for-profit organization
- 2.9 million professionals
- Nearly every country
- Eight globally recognized certifications
- Standards for project, program and portfolio management
- Local Chapters located in over 80 countries
- PMI research program: research projects, symposiums and surveys
- 1,600 Registered Education Providers (R.E.P.s)
- Nearly 100 degree programs in institutions worldwide.



For more info go to <https://www.pmi.org/about/learn-about-pmi>



# 1.1 Project Management Definition

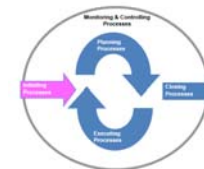
## 1.1.3 Project Management Institute

- PMI ®– PMP ® Certification
- Project Management Professional
- Min 3-5 years of PM experience
- Globally recognized
- Close to 650,000 certification holders in 2017

For more info go to <https://www.pmi.org/about/learn-about-pmi>



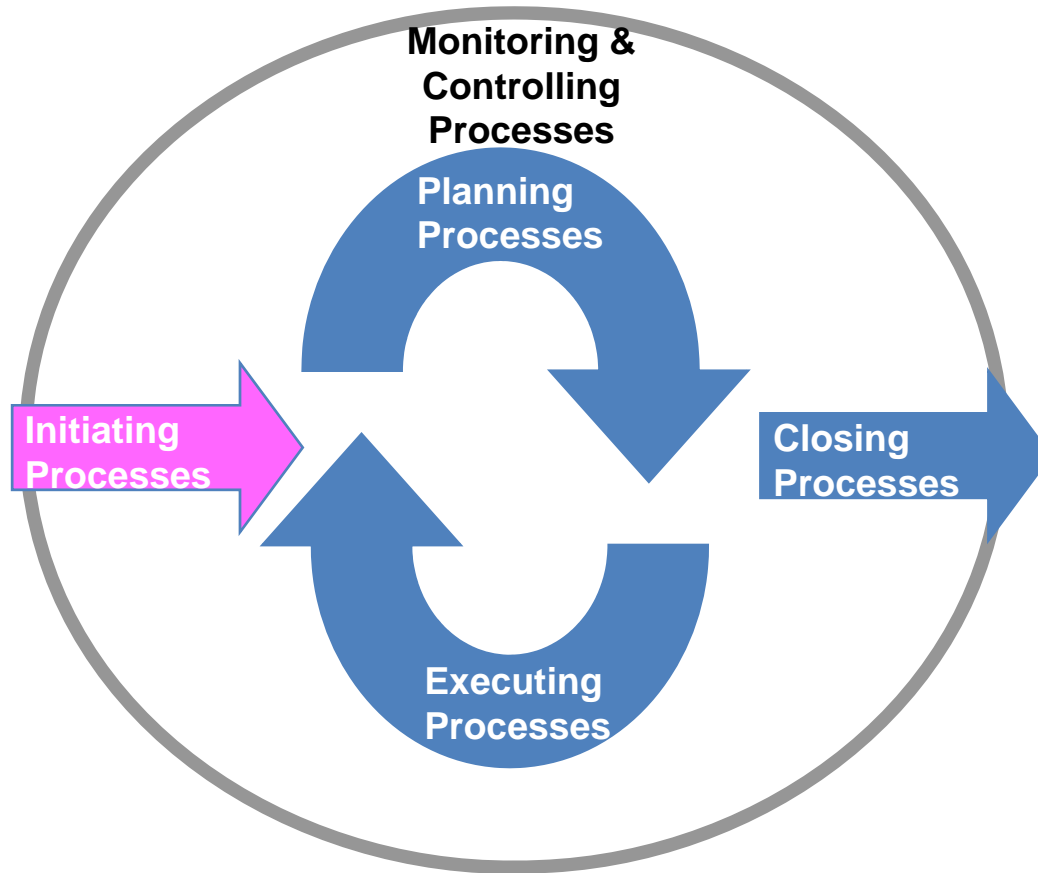
*All PMI Members, or non-members who hold a PMI certificate, must abide by PMI Code of Ethics and Professional Conduct. This document covers four values vital for PM profession: Responsibility, Respect, Fairness and Honesty.*



# 1.2 PROJECT INITIATION

# 1.2 Project Initiation

## 5 Project Management Process Groups





## 1.2 Project Initiation – Learning Goals

**At the end of this module you will understand:**

- **What are project constraints**
- **What are project initiation main goals**
- **What are typical key roles on a project**



## 1.2 Project Initiation

### Exercise #1 EXAMPLE – Select a Trip Leader = Select a PM

*Student Engineering Society (SEC) at University XYZ is about to start planning for the first annual Ski Trip to Sun Peaks, BC for 100 students. You and your team members are given the task to select the best person to manage the project.*

*There are three candidates immediately available. Let's carefully review together the skills of each of the candidates.*





## 1.2 Project Initiation

### Exercise #1 – Select a PM

*An Aerospace Company is about to start a very important project. You and your team members are given the task to select the best person to manage the project.*

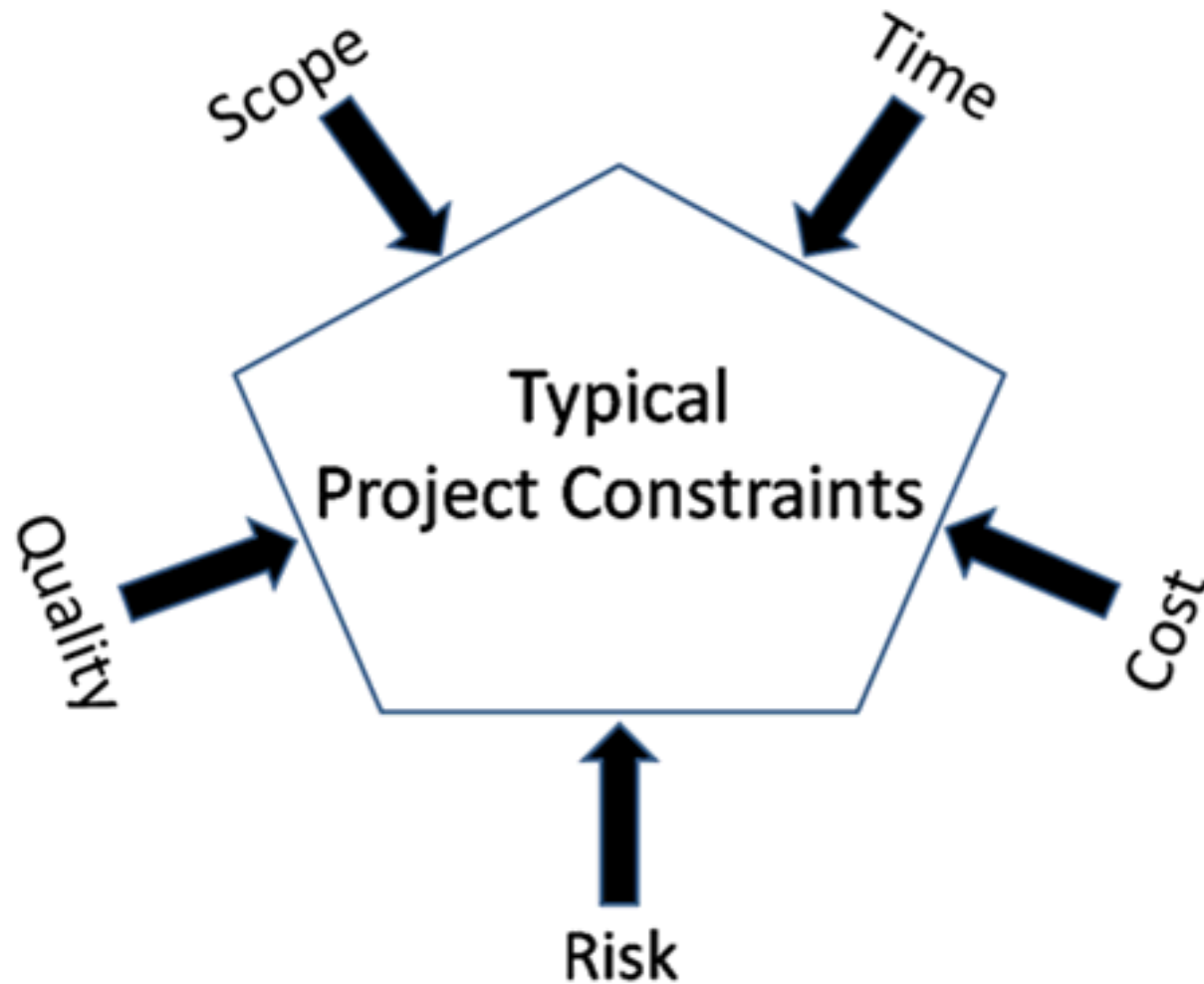
*There are three candidates immediately available. Please carefully review the skills of each of the candidates. At the end of the exercise one person from your team should present who was selected to manage the project and why.*





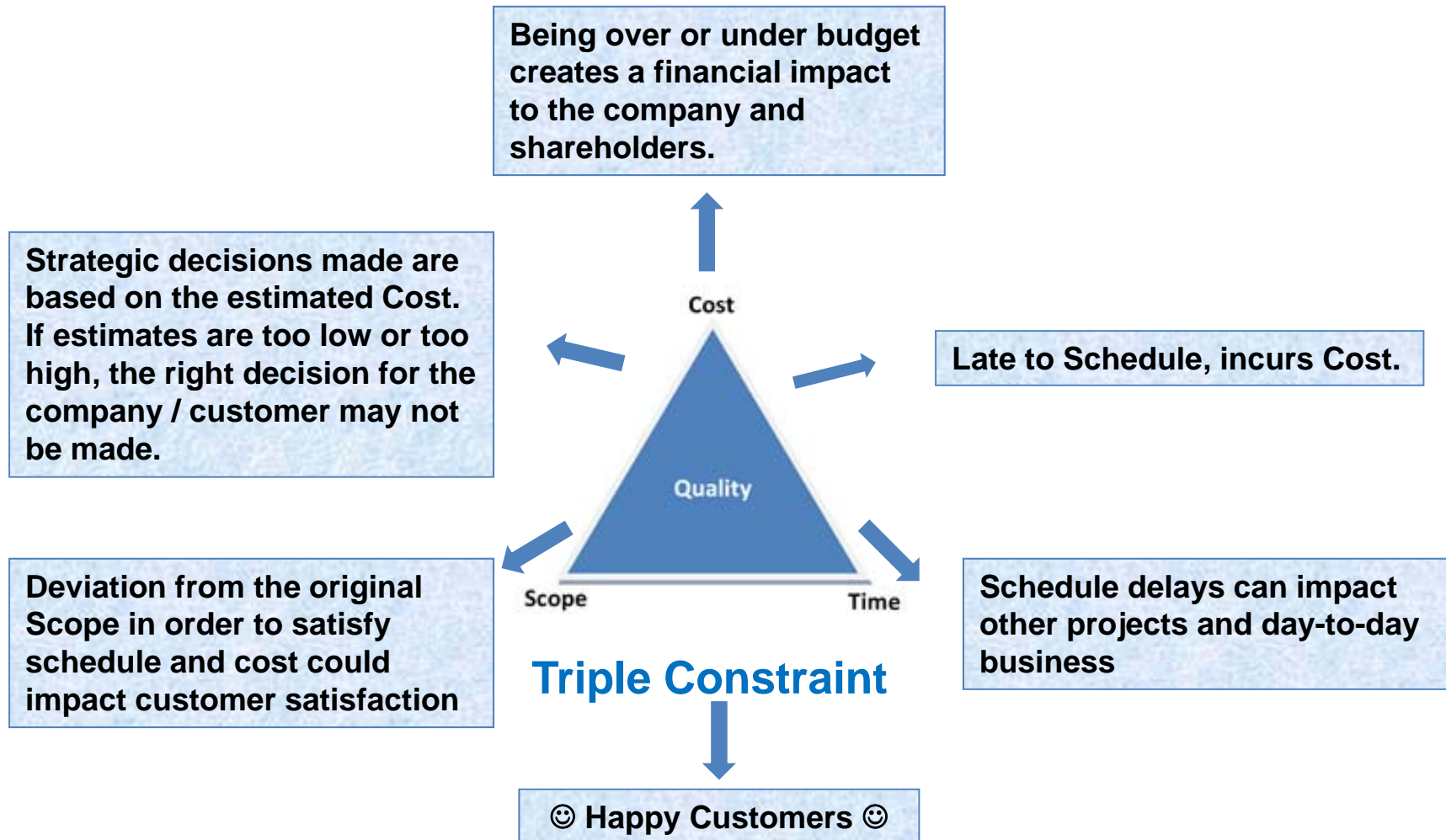
## 1.2 Project Initiation

### 1.2.1 Typical Project Constraints and Triple Constraint



# 1.2 Project Initiation

## 1.2.1 Typical Project Constraints and Triple Constraint

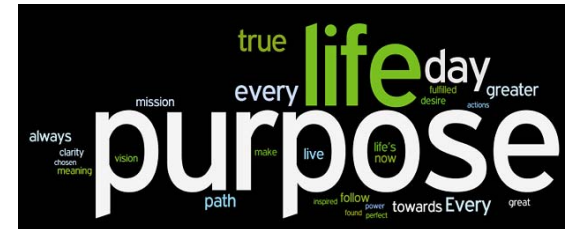




## 1.2 Project Initiation

### 1.2.2 Project Initiation Main Goals

- What is the purpose of the project?
- What is the product, service or result that we are trying to achieve?
- What is the project success criteria?

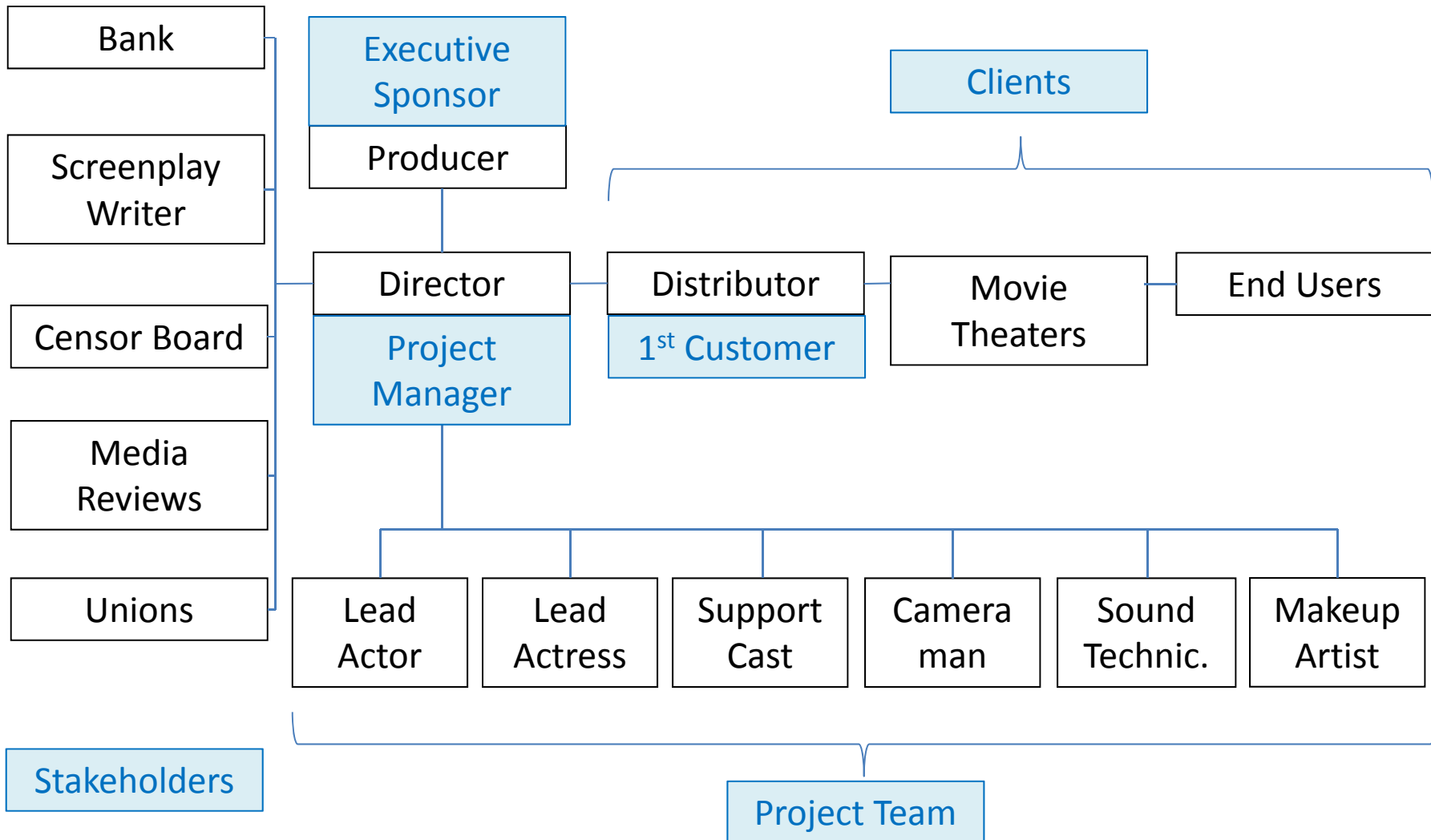


*The Challenge of initiation process is to gain the agreement and approval of all stakeholders prior to proceeding to planning.*



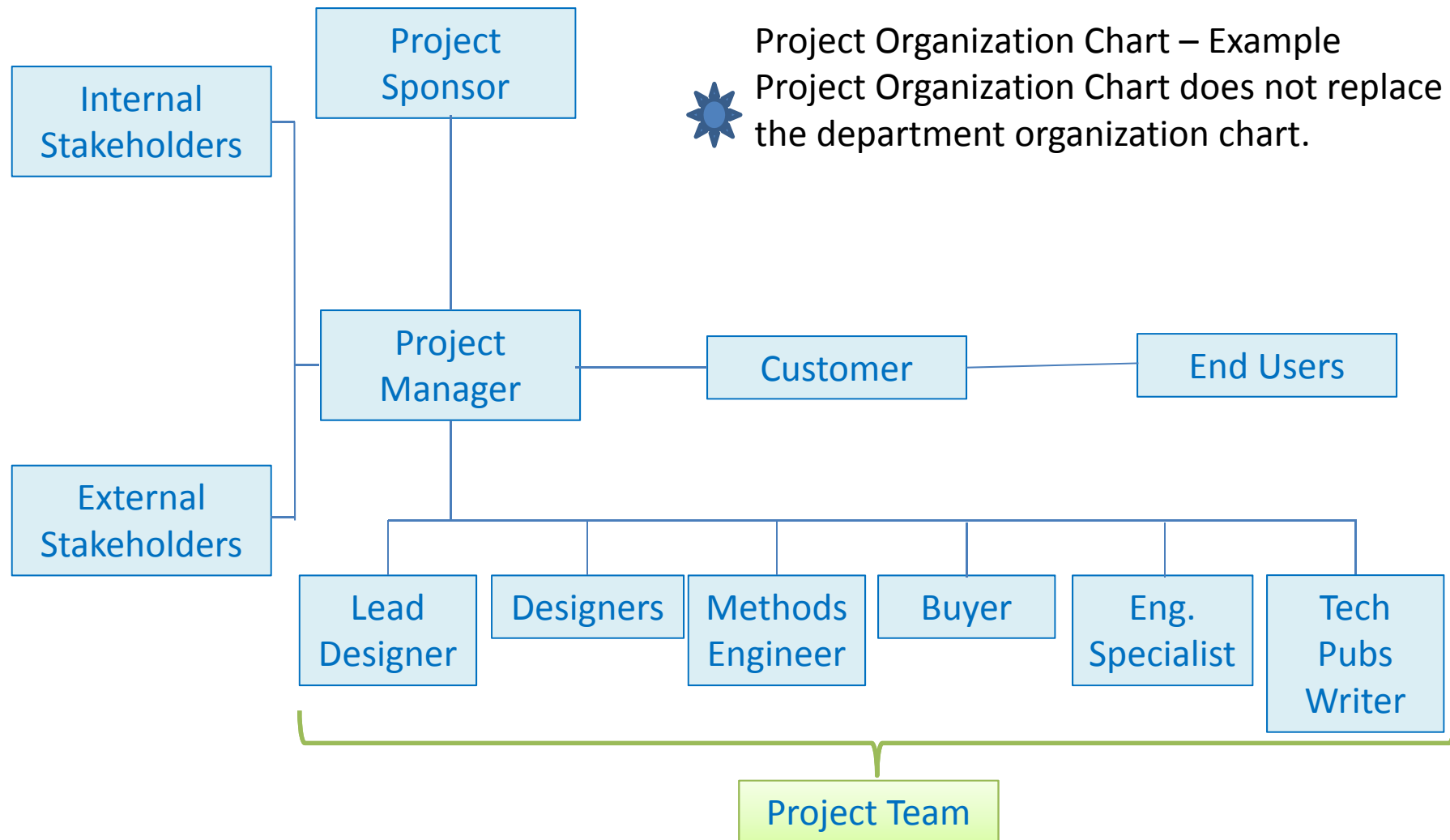
# 1.2 Project Initiation

## 1.2.3 Understanding the Key Roles on a Project



# 1.2 Project Initiation

## 1.2.3 Understanding the Key Roles on a Project





## 1.2 Project Initiation

### Exercise #2 EXAMPLE – Create Project Organization Chart

Create Project Organization Chart for following project:

**SES - Sun Peaks 2018**

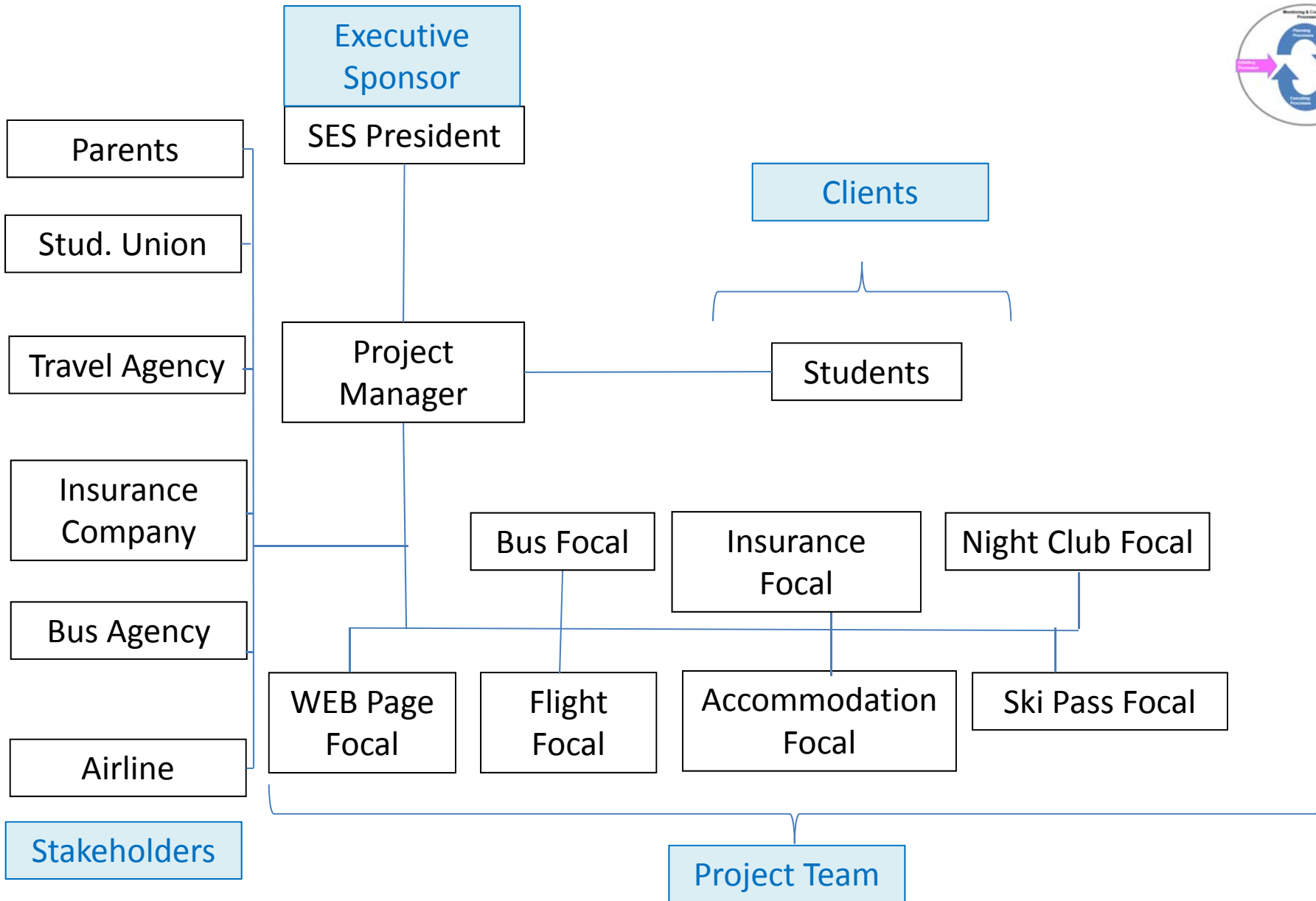
- Define project team and internal and external stakeholders.



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# 1.2 Exercise #2 EXAMPLE – Possible Solution



## **1.2 Project Initiation**

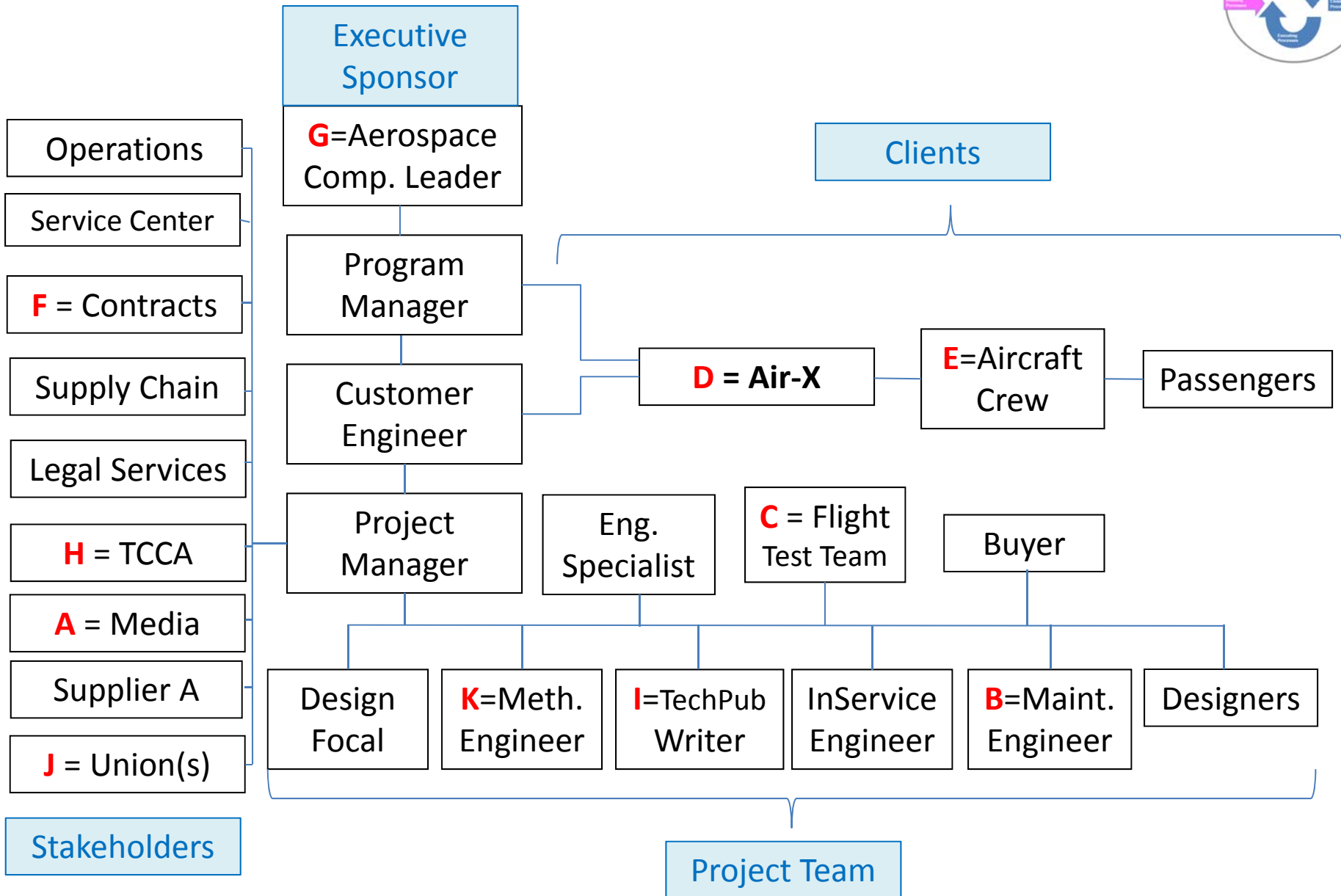
### **Exercise #2 – Create Project Organization Chart**

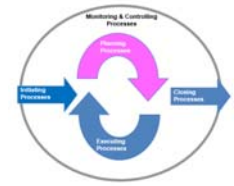
*Create Project Organization Chart for following project:*

***Fictitious Project #12345 – Aircraft Enhancement***

- *Define project team and internal and external stakeholders.*

# 1.2 Exercise #2 – Possible Solution



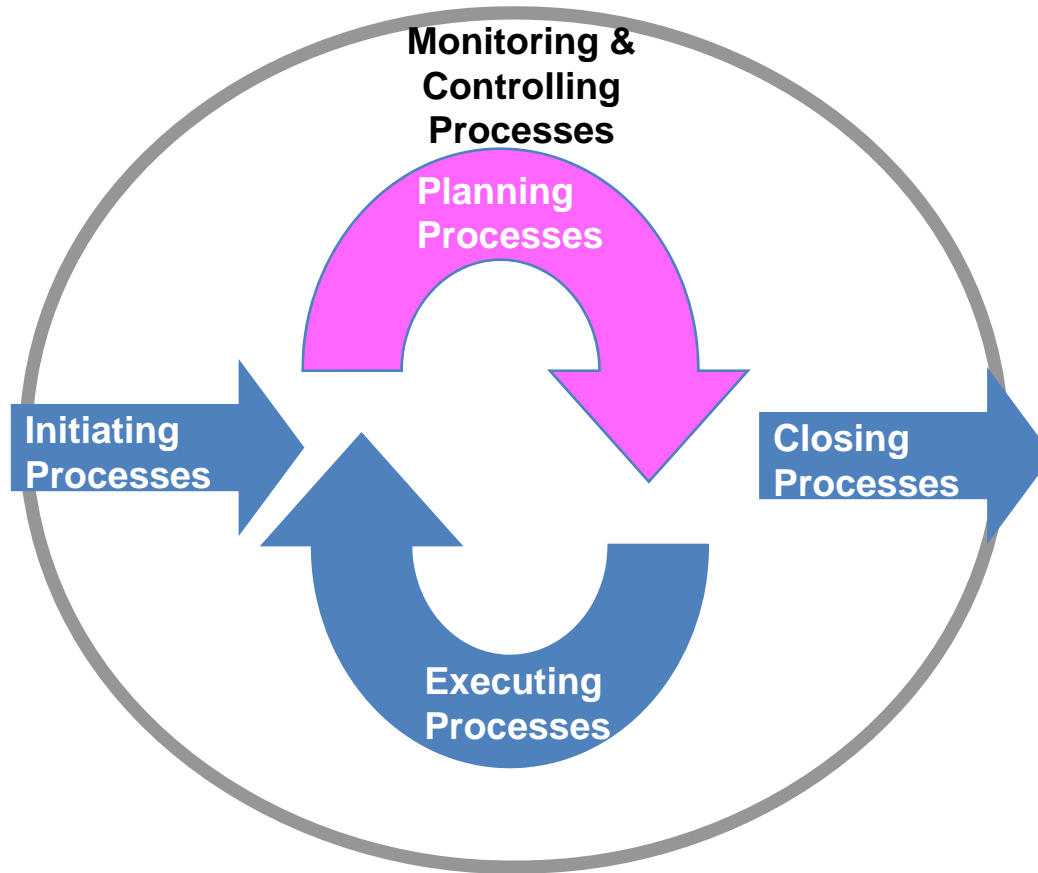


# 1.3 PROJECT PLANNING



# 1.3 Project Planning

## 5 Project Management Process Groups





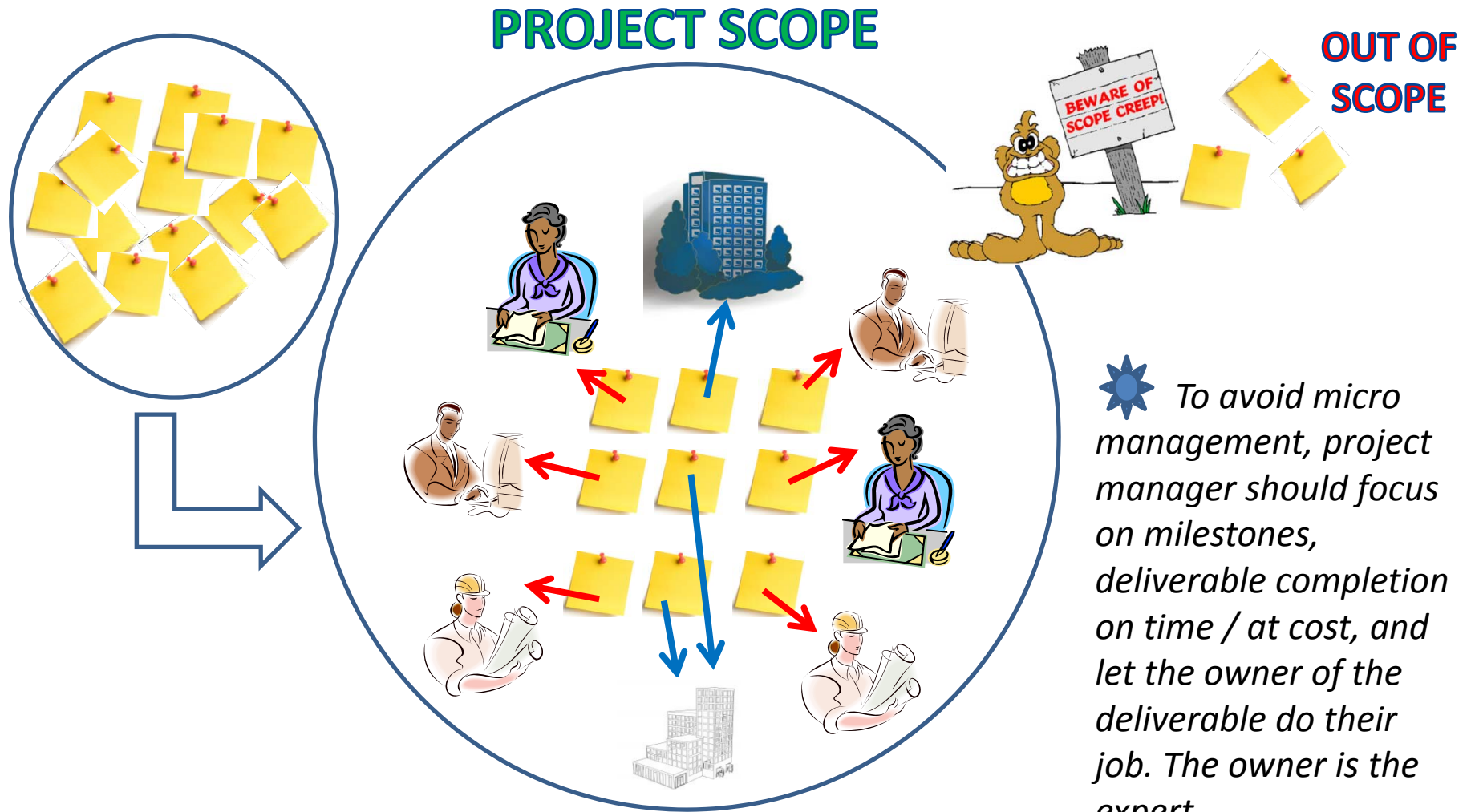
## 1.3 Project Planning – Learning Goals

**At the end of this module you will understand:**

- **What is the Work Breakdown Structure (WBS)**
- **How do we estimate activity duration**
- **How do we sequence activities**
- **What is the critical path**
- **How does Microsoft Project work**

# 1.3 Project Planning

## 1.3.1 Work Breakdown Structure (WBS)



★ To avoid micro management, project manager should focus on milestones, deliverable completion on time / at cost, and let the owner of the deliverable do their job. The owner is the expert.

# 1.3 Project Planning

## 1.3.1 WBS - Few Definitions

- **DELIVERABLE:** According to PMI, a deliverable is “any unique and verifiable product, result or capability to perform a service that must be produced to complete a process, phase or a project.” Deliverable is usually represented as a **noun**.
- *Examples: contract, reservation, itinerary, drawing, workbook, test plan etc.*
- **TASKS** represent the activities required to produce the deliverables. It is possible that more than one task is required to complete one deliverable. Tasks are usually represented as a **verb-noun** phrase.
- *Examples: create a webpage, negotiate contract, finalize itinerary, reserve ski passes, create drawings, release drawings, approve test plan etc.*
- **MILESTONE** is a **significant event** on the project.
- *Examples: webpage launched, contract signed, project completed, final payment processed, drawings released, aircraft delivered, etc.*



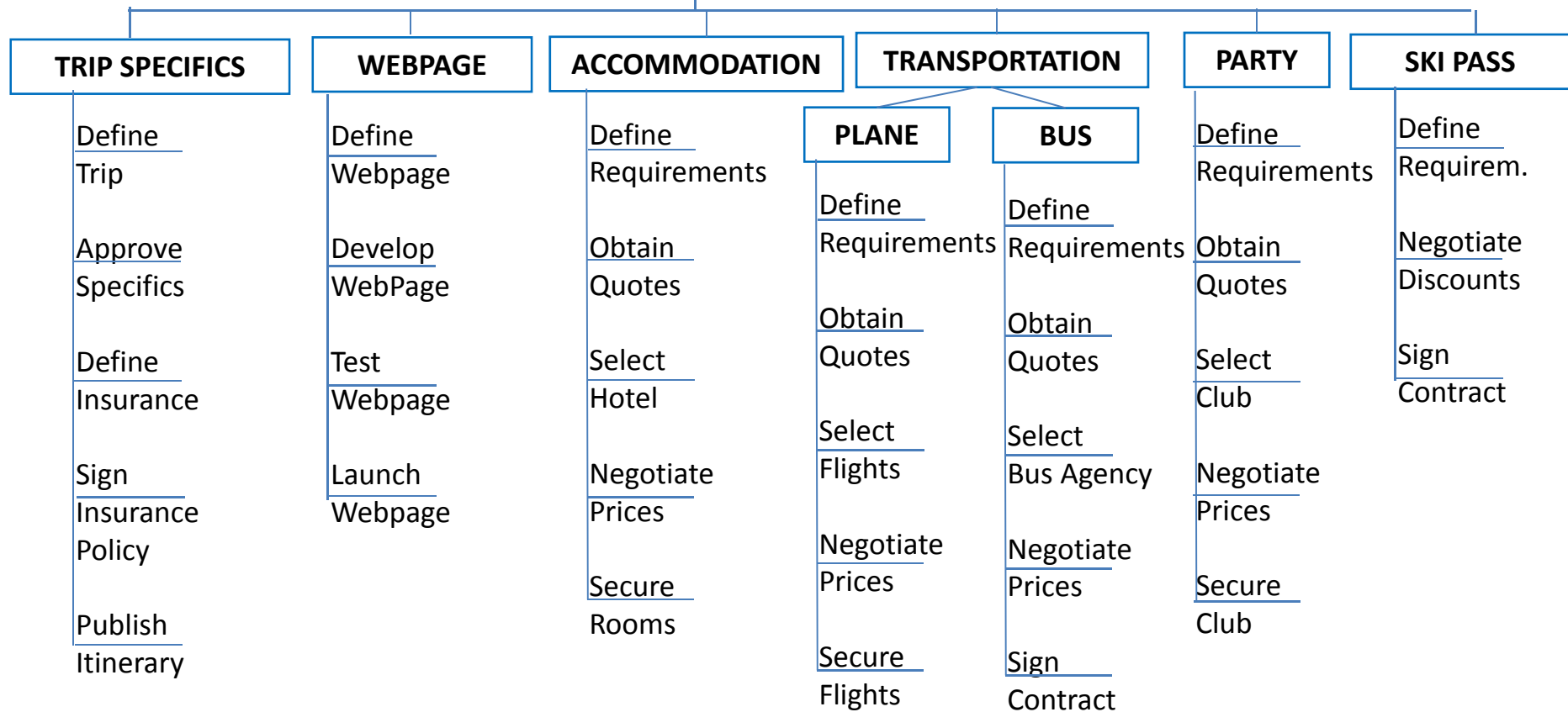


# 1.3.1 Work Breakdown Structure (WBS)

## Exercise #3 - EXAMPLE: WBS for SES – Sun Peaks 2018

SES – Sun Peaks 2018

### 1-WHAT?



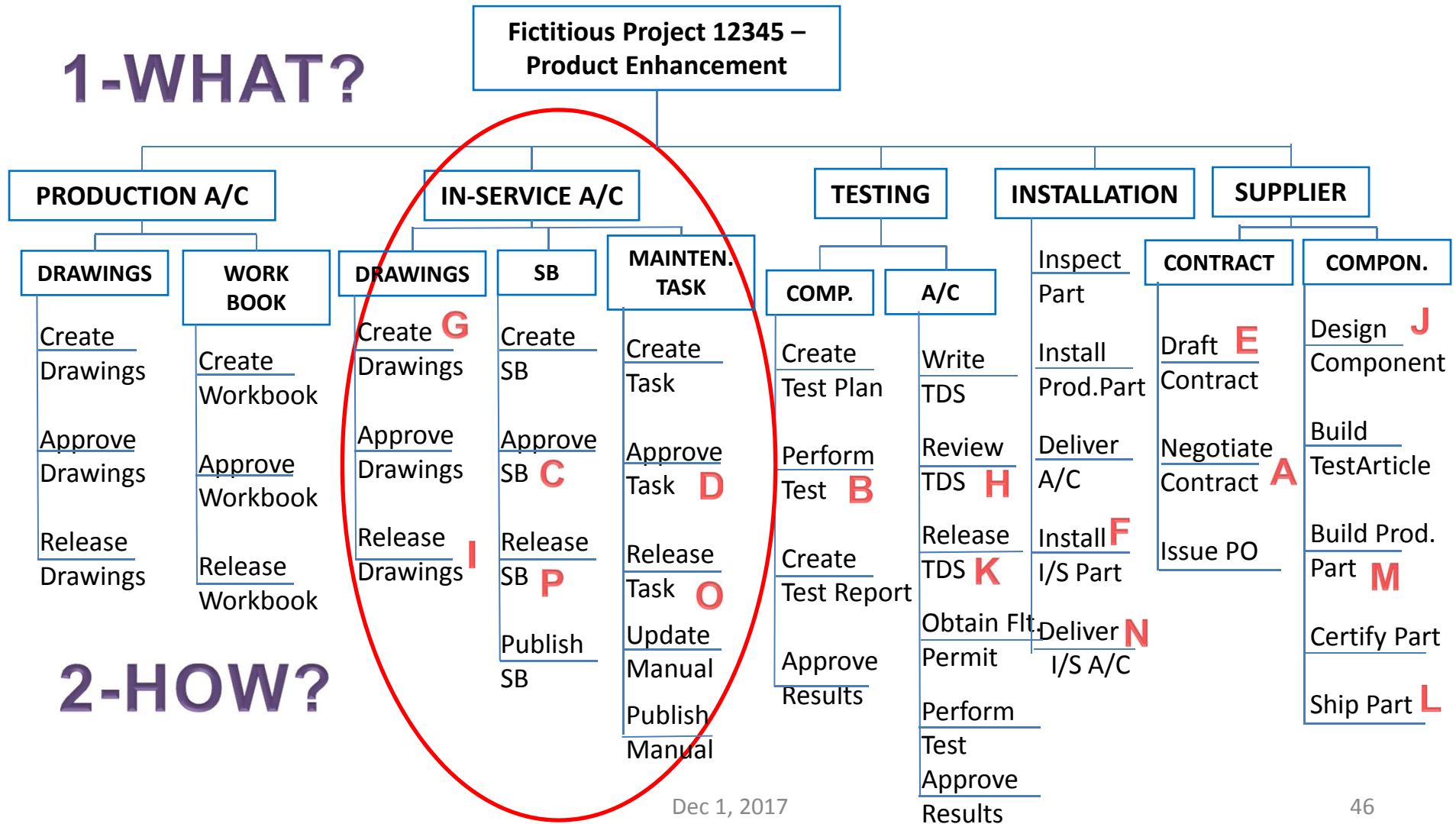
### 2-HOW?



# 1.3.1 Work Breakdown Structure (WBS)

## Exercise #3: WBS for Fictitious Project 12345 – Product Enhancement

### 1-WHAT?



### 2-HOW?



## 1.3 Project Planning

### 1.3.2 Activity Duration Estimating

- **Duration** is the actual amount of time spent working on the activity, including elapsed time.
- **Effort (work)** is the number of work days or work hours required to complete the task.
- **Example:** For 5 days, each day we test one specimen for 2 hours, but it takes 20 hours to condition the specimen in a chamber.
  - Duration is 5 days.
  - Effort (work) is 10 hours.
  - Elapsed time is time specimen spends in a conditioning chamber.

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	= DURATION
2 hours	2 hours	2 hours	2 hours	2 hours	= WORK

# 1.3 Project Planning


## 1.3.3 Dependencies - Activity Sequencing

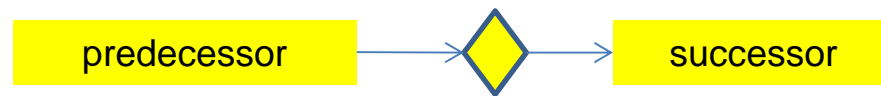


*Start Transportation Activities*

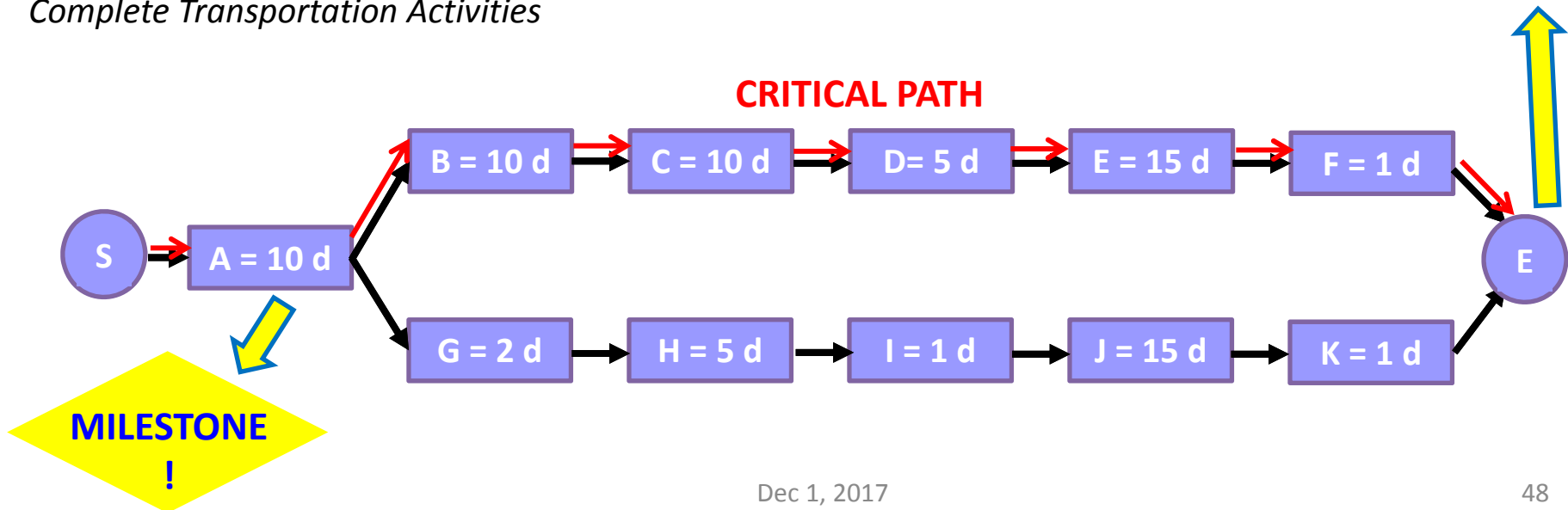
- A: Approve Trip Specifics– 10d
- B: Define Flight Requirements – 10d
- C: Obtain Quotes – 10d
- D: Select Flights – 5d
- E: Negotiate Prices – 15d
- F: Secure Flights – 1d
- G: Define Bus Requirements – 2d
- H: Obtain Quotes– 5d
- I: Select Bus Agency – 1d
- J: Negotiate Prices – 15d
- K: Sign Contract – 1d

*Complete Transportation Activities*

 **Network Diagram** (also referred to as a PERT chart) is a schematic display of the logical relationships among project activities.



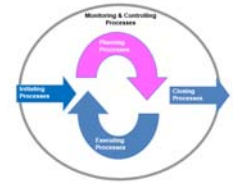
**ABCDEFE = 51 d**  
 AGHIJK = 34 d





# 1.3 Project Planning

## 1.3.3 Dependencies - Activity Sequencing



*Start In-Service Activities*

A: Create Drawings– 20d

B: Approve Drawings – 10d

C: Release Drawings – 1d

D: Create SB – 20d

E: Approve SB – 15d

F: Release SB – 1d

G: Create M. Task – 10d

H: Approve M. Task – 5d

I: Release M. Task – 1d

J: Update Manual – 30d

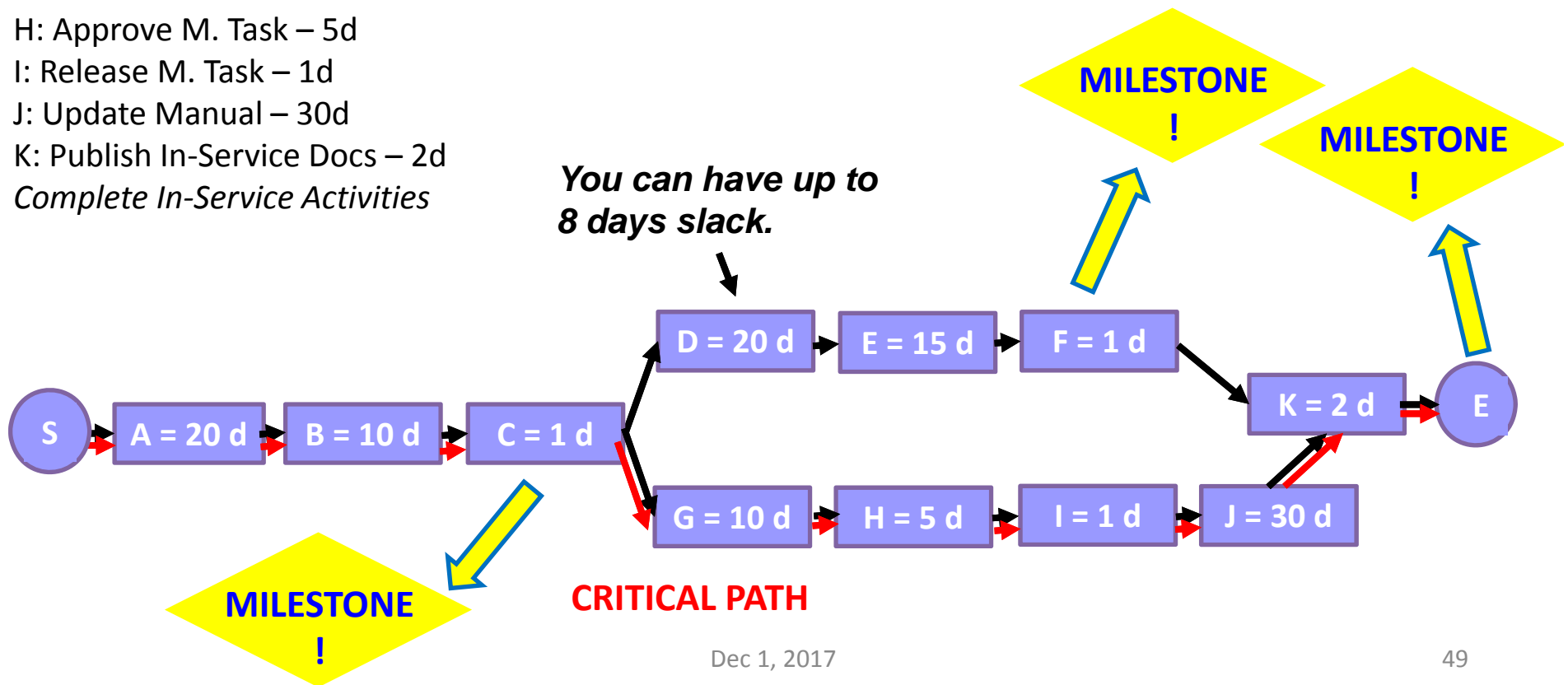
K: Publish In-Service Docs – 2d

*Complete In-Service Activities*

★ **Network Diagram** (also referred to as a PERT chart) is a schematic display of the logical relationships among project activities.

ABCDEFK = 69 d

**ABCGHIJK = 77 d**



# 1.3 Project Planning

## 1.3.4 Microsoft Project Resource Sheet



		Resource Name	Typ	Material	Initials	Group	Max.	Std.	Ovt. Rate	Cost/Usr	Accru	Base Calendar
1		Design Focal	Work		DF	ENG	85%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Aerospace Company Calendar
2		Engineering Specialist	Work		ES	ENG	10%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Aerospace Company Calendar
3		TechPubs Writer	Work		TPW	TP	50%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Aerospace Company Calendar
4		Maintenance Engineer	Work		ME	ME	20%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Aerospace Company Calendar
5		TechPubs Publisher	Work		TPP	TP	5%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Aerospace Company Calendar
6		InService Engineer	Work		ISE	IS	10%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Aerospace Company Calendar

		Resource Name	Typ	Material	Initials	Group	Ma
1		Design Focal	Work		DF	ENG	
2		Engineering Specialist	Work		ES	ENG	
3		TechPubs Writer	Work		TPW	TP	
4		Maintenance Engineer	Work		ME	ME	
5		TechPubs Publisher	Work		TPP	TP	
6		InService Engineer	Work		ISE	IS	

**Change Working Time**

Resource calendar for 'InService Engineer':

Base calendar: Aerospace Company Calc

Legend:

- Working
- Nonworking
- Edited working hours
- Exception day
- Nondefault work week

On this calendar:

- Exception day
- Nondefault work week

Click on a day to see its working times:

June 2013						
S	M	T	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

June 14, 2013 is nonworking.

Based on:  
Exception '[Unnamed]' on calendar 'InService Engineer'.

Exceptions | Work Weeks

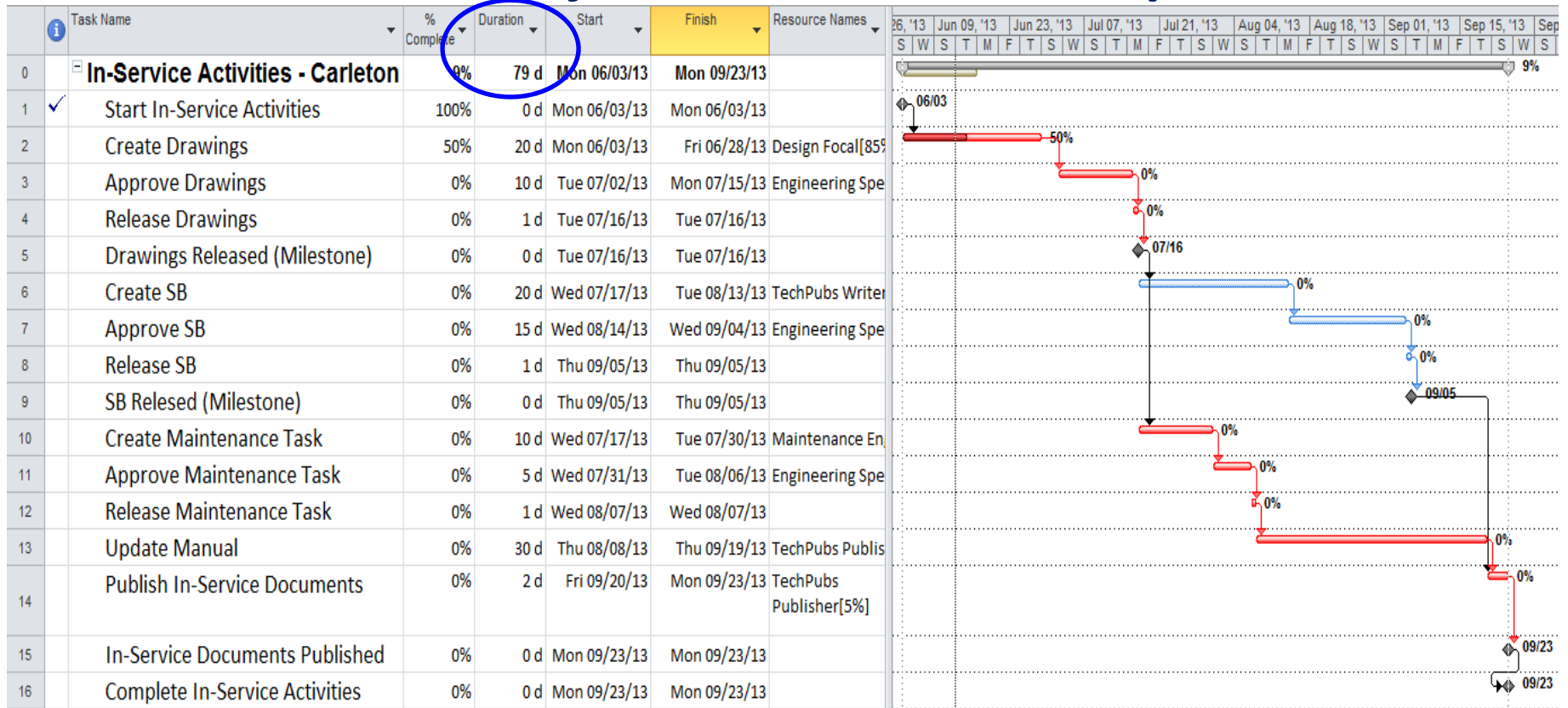
Name	Start	Finish
1 [Unnamed]	06/03/2013	06/14/2013

Details...  
Delete

There are different **calendars** that could be assigned to overall project, a task or a resource. Holidays and vacations are entered prior to resource assignment, so MS Project can calculate properly.

# 1.3 Project Planning

## 1.3.5 Microsoft Project Gantt Chart Example



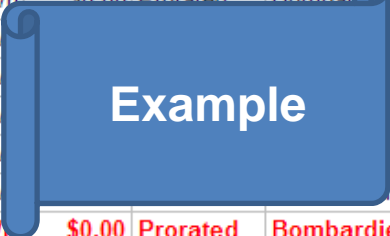
**Critical Path** represents the shortest time in which a project can be completed. If one or more activities on this path take longer than planned, the project will slip.

# 1.3 Project Planning

## 1.3.6 Resources Sheet Example



		Resource Name	Type	Material Label	Initials	Group	Max. Units	Std. Rate	Ovt. Rate	Cost/Use	Accrue At	Base Calendar
1		Angelo Susi	Work		AS	Systems Chief	30%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
2		Christina Yung	Work		CY	Airworthiness	30%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
3		Gordon Collings	Work		GC	R&M	10%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
4		Joshua Benhabib	Work		JB	R&M	50%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
5		Safi Nizami	Work		SN	R&M	50%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
6		Klever Freire	Work		KF	R&M	50%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
7		John Harwood	Work		JH	Air Systems	30%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
8		Ching Yi Choo	Work		CYC	Air Systems	50%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
9		Hamid Reza	Work		HR	Air Systems	50%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
10		Alex Parsi	Work		AP	Flight Controls	30%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
11		Daxin Zhao	Work		DZ	Flight Controls	50%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
12		Mike Dzivy	Work		MD	Flight Controls	50%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
13		Graeme Houston	Work		GH	Hydro-Mech	30%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
14		Alex Waller	Work		AW	Hydro-Mech	30%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
15		Zdenek Rak	Work		ZR	Hydro-Mech	50%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
16		Jeremy Maynard	Work		JM	Hydraulics	50%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
17		Jeff Bienhaus	Work		JB	Door System	50%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
18		Ciprian Gheorghiu	Work		CG	Landing Gear	50%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
19		Juliusz Zulauf	Work		JZ	Landing Gear	50%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
20		Mike Simionescu	Work		MS	Fuel System	30%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale
21		Nick Nikolic	Work		NN	Fuel System	50%	\$0.00/h	\$0.00/h	\$0.00	Prorated	Bombardier Cale



**Resource Sheet View** – Define all resources required for a project. A resource does not have to be a person. It can also be a machine that you will be utilizing to do the work.


# 1.3 Project Planning

## 1.3.7 Resources Usage Example



			Jan 03 '10							Jan 10			
Resource Name			Work	Details	S	S	M	T	W	T	F	S	S
21	<b>Nick Nikolic</b>	528 h	Work			10h	10h	6h	6h	6h			
	Task 1	8 h	Work										
	Task 2	6 h	Work										
	Task 3	4 h	Work										
	Task 4	2 h	Work										
	Task 5	2 h	Work										
	Task 6	6 h	Work			2h	2h	2h					
	Task 7	4 h	Work						2h	2h			
	Task 8	4 h	Work										
	Task 9	4 h	Work										
	Task 10	10 h	Work										
	Task 11	2 h	Work										
	Task 12	4 h	Work										
	Task 13	10 h	Work										
	Task 14	10 h	Work										
	Task 15	4 h	Work										
	Task 16	10 h	Work										
	Task 17	10 h	Work										
	Task 18	4 h	Work										
	Task 19	4 h	Work										
	Task 20	20 h	Work										
	Task 21	40 h	Work			4h	4h						
	Task 22	16 h	Work			4h	4h						
	Task 23	24 h	Work					4h	4h	4h			

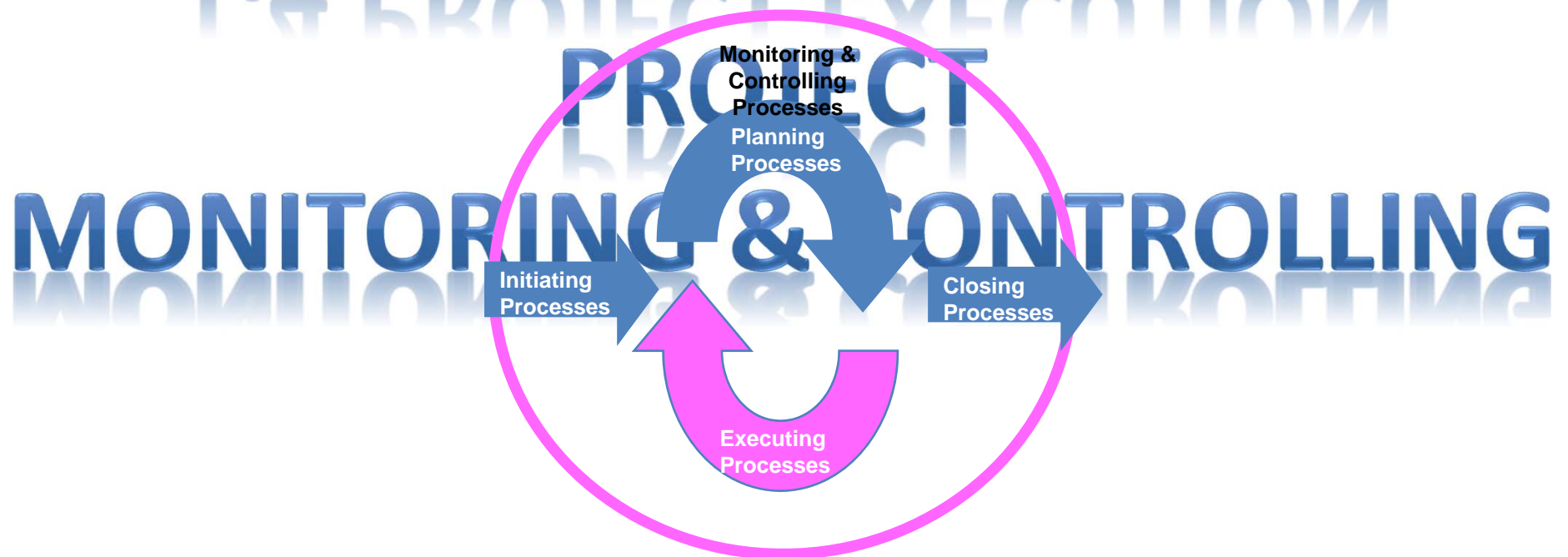
Example

- 
**Resource Usage View** – If resource name gets red, it signals that it is booked over his/hers maximum available time. Check and perform resource leveling. Resource leveling is a technique that overlooks resource allocation and resolves possible conflict arising from over allocation. It is considered one of the key elements to resource/capacity management.





# 1.4 PROJECT EXECUTION

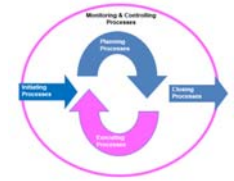




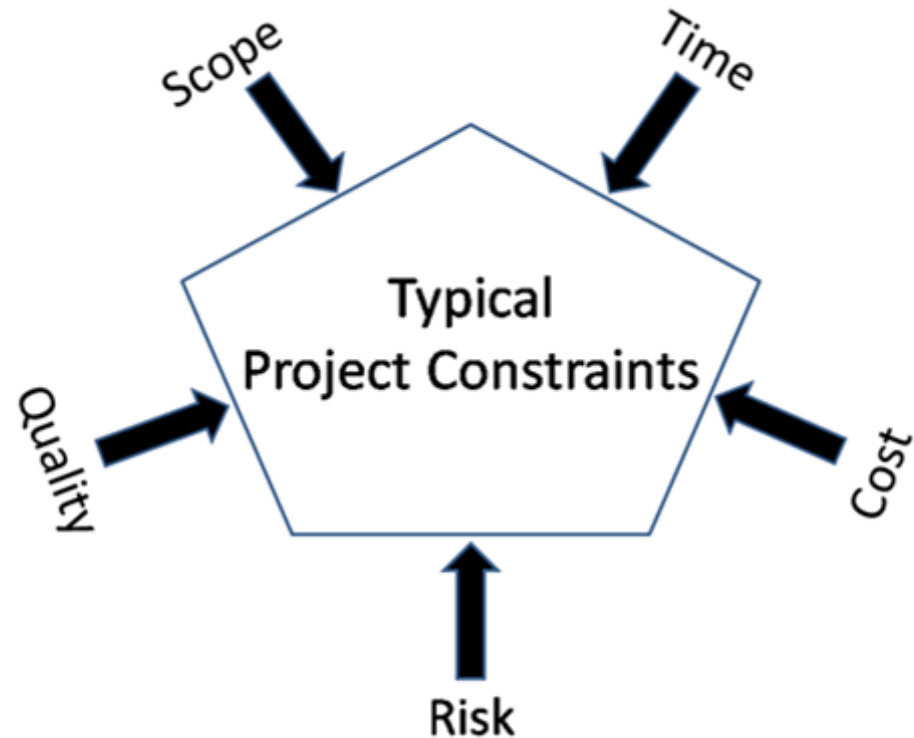
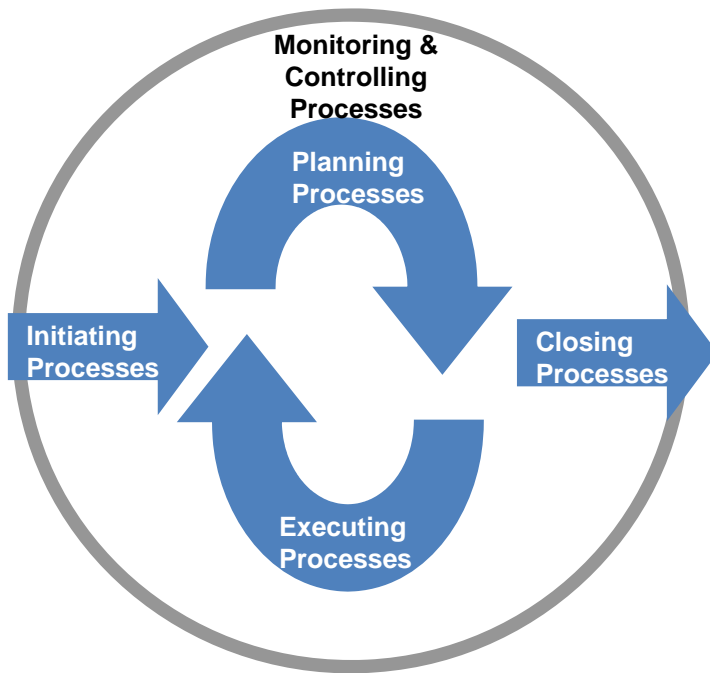
## 1.4 Project Execution, Monitoring and Controlling – Learning Goals

**At the end of this module you will understand:**

- **What are some elements of Project Execution**
- **Why is Monitoring and Controlling important**
- **What is Communication Management**
- **What is Risk Management**
- **What are Negotiation and Conflict Resolution processes**



# 1.4 Project Execution and Monitoring & Controlling

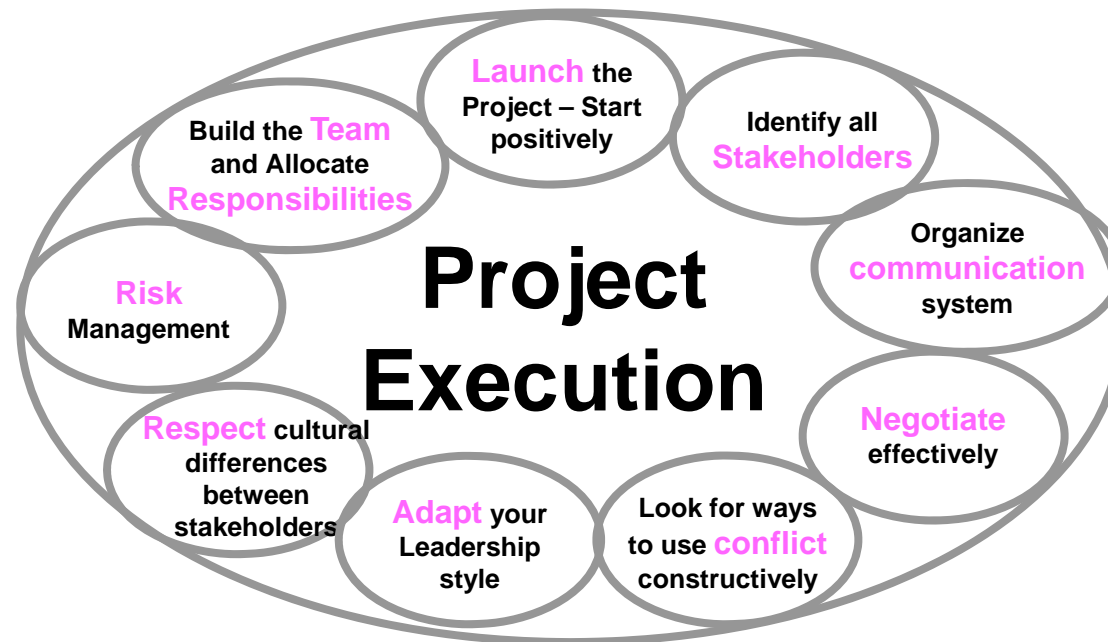


*The Challenge of effective project management is to regularly monitor and measure progress and recognize when corrective actions are necessary.*





## 1.4 Project Execution and Monitoring & Controlling



*The Challenge of effective project management throughout the project execution is to coordinate the people and other resources well.*

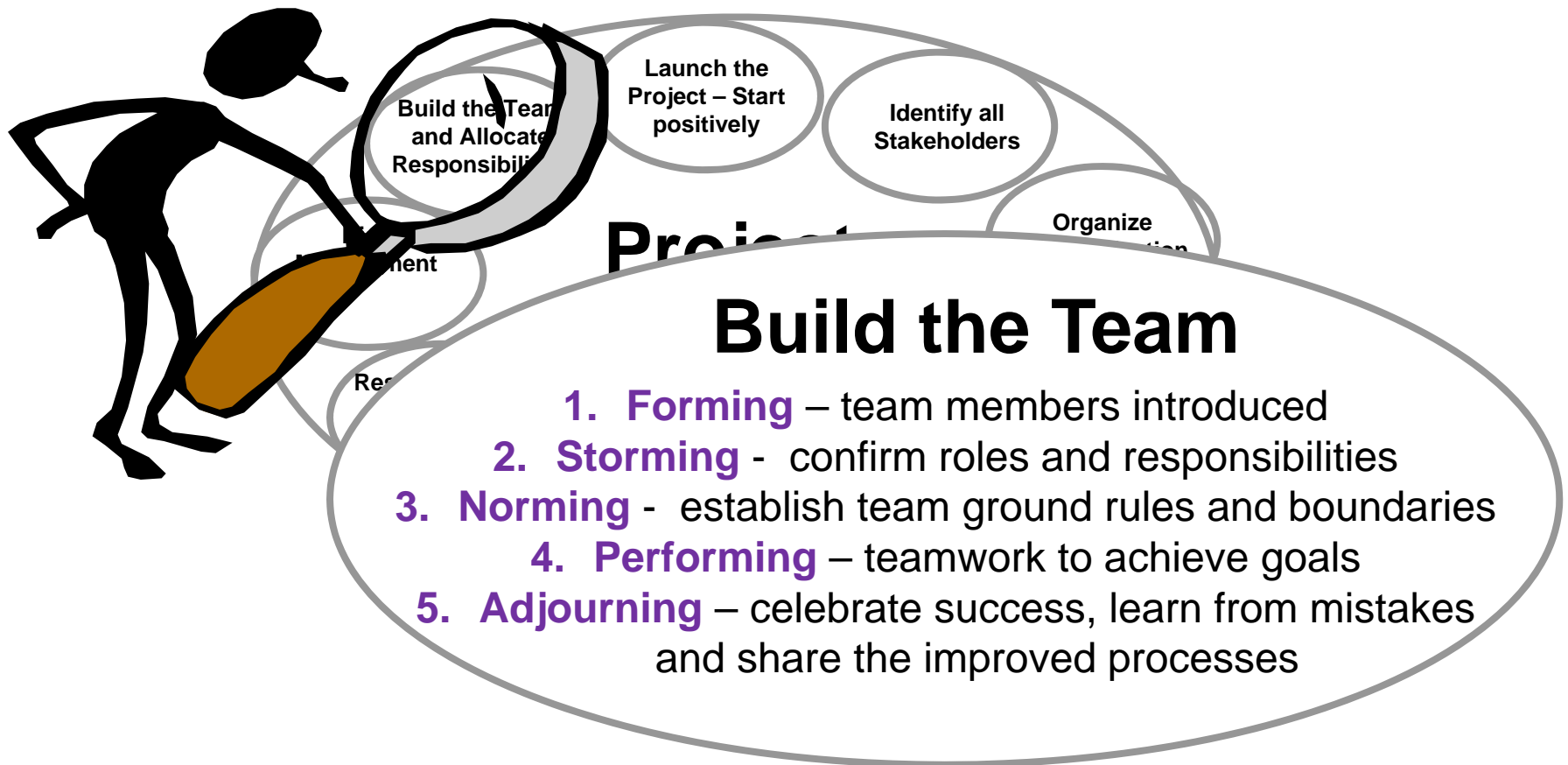


# 1.4 Project Execution and Monitoring & Controlling





## 1.4 Project Execution and Monitoring & Controlling

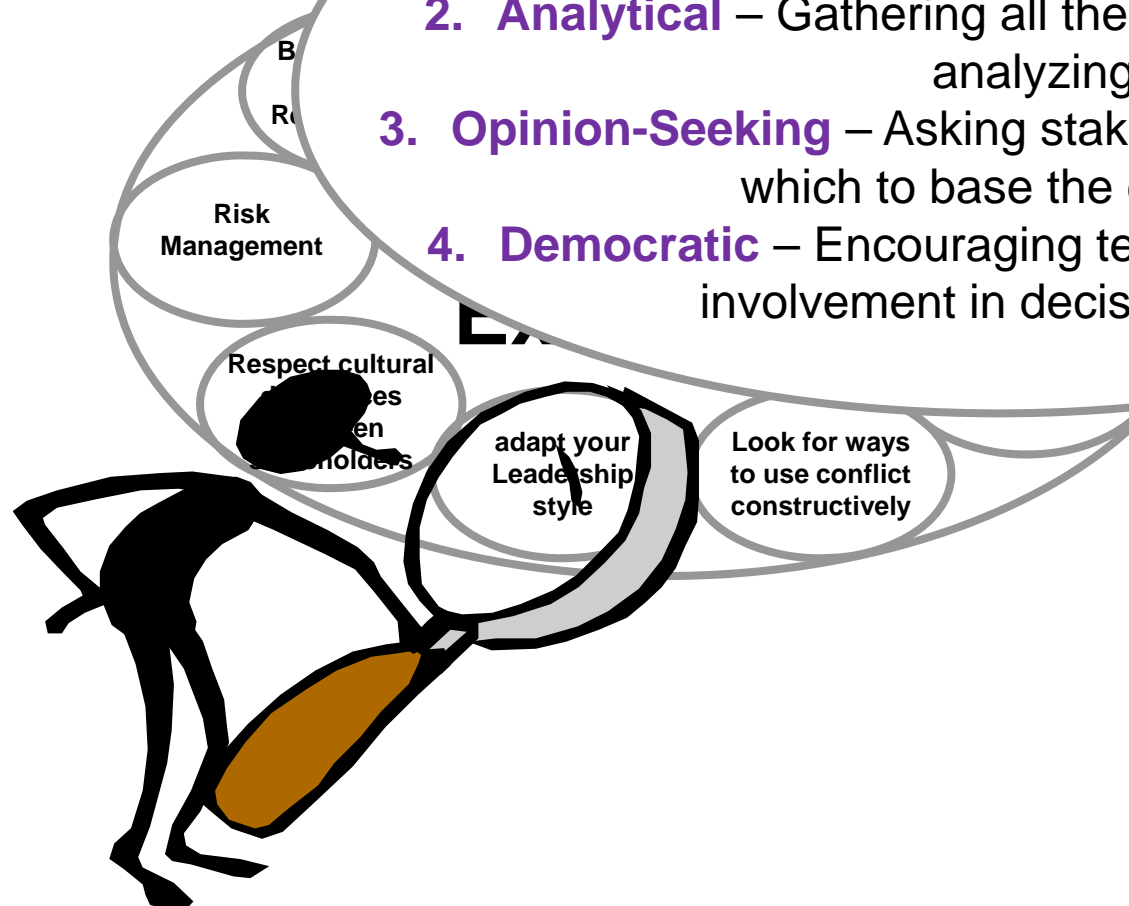


# 1.4 Project Execution and Monitoring & Controlling

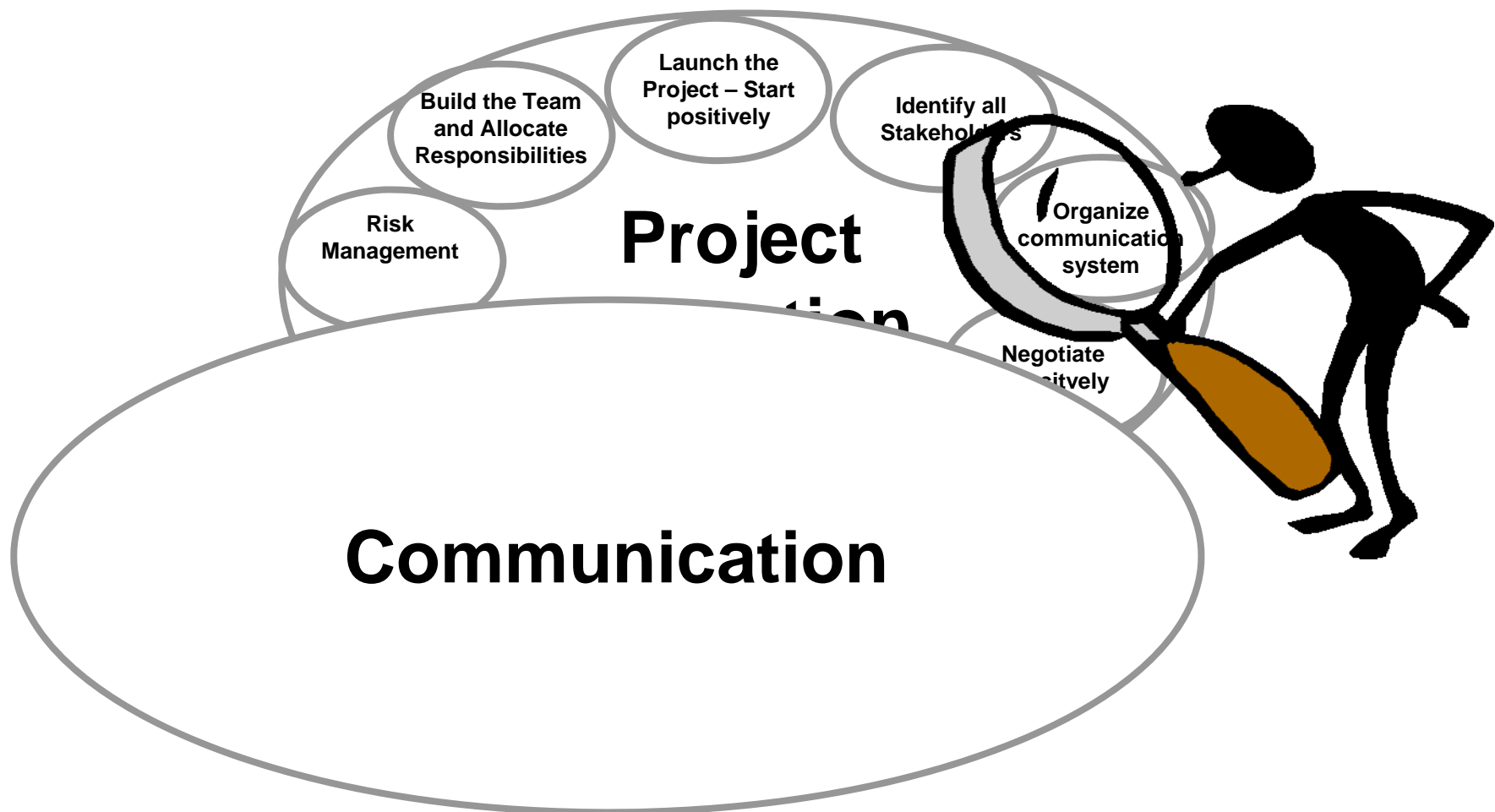


## Leadership Style

1. **Dictatorial** – Making decisions alone, taking risks
2. **Analytical** – Gathering all the facts, observing and analyzing
3. **Opinion-Seeking** – Asking stakeholders for opinion on which to base the decisions
4. **Democratic** – Encouraging team participation and involvement in decision-making



# 1.4 Project Execution and Monitoring & Controlling



# 1.4 Project Execution and Monitoring & Controlling



## 1.4.1 Communication

- Communication Types:

- Formal
- Informal
- Verbal
- Written



	Formal Written	Formal Verbal	Informal Written	Informal Verbal
Complex Technical Issue	✓			
Meeting				✓
Statement of Work	✓			
Corporate Presentation		✓		
Meeting Minutes			✓	
E-mail			✓	
Estimate	✓			
Design Proposal	✓			

# 1.4 Project Execution and Monitoring & Controlling

## 1.4.1 Communication



### FORMAL TONE

*Dear Ms. Johnston:*

*Enclosed please find the information requested during our telephone communication on April 21<sup>st</sup>.*

...

### CONVERSATIONAL TONE

*Good morning Susan:*

*Here is the information you requested during our phone conversation on Friday.*

...

### INFORMAL TONE

Hi Susan:

Hope all is well. Just sending along the information you asked for. As I said on Friday our team ....

# 1.4 Project Execution and Monitoring & Controlling

## 1.4.1 Communication



### ***Exercise #4: Effective Business Communication***

*The summer student wants to ensure all Design Proposals are submitted for Engineering Change Board review in a timely fashion. The student just finished the draft of an e-mail he plans to send to Design Proposal authors and asked you to review it.*

*What will your feedback be? Will you ask him to improve the text, and how?*







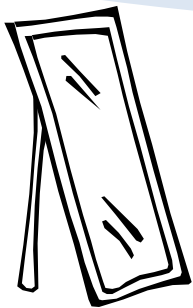
## 1.4.1 Exercise #4: Effective Business Communication

Good day all,

*I would appreciate if Design Proposals requiring Engineering Change Board Review are sent **two working days prior to the meeting (held on Thursday's at 11am)**. Personally the latest (and I stress **LATEST**) I would want these is **Wednesday by noon**. I hope you understand I have to review these and submit to Management. Once I receive the Board Agenda I will forward it in an e-mail to you. If you send a Design Proposal for Board Review after this email is sent, chances are it will not be presented in the meeting and **will be placed for the next Board Review**.*

*I know this will be somewhat of a struggle, unfortunately in order to make this process effective, I am asking that Design Proposals are completed **PROPERLY!** For example, if **signatures and hours are missing** I will be rejecting them. This will create unnecessary delay in approval of your proposal and you may end up having to reschedule your milestones. And the situation will get even more complicated as for any milestone date changes, approval will be required. I think that all of this is unnecessary, and can be prevented by simply submitting your Design Proposal two days prior to our Engineering Change Board Meeting.*

**Regards,**  
Student Xyz



Dec 1, 2017



65

# 1.4 Project Execution and Monitoring & Controlling

## 1.4.1 Communication



- **Communication**



# 1.4 Project Execution and Monitoring & Controlling

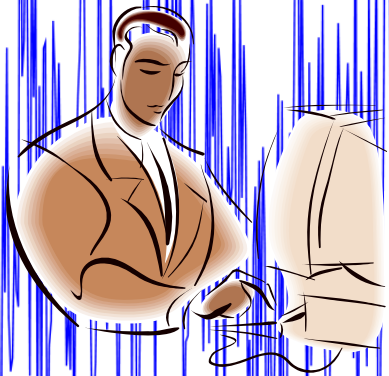
## 1.4.1 Communication



### ■ Communication Model

# Noise

Sender



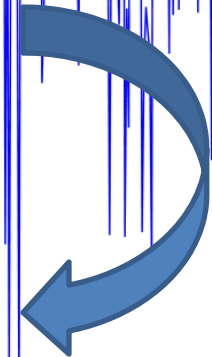
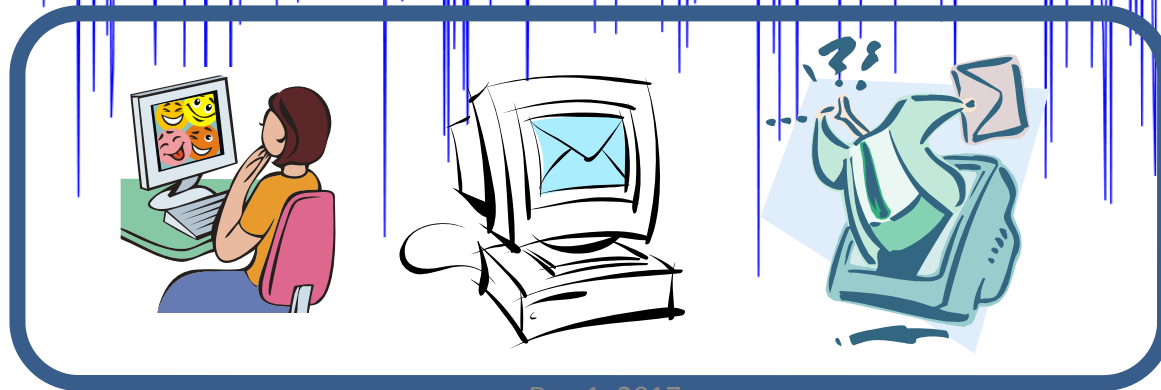
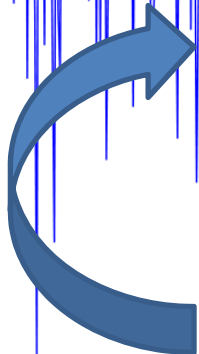
Message



Receiver



Feedback



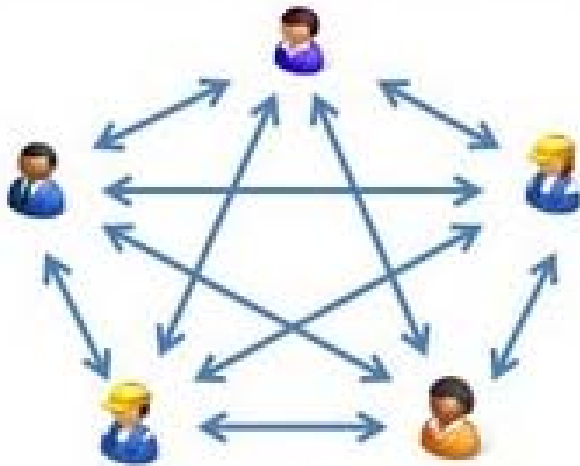


# 1.4 Project Execution and Monitoring & Controlling

## 1.4.1 Communication

- **Communication Channels:**

- The more people involved in a project, the greater the number of communication channels
- Number of communication channels grows quickly as people are added to the project



*The Challenge of effective project management is to ensure communication channels are open and that cooperation happens. Continuous Monitoring and Controlling is essential.*

# 1.4 Project Execution and Monitoring & Controlling



## 1.4.1 Communication

- **Project Manager's role:**
  - Communication planning
  - Information distribution
  - Performance reporting
  - Managing stakeholders



Meeting Facilitation

Meeting Minutes

Status Reporting

Actions

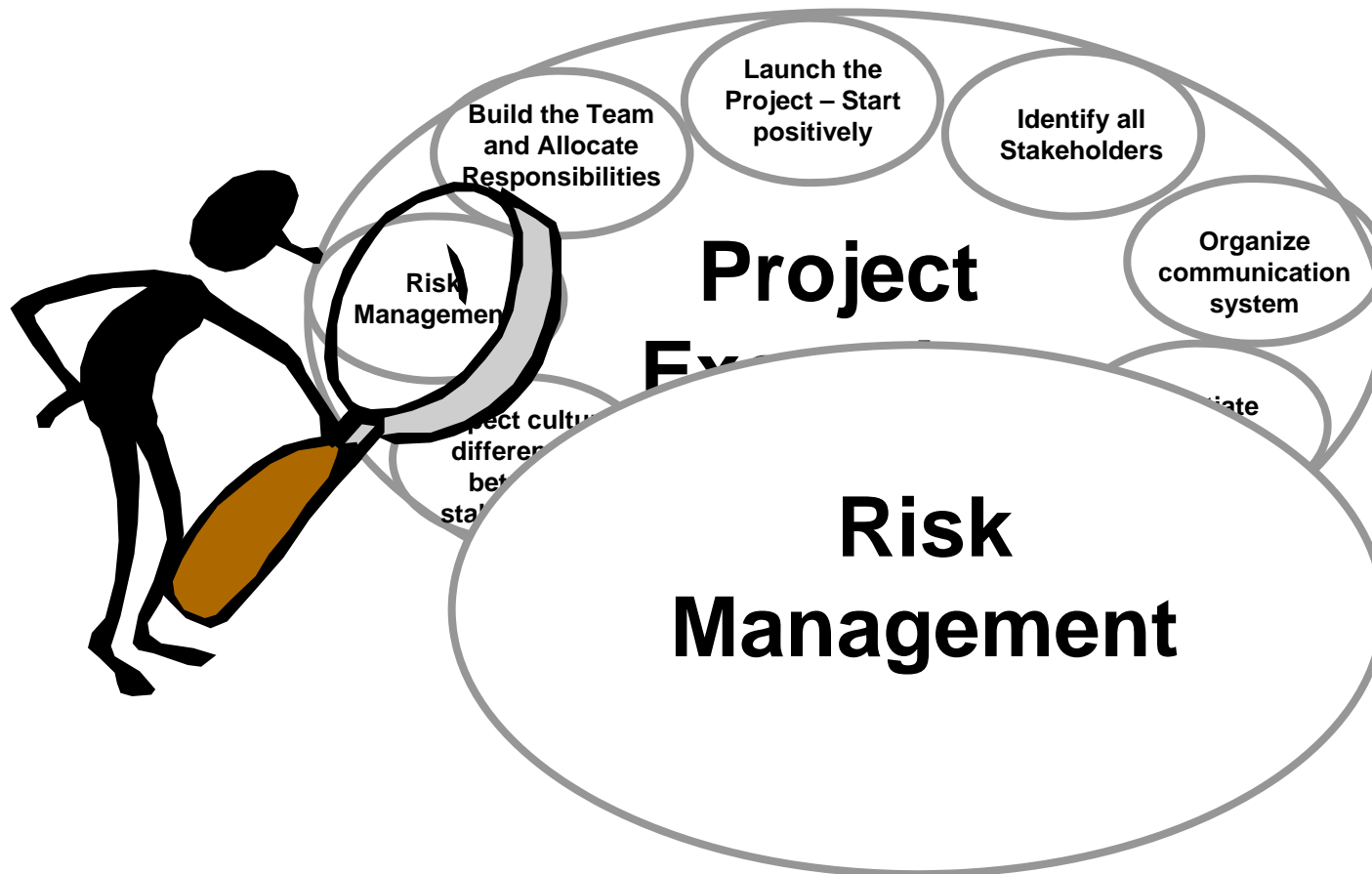
ID	Description	Next Steps	Responsible	ECD	Status
1	Aaaaaaaaa	Dec 1: Bbbb	Izabella	Dec 12	Open
2	Ccccccccc	Dec 1: Dddd	Ramanan	Dec 20	Open

■ ■ ■

☀ *The Challenge of effective project management is to ensure effective communication and prevent information overload.*

# 1.4 Project Execution and Monitoring & Controlling

## 1.4.2 Risk Management



# 1.4 Project Execution and Monitoring & Controlling

## 1.4.2 Risk Management



- **What is Risk?**
  - An event with some degree of **uncertainty**
  - **Positive** risks are **opportunities**
  - **Negative** risks are **threats**
  - **Materialized** risk is an **issue**
  - **Risks are being assessed** to offset any negative impact on project and pursue any positive impact
  - **Risk Register** should identify the risks, assess their probabilities, impact and uncertainty



- **Objective:**
  - **To be proactive & anticipate** any events which may harm the program so that actions may be taken to decrease the risk impact if / when they materialize.

★ *Risk is an uncertain event or condition that, if it occurs, has a positive or negative effect on a project's objectives (PMI, PMBOK Rev3)*

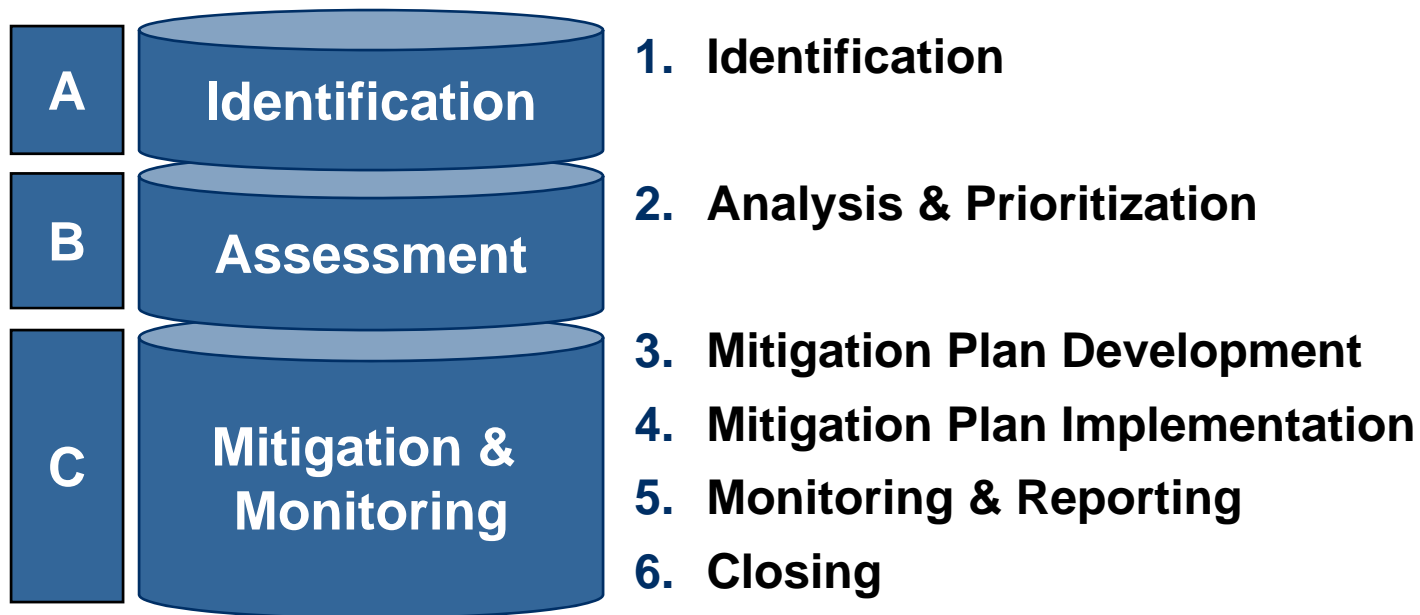
★ *Risk is an undesired situation or circumstance that has both a likelihood of occurring and a potentially negative consequence (AS9100)*





# 1.4 Project Execution and Monitoring & Controlling

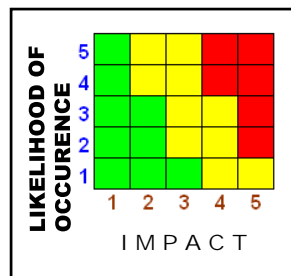
## 1.4.2 Risk & Opportunity Management Strategy – Process



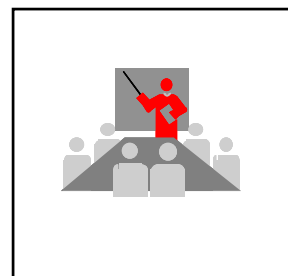
### Identification



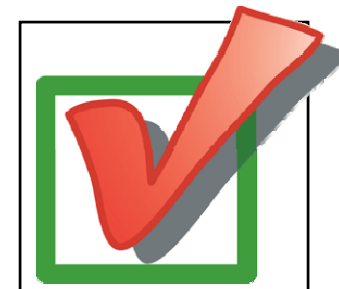
### Assessment



### Mitigation



### Closure



Dec 1, 2017



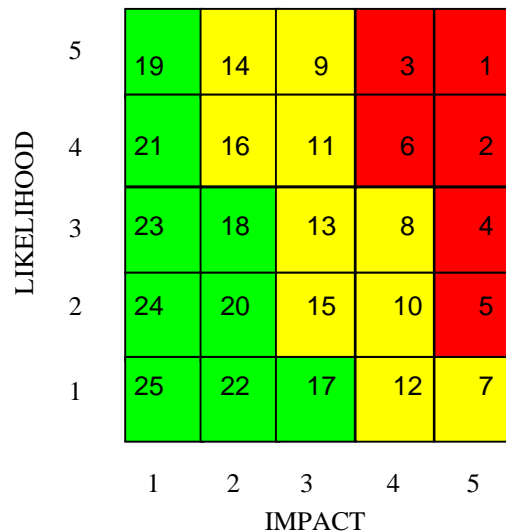


# 1.4 Project Execution and Monitoring & Controlling

## 1.4.2 Risk Management

### Some Risks that may occur during Project Execution Phase

- Change in scope
- Change in schedule
- Unskilled labour
- Material availability
- Strike
- Weather
- Change in Regulatory Requirements ...



Dec 1, 2017

### Updated Risk Matrix and criteria

Risk Matrix					
	1	2	3	4	5
Cost Impact					
Schedule Impact					
Performance Impact					
Quality Impact					
Likelihood					

Likelihood	5					
	4					
	3					
	2					
	1					
		1	2	3	4	5
	Impact					



# 1.4 Project Execution and Monitoring & Controlling

## 1.4.2 Risk Management

### Exercise #5: Risk Assessment

As part of Product Enhancement Project, retrofit will be performed by a Service Center in USA. You are learning that the **Center is going through some major restructuring** of the business and your project retrofit will be done at **a location different than originally planned**. The new location **does not have much Systems installation experience** (that you need for your project). Due to a learning curve process, **there is a risk that retrofit will take more time than planned, and that could affect the aircraft return into service date.**

Perform risk assessment.

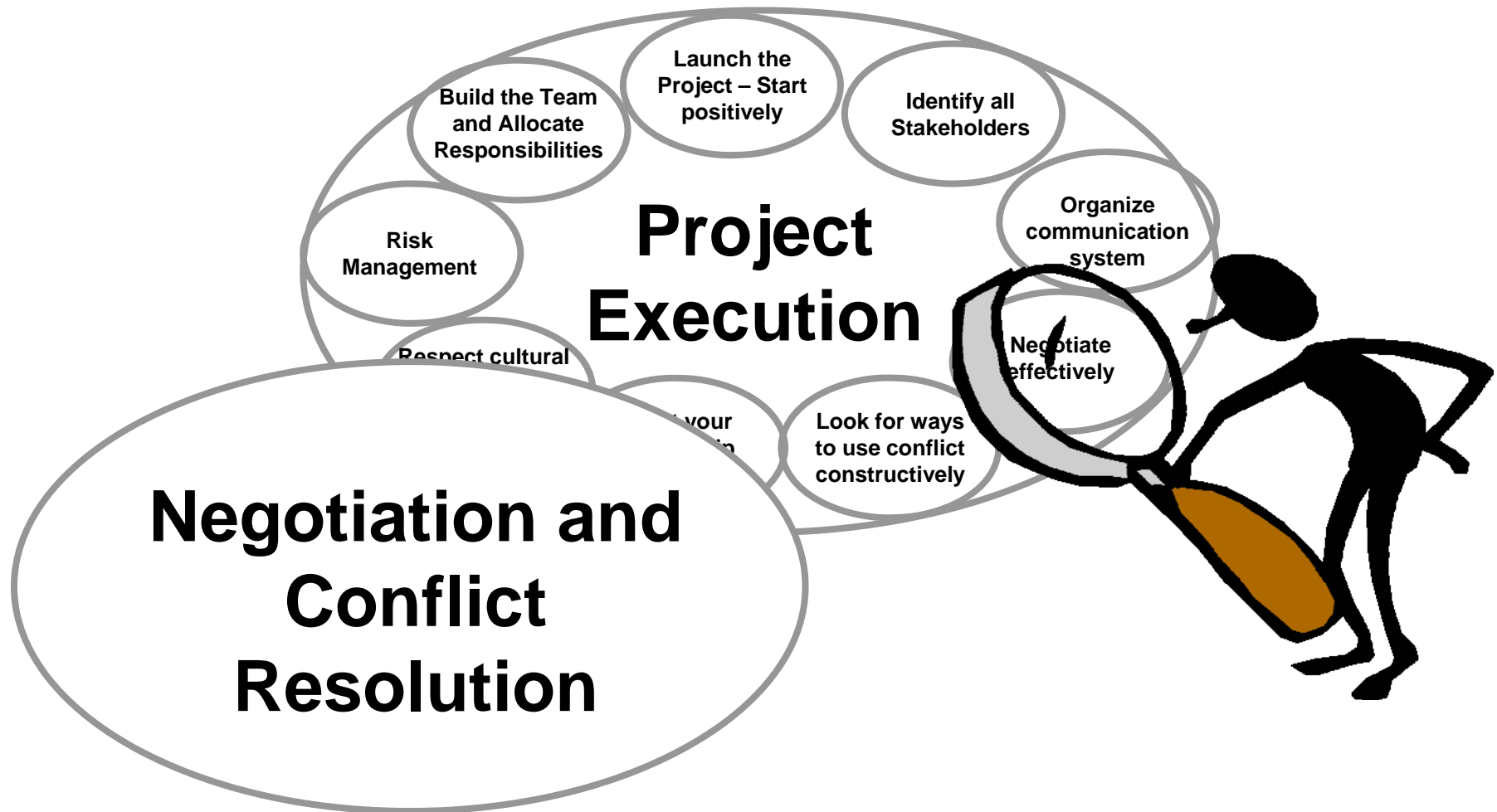
Risk Matrix					
	1	2	3	4	5
Cost Impact					
Schedule Impact					
A/C Performance					
Quality					
Cust Satisfaction					
Likelihood					

Likelihood	5	Green	Yellow	Yellow	Red	Red
	4	Green	Yellow	Yellow	Red	Red
	3	Green	Green	Yellow	Yellow	Red
	2	Green	Green	Green	Yellow	Yellow
	1	Green	Green	Green	Green	Yellow
		1	2	3	4	5
		Impact				

# 1.4 Project Execution and Monitoring & Controlling

## 1.4.3 Negotiation and Conflict Resolution

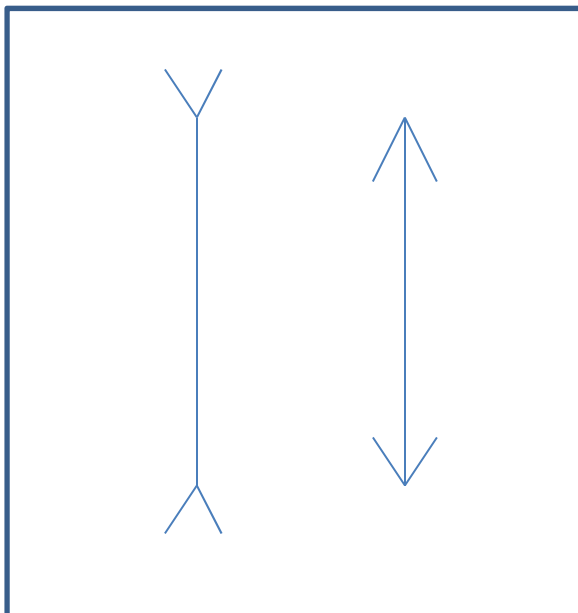


# 1.4 Project Execution and Monitoring & Controlling

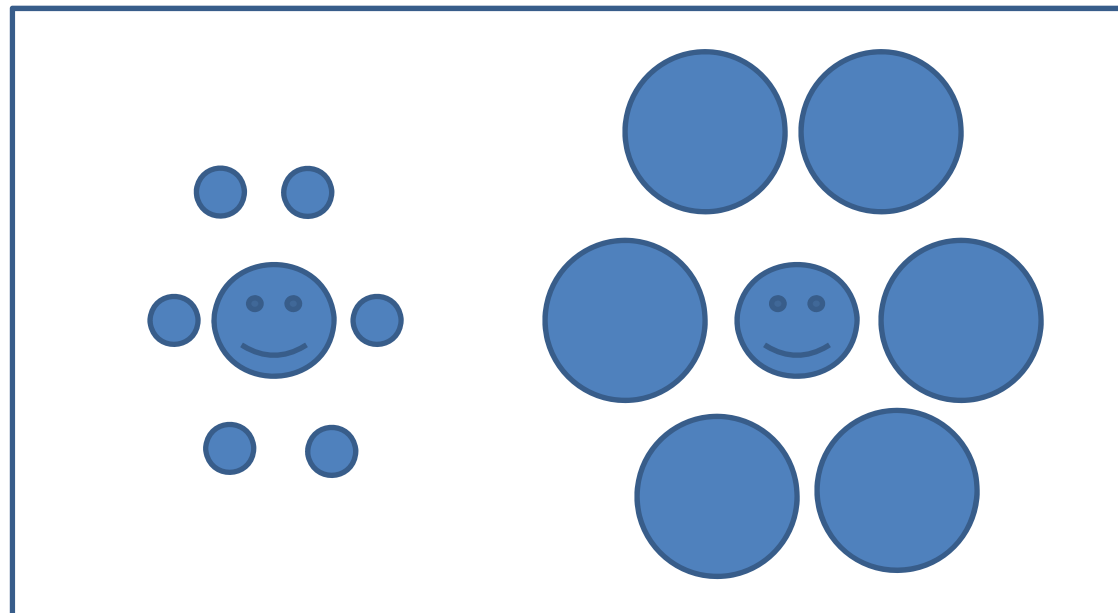
## 1.4.3 Negotiation and Conflict Resolution



Conflict is a process in which one party **perceives** that its interests are being opposed or negatively affected by another party.



Which vertical line is longer?



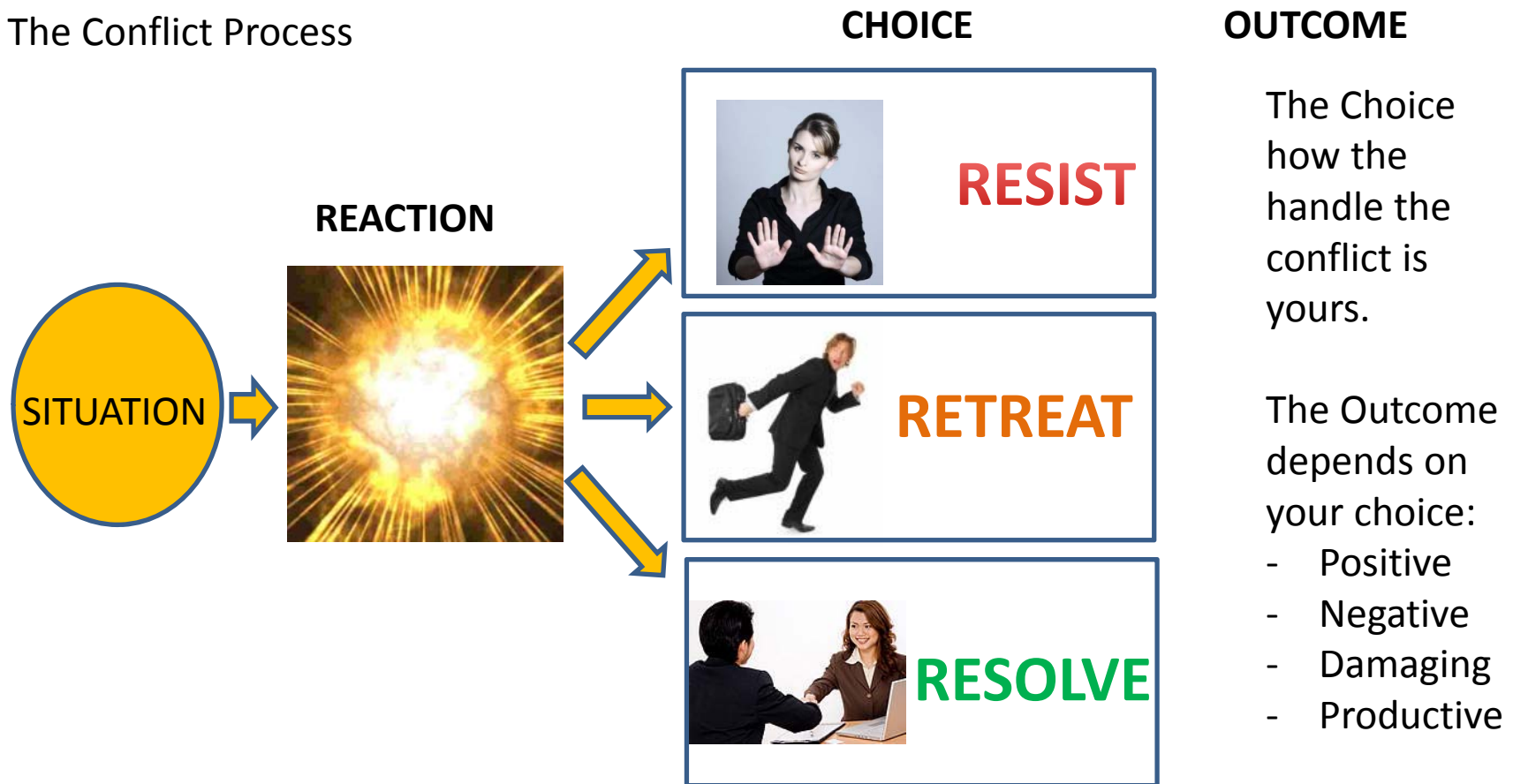
Which smiley face circle is larger?


# 1.4 Project Execution and Monitoring & Controlling

## 1.4.3 Negotiation and Conflict Resolution



The Conflict Process



 *A conflict that is being ignored or run away from acts like a catalyzer for future project issues and unplanned roadblocks. This applies to both, personal and intergroup conflicts.*

*The Challenge of effective project management is to encourage healthy conflict and manage dysfunctional conflict.*

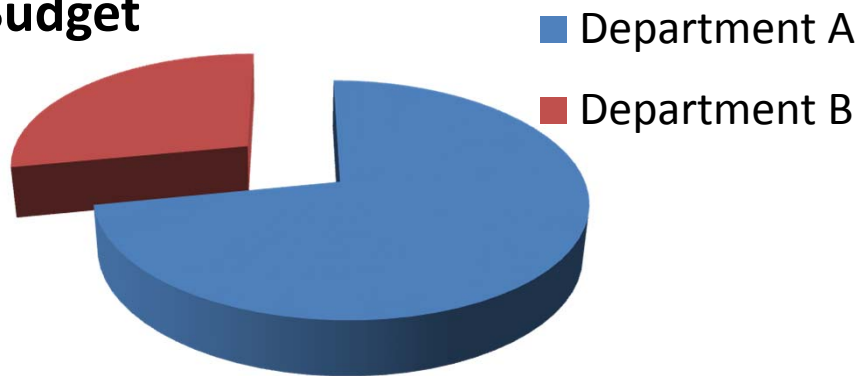


# 1.4 Project Execution and Monitoring & Controlling

## 1.4.3 Negotiation and Conflict Resolution

Project Managers are constantly involved in negotiations, discussing scope, schedule, cost; discussing with project team members, upper management, Customers.


### Budget



**Distributive negotiations** – a single issue is being discussed. One person or group gains at the expense of the other. Involves “win-lose” strategy.



**Integrative negotiations** – more than one issue is being discussed. An agreement can be reached to satisfy both parties. Involves “win-win” strategy.

 *Prior to negotiations, always do your “homework”. Both parties should be satisfied, so future business does not suffer.*



## ***1.4.3 Negotiation and Conflict Resolution***

### ***Exercise #6 – Role Playing***

## **CUSTOMER – SUPPLIER NEGOTIATIONS**

An Aerospace Company is negotiating a sale of the product with Supplier A. Various aspects will be negotiated.

You will earn points depending on the outcome. Remember, think of your priorities. You have done very well if you get 13 points.

You will be playing either a role of an **Aerospace Company** or **Supplier A**.



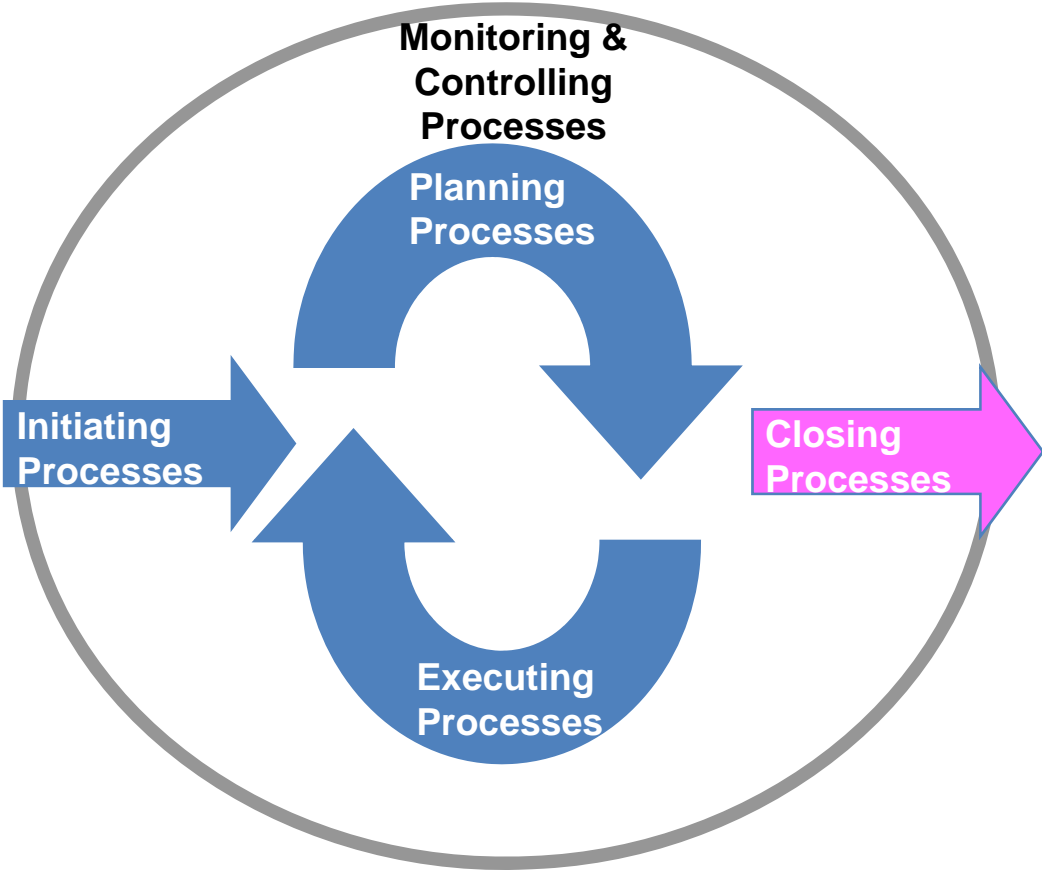


# 1.5 PROJECT CLOSING



# 1.5 Project Closing

## 5 Project Management Process Groups





## 1.5 Project Closing – Learning Goals

**At the end of this module you will understand:**

- **Why is it important to hold a formal project close out meeting**
- **Why do we publish lessons learned**
- **How do we know the project was successful**

## 1.5 Project Closing

... is performed upon:

- Successful completion or
- Project cancelation

### Main output:

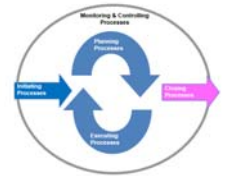
- Project product, service or result

### Milestones:

- Close-Out Meeting
- Contract Closures
- Lessons Learned



*Project Closing is the process of finalizing all activities across all of the project process groups to formally close the project or phase.*



# 1.5. Project Closing

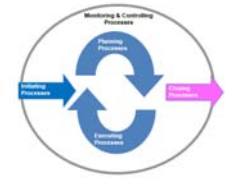
## *Project Success Criteria*

*Discussion: What constitutes Project Success?*



# 1.5. Project Closing

## 1.5.1 Project Success Criteria



*Discussion: What constitutes Project Success?*



Project

Organization

Customer

Cost

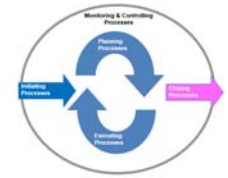
Quality

Scope

Time

Survey

- Very Satisfied
- Satisfied
- Neutral
- Unsatisfied
- Very Unsatisfied



## 1.5. Project Closing

### Exercise #7 – Compare Success of 3 Project

*It is the end of the quarter and three projects of high significance were closed in the last few months. Your team has been asked to select the best project.*

*Please review the results shown below and discuss with your team which project was the most successful and why.*

Project #	Project Name	Estimated Hours	Actual Hours	%
01234	Structural Enhancement	210	149	71.0%
34567	New Product Option	150	141	94.0%
56789	Installation Improvement	135	171	126.7%





## 1.5 Project Closure

### 1.5.2 Lessons Learned

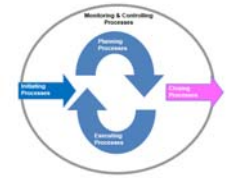
Lessons Learned Value:

- Incorporation of lessons learned into process assets
- Improvement of existing processes
- Building on existing successes
- Turning mistakes into future successes

**What went well?**

**What can be improved?**

**What were the obstacles?**



# 1.5 Project Closure

## 1.5.2 Lessons Learned

### Lessons Learned Value:

- Incorporation of LL into process assets
- Improvement of existing processes
- Building on existing successes
- Turning mistakes into future successes

- a) Templates
- b) Checklists
- c) Additional process steps
- d) Making steps optional or mandatory
- e) Suggesting use of new tools
- f) Technical Best Practices ...

### When?

- Project completed
- Project cancelled
- Project phase completed
- Project handover to a different team





## 1.5.2 Example - Team Lessons Learned Workshop



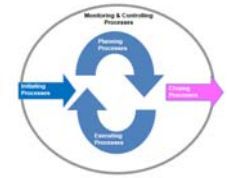
### Accomplishments:

- Exceptional team work
- Active communication
- Cross-team learning experience
- Transfer of knowledge
- Change in project learning culture
- Creation of 'learning to learn' cycle

### Initiative to:

- incorporate lessons into process assets
- enrich existing processes
- turn mistakes into successes





# 1.5.2 Lessons Learned - What Went Wrong?

- [http://en.wikipedia.org/wiki/Sampoong\\_Department\\_Store\\_collapse](http://en.wikipedia.org/wiki/Sampoong_Department_Store_collapse)
- The Sampoong Department Store ([삼풍백화점](#); [三豊百貨店](#)) collapse was a **structural failure** that occurred on June 29, 1995 in the [Seocho-gu](#) district of [Seoul, South Korea](#). The collapse is the largest peacetime disaster in South Korean history – 502 people died and 937 were injured.



# 2. SUMMARY AND RECOMMENDATIONS

# 2. SUMMARY OF INTRODUCTION TO PROJECT MANAGEMENT

You should now have a basic understanding of:

- What is project management
- What are the roles of project manager
- What are project management process groups
- What are project management knowledge areas
- What are typical constraints on the project
- What are typical key roles on a project
- The importance of Monitoring and Controlling
- Communication management
- Risk management
- Negotiation and conflict resolution processes
- Lessons learned

## 2. SUMMARY AND RECOMMENDATIONS



### PROJECT INITIATION

**NOTE:** This could apply to the phase initiation, as you are accepting the project from the previous project team.

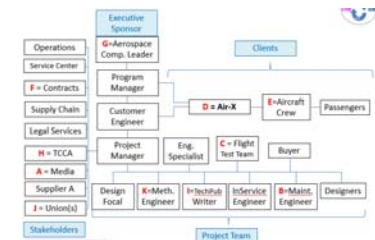


Select your PM



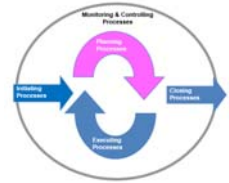
Define and Agree:

- What is the purpose of the project?
- What is the product, service or result that we are trying to achieve?
- What is the project success criteria?



Create Project Organization Chart





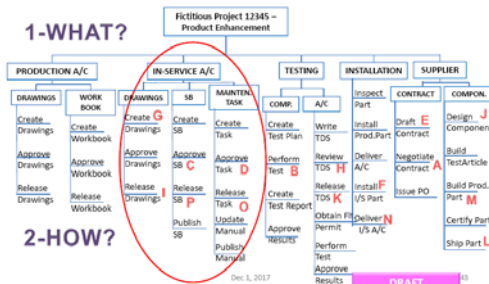
# 2. SUMMARY AND RECOMMENDATIONS

## PROJECT PLANNING

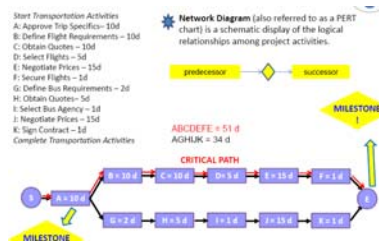
**NOTE:** This could apply to the phase planning, as you have accepted the project from the previous project team.

Answer your two questions:

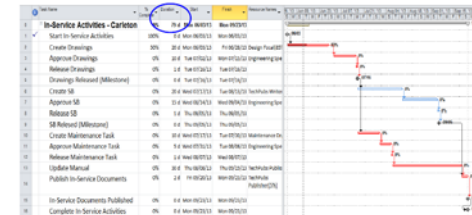
1. WHAT?
2. HOW?



Prepare WBS



- Estimate Duration and Dependencies for your tasks
- Identify Significant Milestones



Prepare Schedule

Make sure your project information folder is organized and create a table of contents. Same applies to CAD data management.

# EXAMPLE – SWIM LANE TEMPLATE

Project 12345	Q1-17			Q2-17			Q3-17			Q4-17			Q1-18		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
MAJOR PROJECT MILESTONES			▲ ???	▲ ???	▲ ???		▲ ???	▲ ???	▲ ???	▲ ???					▲ ???
GROUP 1 Focal: ?			????		▲			▲ ???	→	▲ ???	→	▲ ???			
GROUP 2 Focal: ?										▲ ???					
GROUP 3 Focal: ?					▲ ???		▲ ???	▲ ???			▲ ???				
GROUP 4 Focal: ?															
GROUP 5 Focal: ?															
GROUP 6 Focal: ?															
GROUP 7 Focal: ?															
GROUP 8 Focal: ?															

Don't forget to enter major project milestones: i.e. major design reviews.

LEGEND STATUS		LEGEND MILESTONES	
ON SCHEDULE	●	ON SCHEDULE	▲
RISK OR OPPORTUNITY	●	COMPLETED	▲
ROADBLOCK OR LATE	●	LATE	▲

# 2. SUMMARY AND RECOMMENDATIONS



## PROJECT EXECUTION, MONITORING & CONTROLLING

### Project Execution Kick-Off

- Invite Sponsor and ask him to greet the team, present the project background and express his confidence in the team
- Include the summary of project goal, any performance indicators and target figures
- Summarize milestones and identify associated deliverables
- Present any Risks and Opportunities identified so far
- Present the list of Stakeholders ...

**Adopt leadership styles, as required...**  
 Dictatorial / Analytical / Opinion-Seeking / Democratic



### Prepare Communication Plan:

- How often would you meet regularly
- What are your major design reviews
- Define high level project visibility
- Define working level communication
- Have action item register
- Record and publish meeting minutes
- Communicate effectively → always seek feedback



### Identify and manage your risks early:

- Create and maintain risk register: ID, Description, Impact, Likelihood, Mitigation Plan, Risk Owner, Status
- Focus on high impact / high likelihood risks




### Negotiate effectively and resolve conflicts

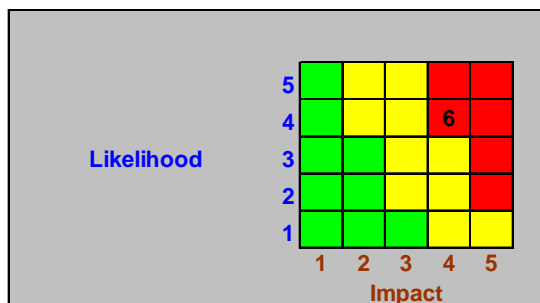
- Encourage healthy conflicts and manage dysfunctional conflicts
- Come prepared for negotiations





# EXAMPLE – RISK REGISTER TEMPLATE

No	Risk Health	Description	Likelihood	Impact	Mitigation Action	ECD
1		??????	Low	High		
2		??????	Medium	Low		
3		??????	High	Low		



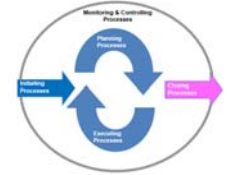
- Identify risks sooner, rather than later.
- Prioritize - Focus more on high likelihood / high impact risks.

# EXAMPLE – ACTION ITEM REGISTER TEMPLATE

ITEM NO	MARK	TITLE	DESCRIPTION	ACTION	OWNER	DATE OPENED	ECD	ACD	STATUS / NOTES
<b>1.000.0</b>		<b>GENERAL</b>							
1.001			DESCRIBE THE ISSUE	11/27: NSJDSJJKSHDKJHSK 11/20:DSKHDKSHDKSAH	NAME	13-Nov-17	5-Dec-17		
1.002									
<b>2.000.0</b>		<b>CERTIFICATION</b>							
2.001									
2.002									
<b>3.000.0</b>		<b>SCHEDULE</b>							
3.001									
3.002									
<b>4.000.0</b>		<b>OTHER TECHNICAL DISCUSSIONS</b>							
4.001									
4.002									

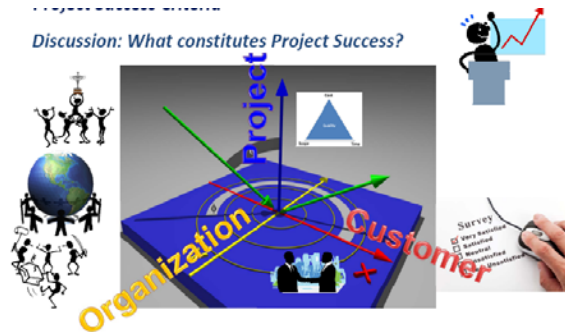
- Don't forget to keep closed items. You can have a separate tab in excel spreadsheet. History.
- You can rotate who updates the register.
- Date your discussions / actions.
- Start your actions always with the verb.

## 2. SUMMARY AND RECOMMENDATIONS



### PROJECT CLOSURE

*NOTE: This could apply to the phase planning, as you have accepted the project from the previous project team.*



**What went well?**  
**What can be improved?**  
**What were the obstacles?**

#### Prepare for closeout meeting:

- Status the project scope, schedule and cost
- Have you met your purpose, produced your product and met your project success criteria?
- If you are handing over the project:
  - Prepare checklists for project handover
  - Inform where project information is stored

#### Conduct Lessons Learned meeting

## 2. SUMMARY AND RECOMMENDATIONS



ENJOY THE PROJECT...



... AND NEVER FORGET

# 3. Questions

