



वसुधैव कुटुम्बकम्  
ONE EARTH • ONE FAMILY • ONE FUTURE



# Effective Project Management

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**Session 5, Soft Skills Program, VMSBUTU, Dehradun, India, 8 May, 2023**



# Outline – Effective Project Management

- Session 4 (Teamwork) Feedback and Recap
- Applications of Project Management
- Define Project, Project Goals, and Project Management
- Project Failures
- Aggregate Project Plans
- Project Management Journey (The WOW Project):
  - Find & Create, Selling, Execute, Hand Off
- Project Management Tools
- Best Practices:
  - Project Budget
  - Project Communication
  - Project Risk Management
- Major Resources
- Summary
- **Your 2 Key Takeaways from the Session**

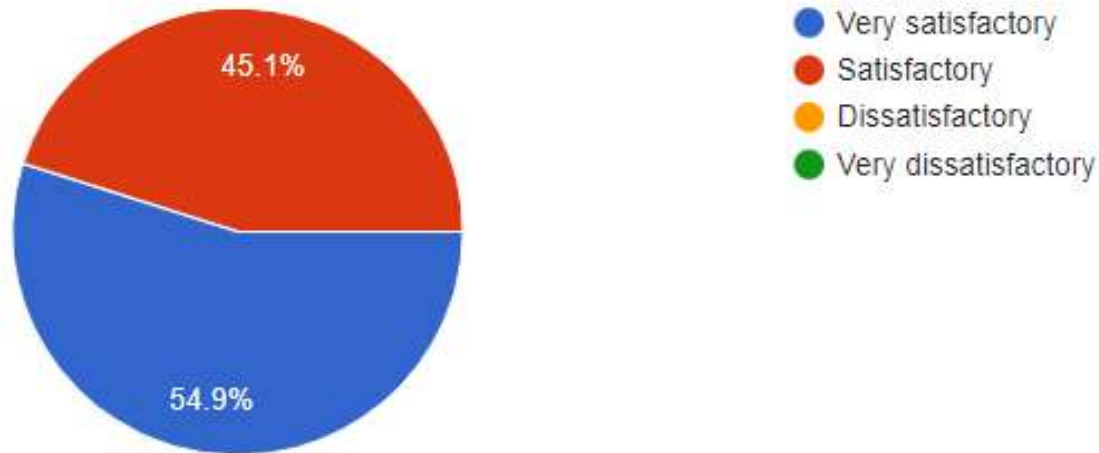


# Session 4 - Teamwork Feedback

## Q1. Overall Session Quality – 100.0%

Overall quality of the session

51 responses

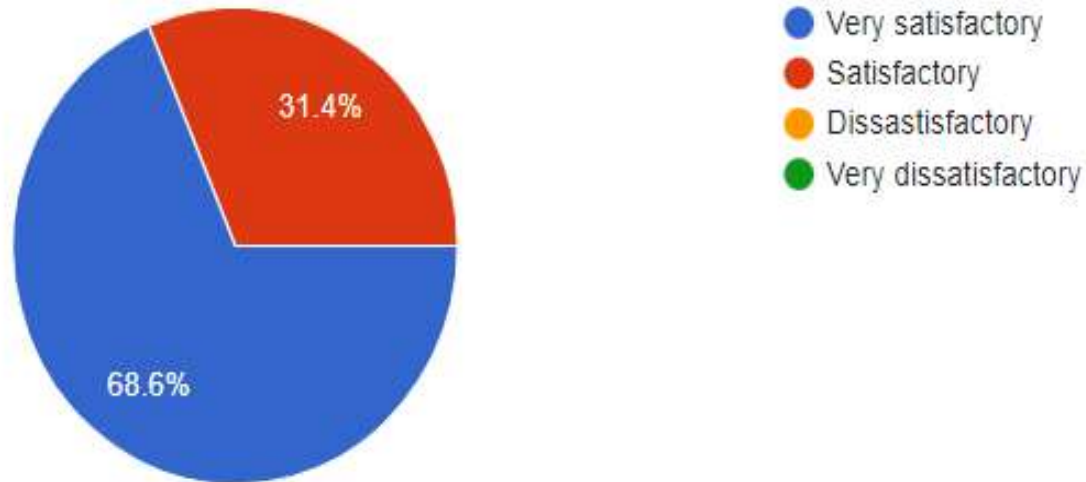


# Session 4 – Teamwork Feedback

## Q2. Learnt New Skills – 100.0%

Learnt new skills from this session

51 responses

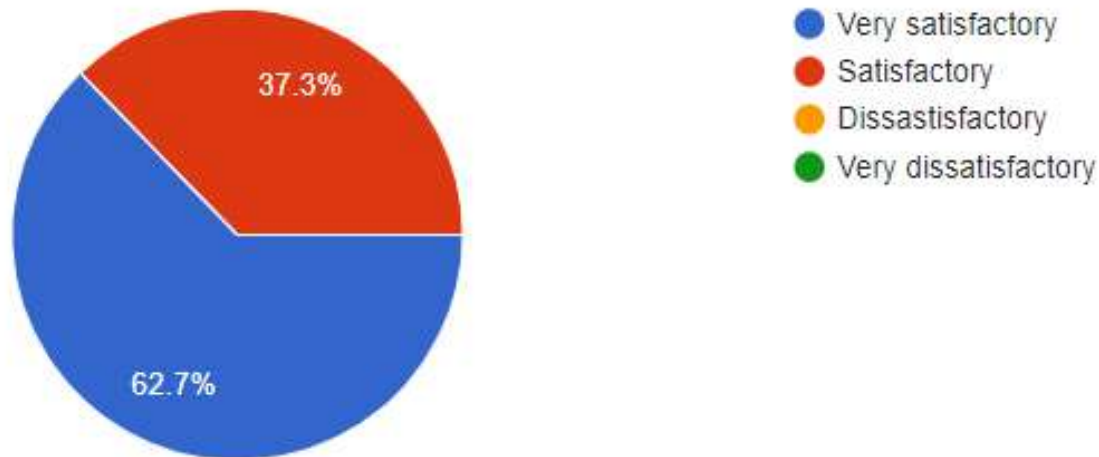


# Session 4 – Teamwork Feedback

## Q3. Applicability of Skills – 100.0%

Ability to apply new skills and knowledge in personal and professional life

51 responses



# YouTube Recording of SSP Sessions

<https://www.youtube.com/live/U4Fu4nYJePk?feature=share> (S1)

<https://www.youtube.com/watch?v=RExVEDHCZ-o> (S2)

[https://www.youtube.com/watch?v=Gp7V5\\_rBksg&t=1s](https://www.youtube.com/watch?v=Gp7V5_rBksg&t=1s) (S3)

[https://www.youtube.com/watch?v=CpNHL\\_7cUls&list=PL1uOixorteLpZ\\_2ymyyA2F3q8RowufAur&index=5](https://www.youtube.com/watch?v=CpNHL_7cUls&list=PL1uOixorteLpZ_2ymyyA2F3q8RowufAur&index=5) (S4)

# Effective Teamwork Summary



The difference  
between **success**  
and **failure** is a  
**great team.**



# Soft Skills Essentials for Everyone

Engineers work on projects and Managers oversee the projects. To effectively complete projects, one need proficiency in:

- 1. Leadership Excellence**
- 2. Effective Decision Making**
- 3. Effective Time Management**
- 4. Effective Teamwork (Problem Solving)**
- 5. Effective Project Management (Risk Management)**
- 6. Career Development Guidance (apply PM)**

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20<sup>th</sup> Century Skills need: Reading, Writing, and Arithmetic

21<sup>st</sup> Century Skills need: Teamwork, Problem Solving, Project Mgmt.



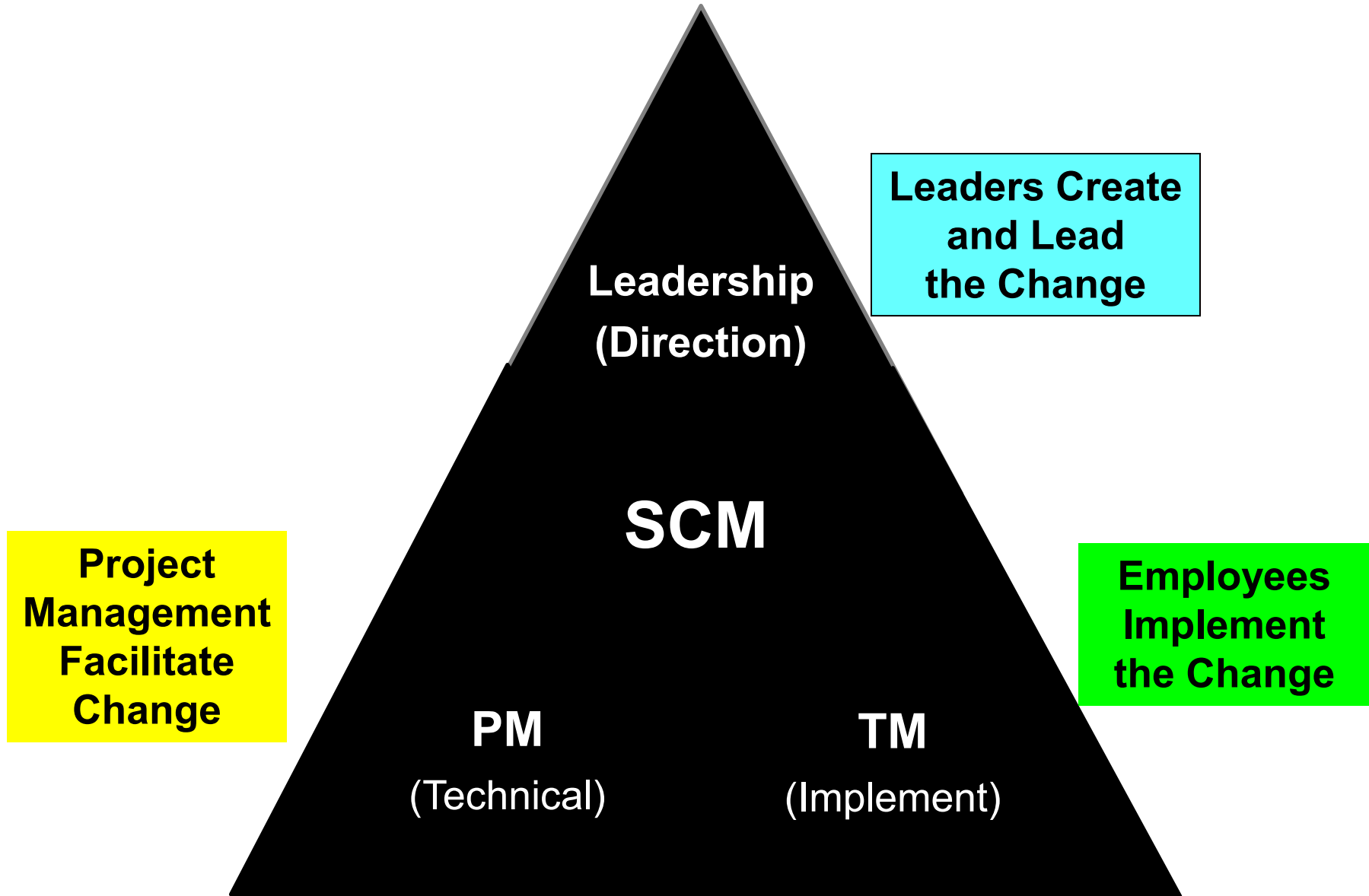


# Applications of Project Management

## Some Applications of PM:

- Strategic Plan Deployment
- Managing Transformation/Change
- Capital Projects Deployment
- Conducting Research – Academic and Applied
- Managing your M.S. and Ph.D. thesis work
- Improvement Projects Deployment
- Software Development
- Enterprise Resource Planning (ERP) Implementation
- Product Development
- Construction of Bridges and Roads
- Building Aircrafts and Ships
- Solving Organization Problems – Customer, Finance, Operations, Personnel, etc.

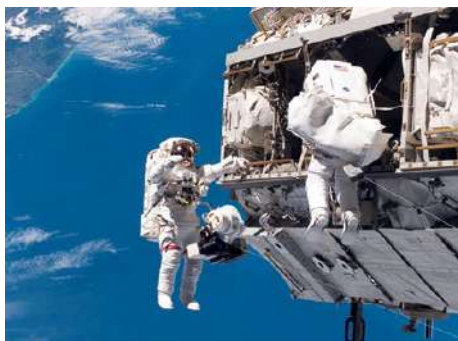
# Change Management Foundation



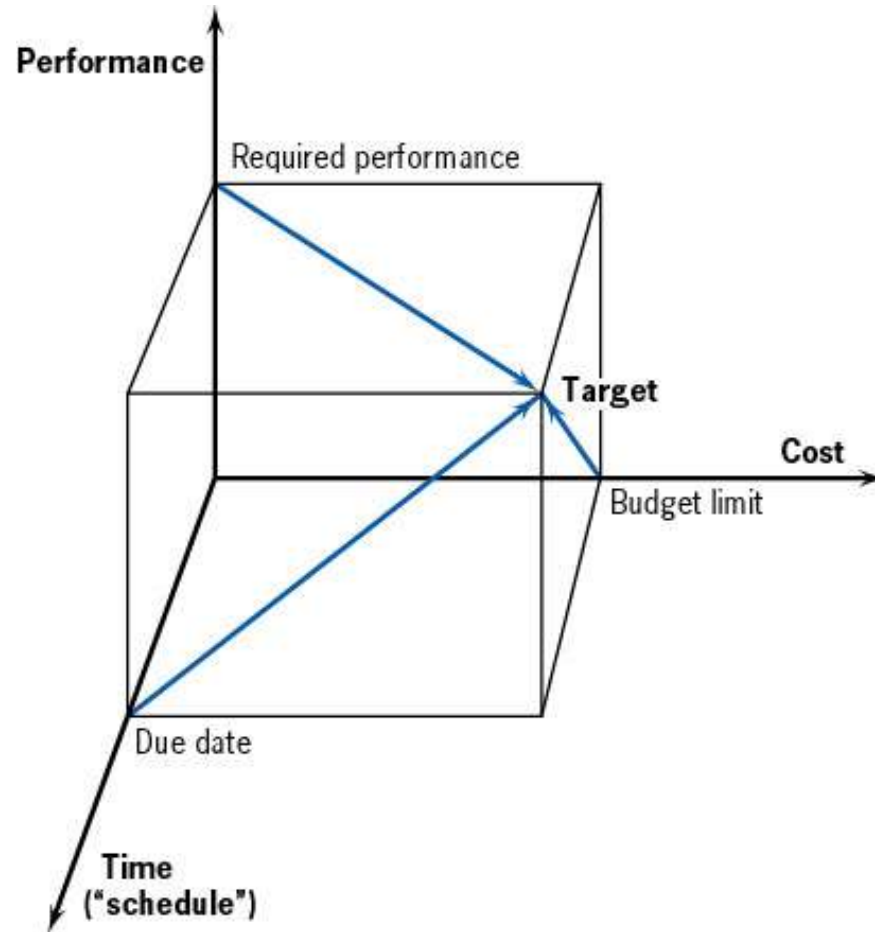
# Project

- A project is a **temporary, organized effort** that creates a **unique product, service, or plan.**
- **Project Characteristics:**
  - **Single definable purpose** (performance, cost, & schedule requirements)
  - **Unique** (one-time activity)
  - **Temporary activity** (limited time frame)
  - **Cut across organizational lines** (multiple professions/ orgs.)
  - **Unfamiliarity** – uncertainty and risks
  - **Something at stake** when doing a project

# Great Examples of Successful Projects



# Project Goals: Performance, Cost, and Schedule



# Project Management

- **Project Management Definition:**
  - The role of the Project Management is to **integrate resources and tasks to achieve organizational goals**
- **Advantages of Project Management:**
  - **Avoids excessive work loads** for few individuals
  - **Avoids cost overruns**
  - Builds the **right skills or expertise** for the project
  - **Avoids strained relationships** among team members
  - Prevents **scope creep**
  - **Avoids duplication** of work
  - **Better use of limited resources**



# Software Project Failure Statistics

(The Standish CHAOS Report , UK – 1990, 2000, and 2009)

Seer Galorath, June 7, 2008

Year	1994	2000	2009
Succeeded	16%	28%	32%
Failed	31%	23%	24%
Challenged	53%	49%	44%



# Cost of Software Project Failure

(Worldwide cost of IT Failures: \$6.2 Trillion, M. Krigsman, 12-22-2009)

Region	GDP (US Billions)	Annual Cost of IT Failure (US Billions)
World	69,800.00	6,180.48
USA	13,840.00	1,225.47
New Zealand	44.00	3.90
UK	2,260.00	200.11
Texas	1,250.00	110.68





# Project Failures (70% Fail)

- In 2006, a **\$400 million purchasing system** for Ford Motor Company was simply abandoned.
- Software errors in a U.K. Inland Revenue System resulted in a **\$3.45 billion** tax-credit overpayments.
- The infamous automated baggage system at Denver International Airport burned through **\$250 million** before being abandoned as unworkable.
- The U.S. Department of Defense's **\$6 billion** Kinetic Energy Interceptor Program was terminated in 2009 after it was that it would Not achieve its goals.
- **India:** 1) *Commonwealth Games Project Scandal (2010)*  
2) *Ganga Action Plan Project (1986-present)*



## 12 Ways to Fail in Project (without really trying)\*

1. Ignore the Project Environment including Stakeholders
2. Push a New Technology to Market Quickly
3. Don't bother Building in Fallback Options
4. When the Problems occur, Shoot the One Most Visible
5. Let the New Idea Starve to Death from Inertia
6. Don't bother Conducting Feasibility Studies
7. Never Admit a Project is a Failure
8. Overmanage Project Managers and their Teams
9. Never, Never Conduct Post-Failure Reviews
10. Never bother to Understand Project Trade-offs
11. Allow Political Expediency and Infighting to Dictate Crucial Project Decisions
12. Make Sure the Project is Run by a Weak Leader

*\* Pinto, J. K. and Kharbanda O. P., Business Horizons, February 1996*





# Is This Your Project Pipeline?

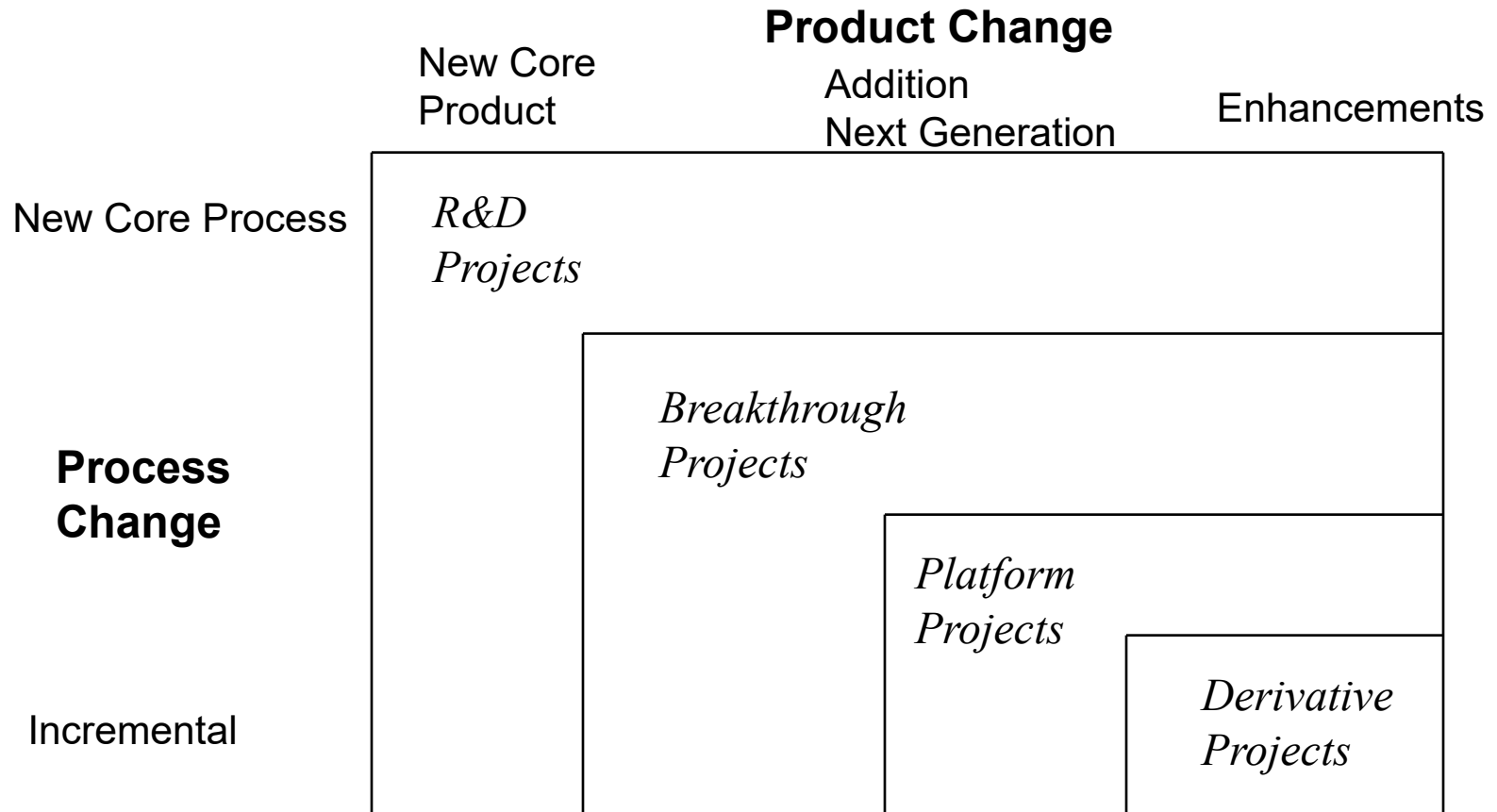






# The Aggregate Project Plan

Steven C. Wheelright & Kim B. Clark – HBR March-April, 1992, September 2003



# How Project Leaders Can Overcome Crisis of Silence (Grenny et.al., MIT Sloan MR, Summer 2007)

**Are team  
members pulling  
their weight ?**

**Are we honestly  
assessing progress & risks ?**

**Are we faithful to the PM process?**

**Is the Project Sponsor  
providing support?**

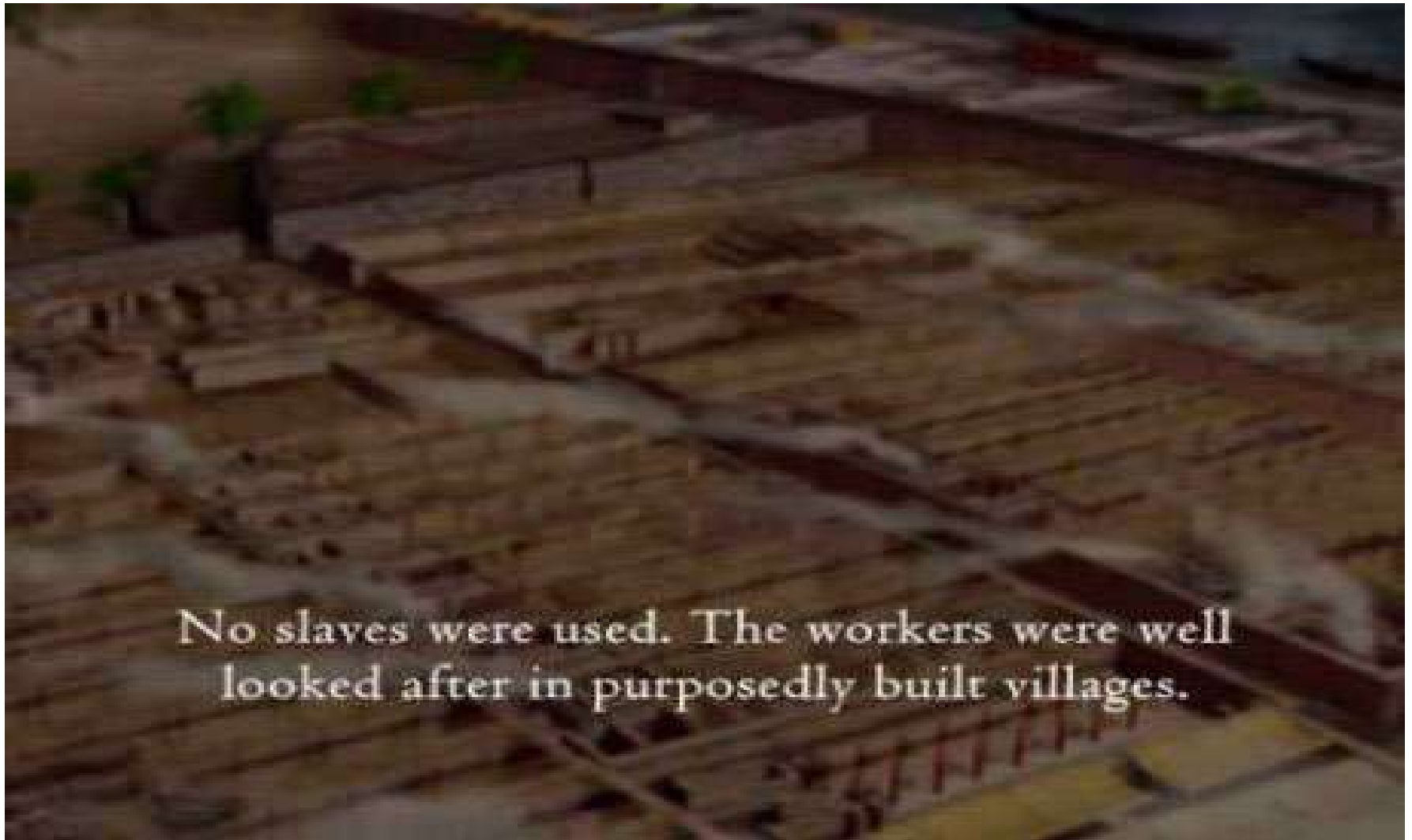
**Are we planning around facts?**



# Project Management YouTube

History of Project Management – (5.26 min)

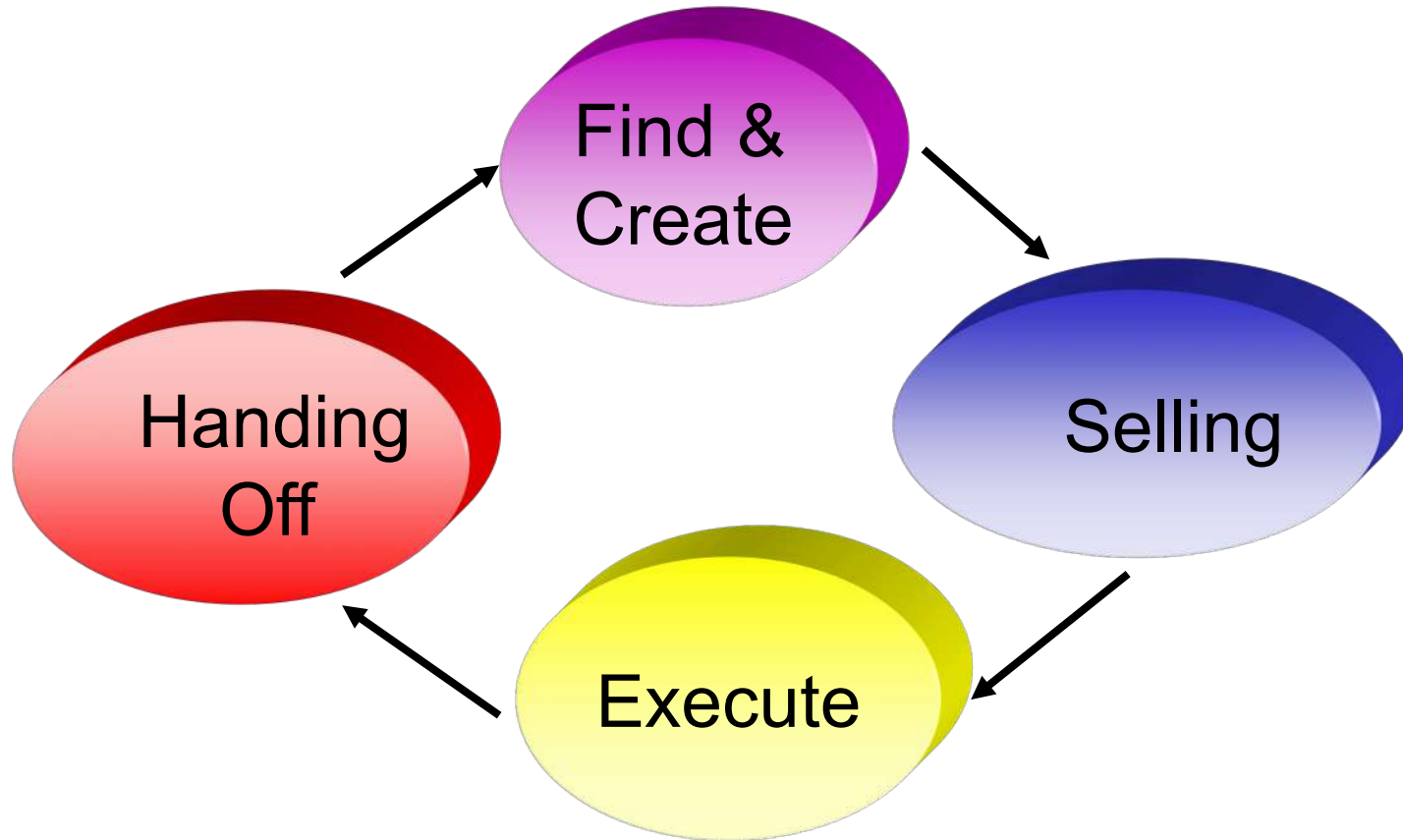
<http://www.youtube.com/watch?v=C1uxCBx2-UQ>



No slaves were used. The workers were well looked after in purposely built villages.

# The WOW Project

(Tom Peters, Fast Company.com, December 19, 2007)



# The WOW Project

- **Finding & Creating** your WOW Project:
  - Does it matter? (personal passion)
  - See projects as a first-rate opportunity to add value
  - Everything is a golden learning opportunity
  - Use superfast approximations to refine your WOW project (3M – Make a little, try a little, sell a little)
- **Selling** your WOW Project:
  - Be smart, sell it hard from beginning to end
  - Develop a 2 minutes elevator spiel
  - Community organizing (Generate grass-roots support )
  - Build supporting community of endorsers





# The WOW Project

- **Executing** your WOW Project:
  - Execute in a series of rapid prototypes (fail often to succeed sooner)
  - Think, act, live, sleep, eat, and breath your time line
  - Keep it fun
  - Don't talk it to death
  - Don't stop selling
  - Don't lose the emotion
- **Handing Off** your WOW Project:
  - Turnover to someone else to run on a day-to-day basis
  - Celebrate your accomplishments
  - Size up new opportunity
  - Self evaluate (worked, didn't work, lessons learned, etc.)
  - Open first chapter of your next project



# Team Project Member Roles

## (5-6 members per team)

- **Project Leader (1)**  
(Keeps the Project on Track, Overall Responsibility)
- **Project Communicator (1)**  
(Communicates with the Project Sponsor)
- **Project Researcher (1-2)**  
(Conducts necessary research for the topic)
- **Editor (2)**  
(Edits Project Report/Slides with Team Members' Input)



# Meeting Minutes Sample

**Date:**

**Time:**

**Place:**

**Attendees:**

**Key Discussion (use bullets):**

**Key Decisions (use bullets):**

**Action Items (AI Table - AI #, Date opened, What, Who, When):**



# Meeting Evaluation Sample

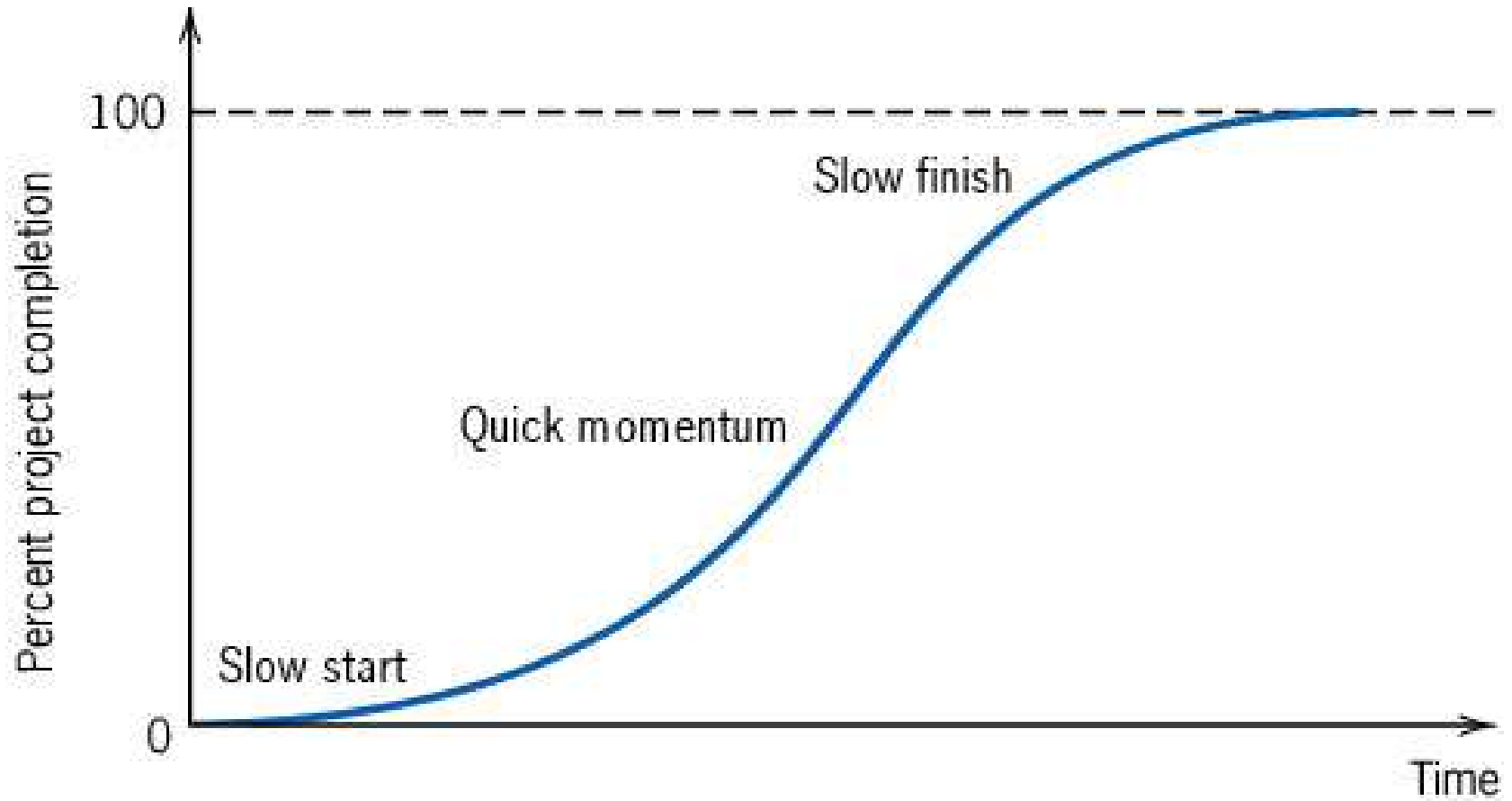
**1. Things worked well today (bullets):**

**2. Things did not work well today (bullets):**

**3. Things need change for the subsequent meetings (bullets):**

Name \_\_\_\_\_

# The Project Life Cycle



# Humor in Project Management



How the customer explained it



How the project leader understood it



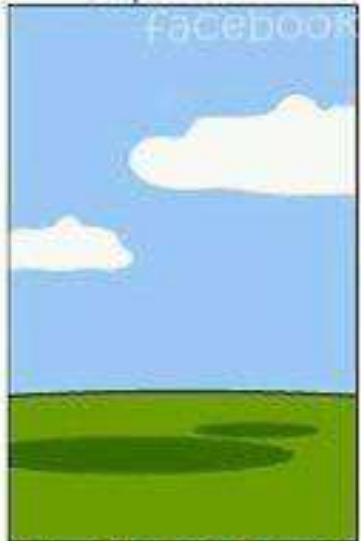
How the engineer designed it



How the programmer wrote it



How the sales executive described it



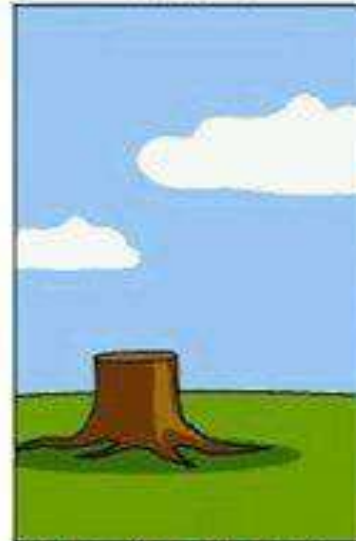
How the project was documented



What operations installed



How the customer was billed



How the helpdesk supported it



What the customer really needed



# Project Management Journey

- Creating a Project Charter (Define & Create)
- Developing the Project Plan (Plan)
- Working as a Team (Plan and Execute)
- Doing the Project (Execute)
- Closing out the Project (Close Out)

# Importance of a Project Charter

- A **Blueprint** to plan and take actions on the project.
- Facilitates **Fact-Based Decision Making**.
- Identifies all **Stakeholders**.
- Focuses on project **Vision and Mission**.
- Requires **Objectives, Deliverables, and Milestones**.
- **Identifies and Prioritizes Risks** for the project.
- Requires **Communication Strategy** for the project.
- **Sign-off on the Charter** freezes the **Project Scope**.

***Always Insist on a Project Charter for Every Project.***





# Project Charter Sample - Page 1

## Project Charter Template

### PROJECT CHARTER

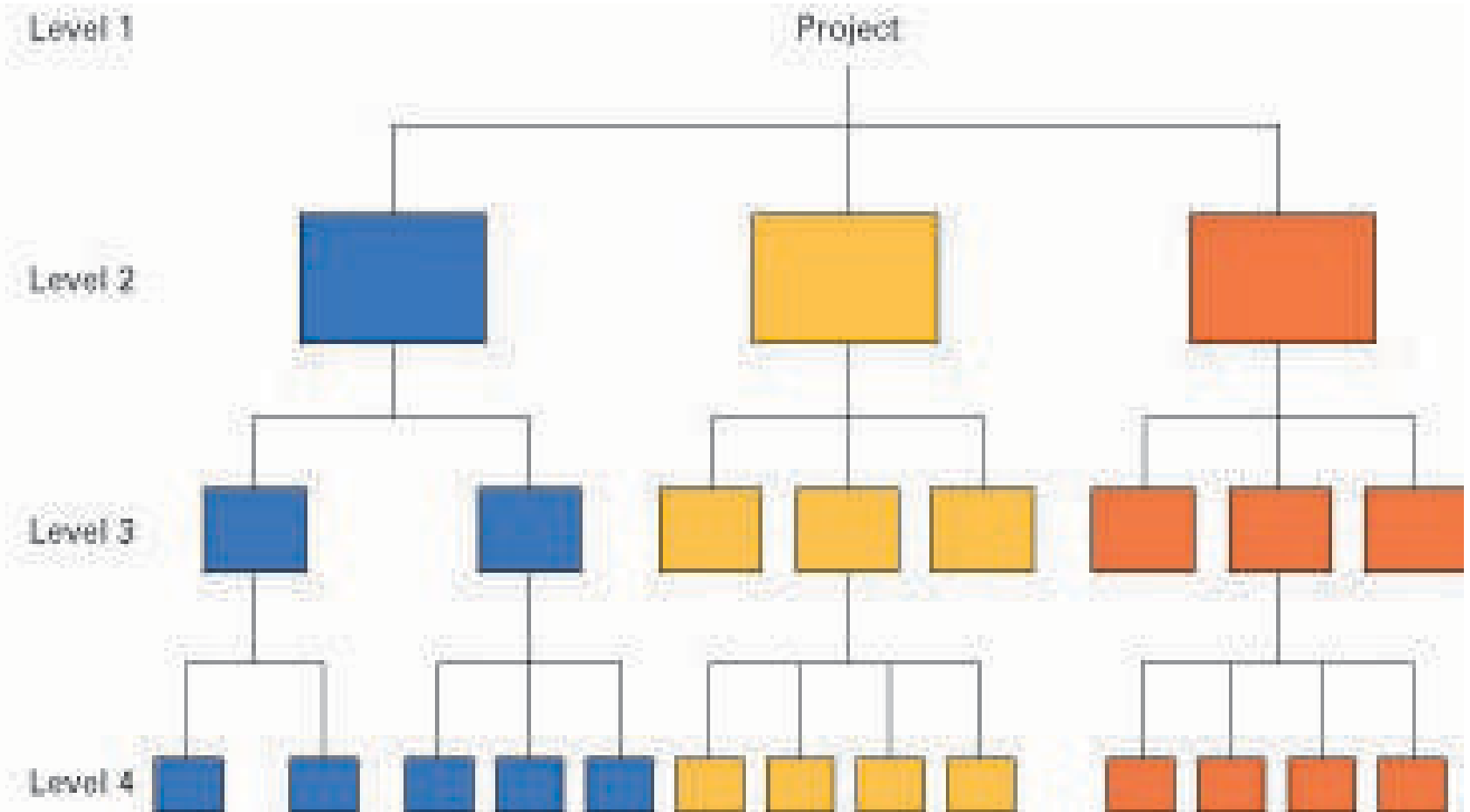
1. General Project Information				
Project Name:				
Executive Sponsors:				
Department Sponsor:				
Impact of project:				
2. Project Team				
	Name	Department	Telephone	E-mail
Project Manager:				
Team Members:				
3. Stakeholders (e.g., those with a significant interest in or who will be significantly affected by this project)				
4. Project Scope Statement				
<b>Project Purpose / Business Justification</b> Describe the business need this project addresses - include <b>Project Vision and Mission</b>				
<b>Objectives (in business terms)</b> Describe the measurable outcomes of the project, e.g., reduce cost by xxxx or increase quality to yyyy				
<b>Deliverables</b> List the high-level "products" to be created (e.g., improved xxxx process, employee manual on yyyy)				

# Project Charter Sample – Page 2

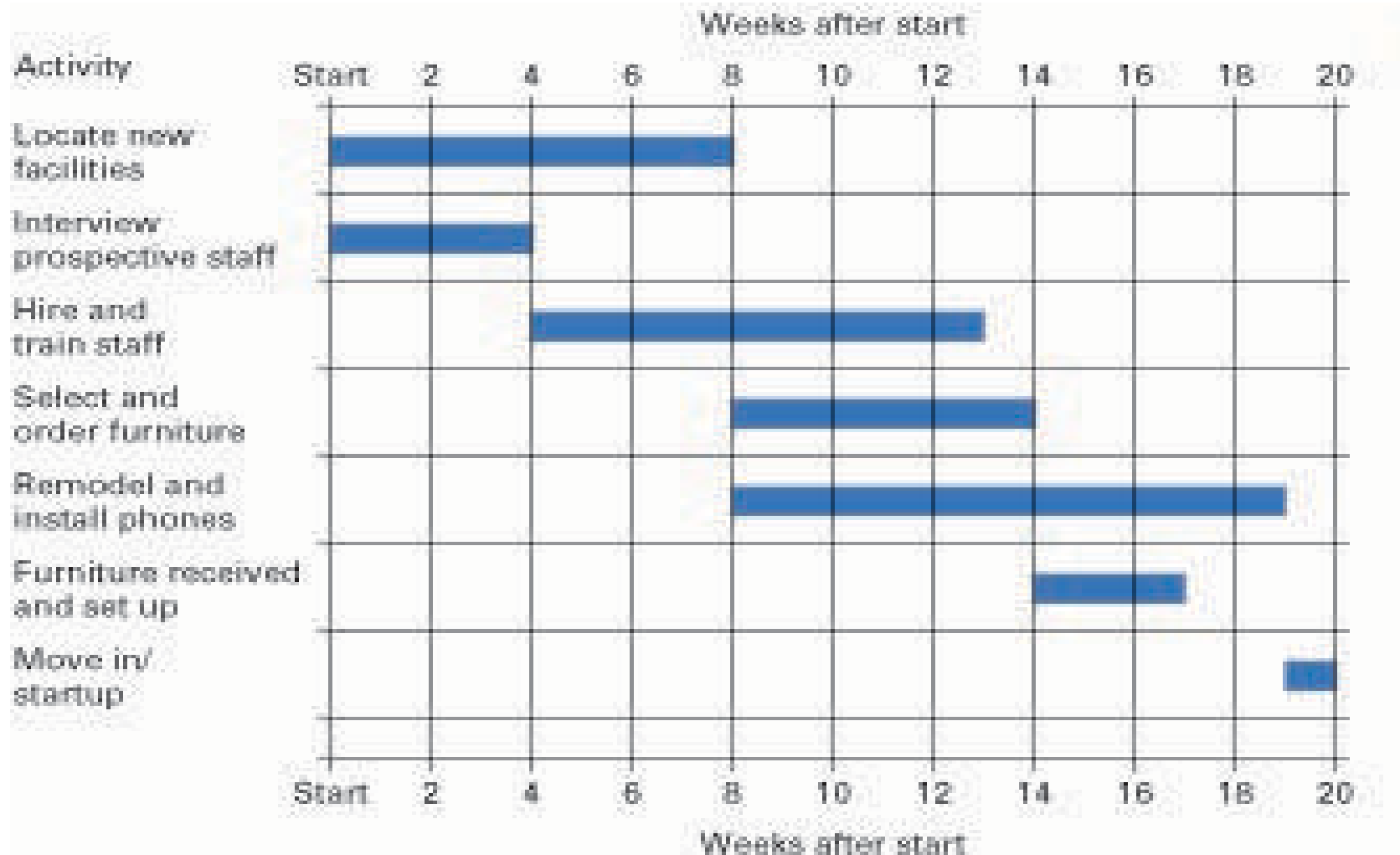
## Project Charter Template

<b>Scope</b> <i>List what the project will and will not address</i>			
<b>Project Milestones</b> <i>Propose start and end dates for Project Phases (e.g., Inception, Planning, Construction, Delivery) and other major milestones</i>			
<b>Major Known Risks (including significant Assumptions)</b> <i>Identify obstacles that may cause the project to fail.</i>			
<b>Risk</b>	<b>Risk Rating (Hi, Med, Lo)</b>		
<b>Constraints</b> <i>List any conditions that may limit the project team's options with respect to resources, personnel, or schedule (e.g., predetermined budget or project end date, limit on number of staff that may be assigned to the project).</i>			
<b>External Dependencies</b> <i>Will project success depend on coordination of efforts between the project team and one or more other individuals or groups? Has everyone involved agreed to this interaction?</i>			
<b>5. Communication Strategy</b> <i>(specify how the project manager will communicate to the Executive Sponsor, Project Team members and Stakeholders, e.g., frequency of status reports, frequency of Project Team meetings, etc.</i>			
<b>6. Sign-off</b>			
	<b>Name</b>	<b>Signature</b>	<b>Date (MM/DD/YYYY)</b>
<b>Executive Sponsor</b>			
<b>Department Sponsor</b>			
<b>Project Manager</b>			
<b>7. Notes</b>			

# Work Breakdown Structure - WBS

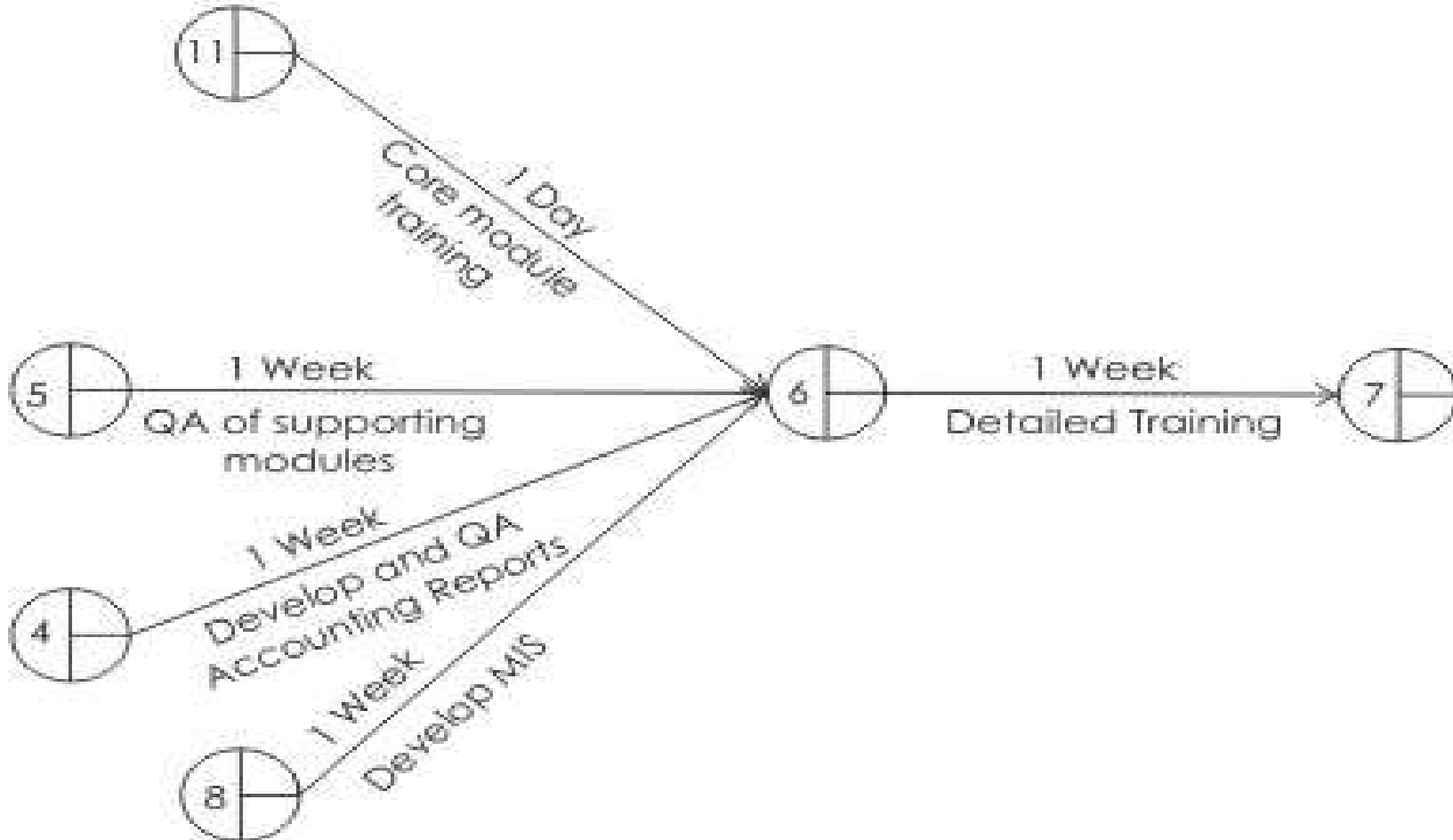


# Gantt Chart



# Critical Path Method

Figure 4: Circle and Arrow Diagram showing an activity (6 to 7) that cannot start until other activities (11 to 6, 5 to 6, 4 to 6, and 8 to 6) have been completed.



# Budget Control

- Budget control is an important aspect of project management
  - Costs can exceed budget
    - Overly optimistic time estimates
    - Unforeseen events
  - Unless corrective action is taken, serious cost overruns can occur



# Earned Value Management – US DoD

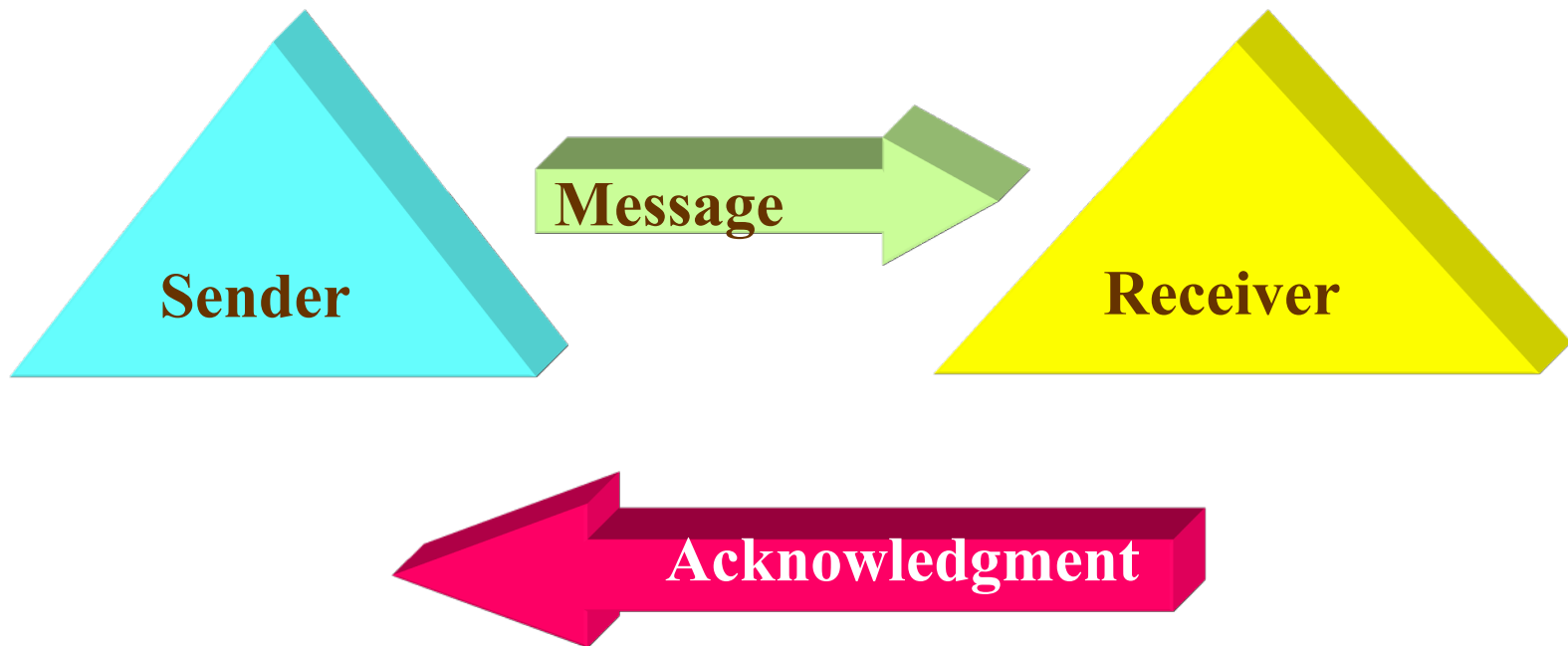
(K\$)	1	2	3	4	Total Allocation
Work Planned	25	25	25	25	100
Actual Costs	22	20	25	25	92
Earned Value (Value of completed work)	20	20	20	20	80

# Importance of Communication

No matter what job you have in life, your success will be determined 5% by your academic credentials, 15% by your professional experiences, and 80% by your communication skills.



# Two-Way Communication



# Modes of Communication

## Verbal

- Appropriate
- **Clear**
- Concise
- **Effective**
- Non-Verbal
- **Practice**

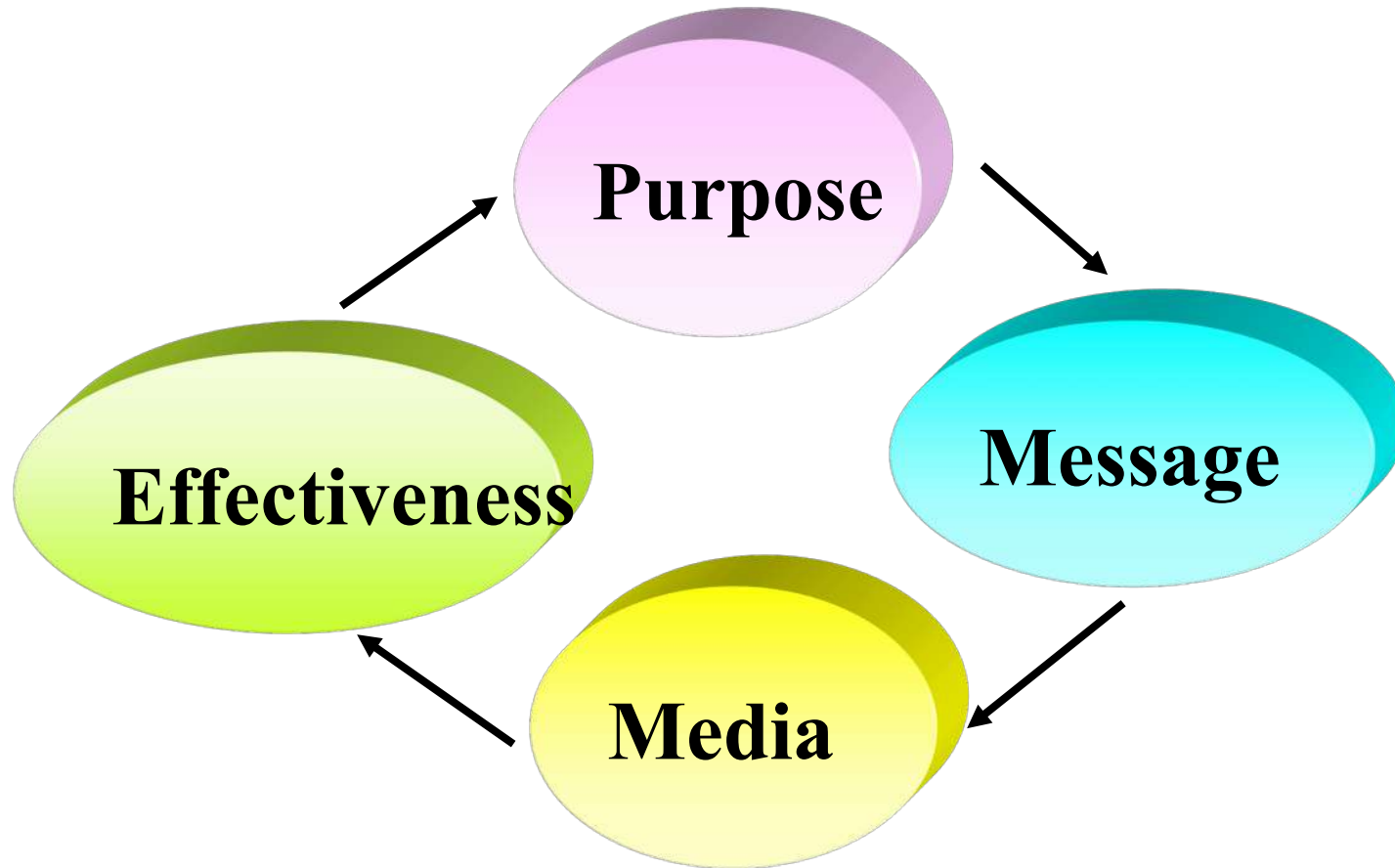
## Written

- **Clear**
- Concise
- **Effective**
- Impactful
- Meaningful
- **Practice**

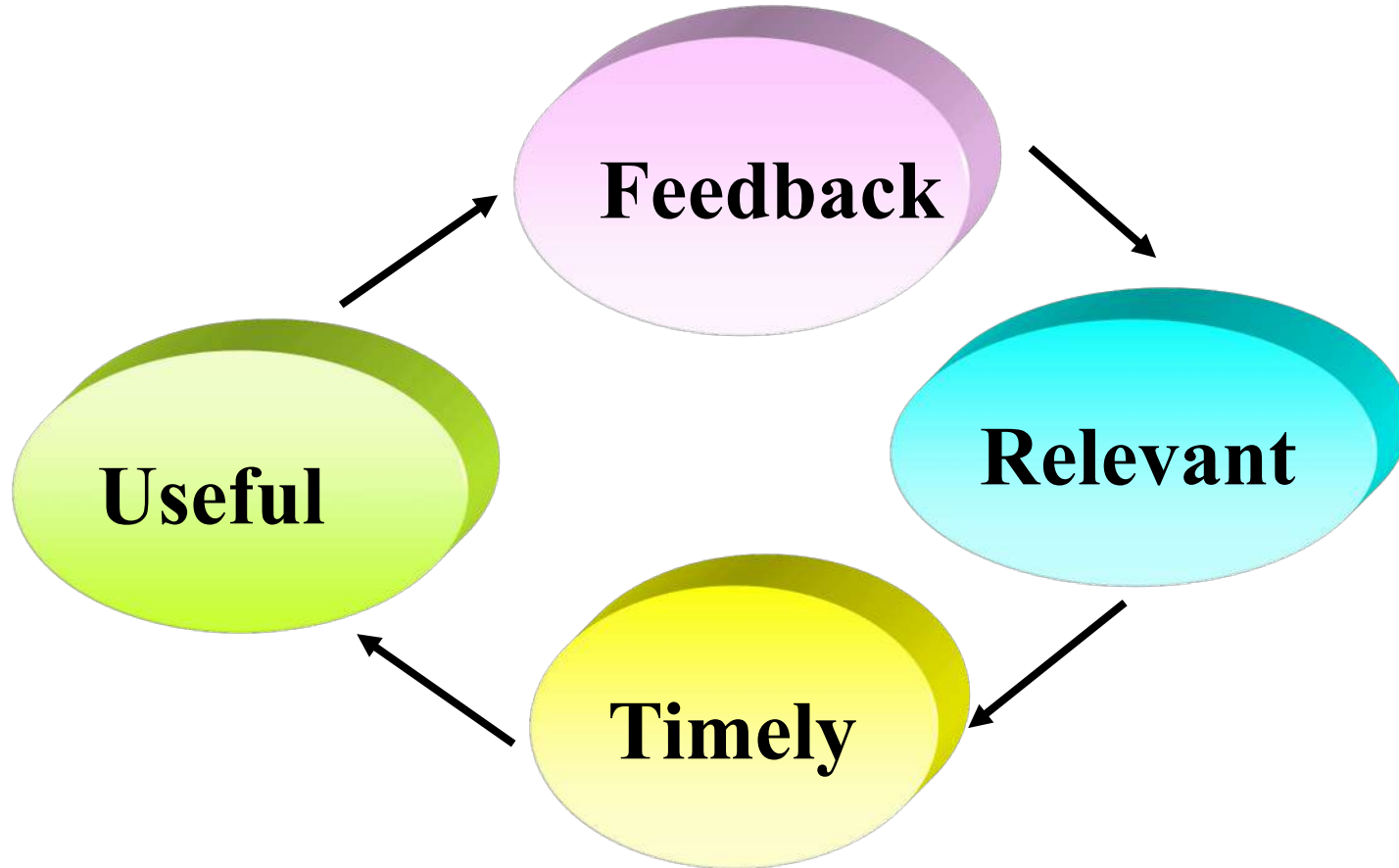
## Presentation

- Appropriate
- **Clear**
- Concise
- Coverage
- **Effective**
- **Practice**

# Communication Basics



# Communication - Effectiveness



# Listening Skills

- **To be good at Communication, develop Listening skills**
- **Pay attention to the person who is communicating**
- **First Understand the message before responding**
- **If in doubt, ask the other person for clarity**
- **Create a meaningful dialogue for action**
- **Become an Active Listener:**
  - ✓ Look at the speaker directly
  - ✓ Put aside distracting thoughts
  - ✓ Don't mentally prepare a rebuttal
  - ✓ Avoid being distracted by side conversations
  - ✓ "Listen" to the speaker's body language
- **You should be able to repeat what others have said, practically word-for-word**
- **Listening and taking notes will serve you well**



# Project – Lessons Learned

- 1. What worked well in the Project? (bullets):**
  
- 2. What did not work well in the Project? (bullets):**
  
- 3. Things you will change for the future Projects (bullets):**

Name \_\_\_\_\_

# Risk Definition

Risk is defined, in the insurance industry, as:

$$\text{Risk} = \text{“Likelihood”} \times \text{“Loss”}$$

For a lot of risk management, risk is considered in

The aggregate:

- Stock portfolios
- Loans made by a bank
- Insurance policies
- Lotteries
- Gambling establishments



# Risk Management



- **Risks are an inherent part of project management**
  - **Risks relate to occurrence of events that have undesirable consequences** such as:
    - Delays
    - Increased costs
    - Inability to meet technical specifications
  - **Good risk management involves:**
    - Identifying as many risks as possible
    - Analyzing, Assessing, and Prioritizing those risks
    - Working to minimize the probability of high risks occurrence
    - Establishing contingency plans and budgets for dealing with any risks that do occur



# Risk Matrix

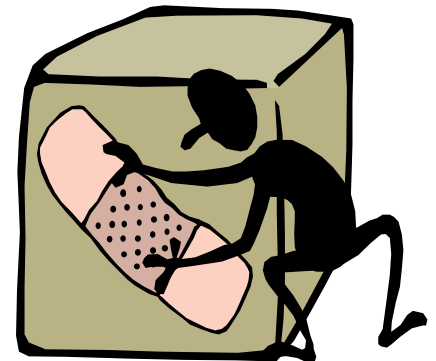
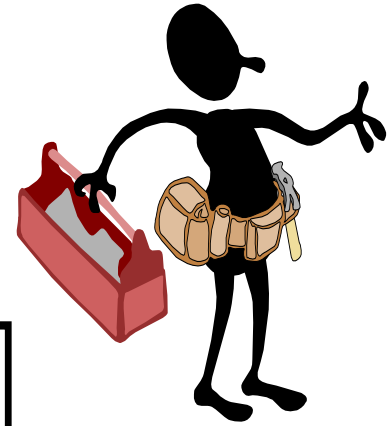
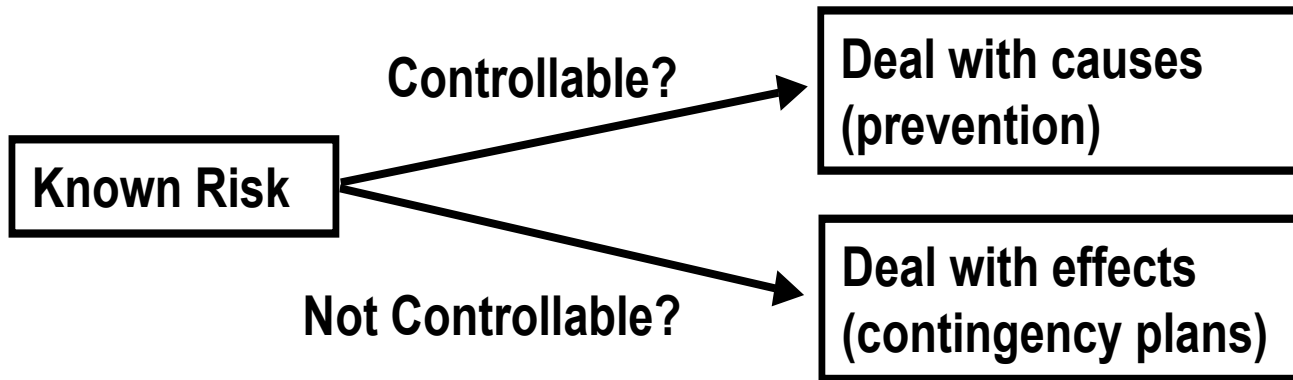
3 x 3 Risk Matrix

L  
I  
K  
E  
L  
I  
H  
O  
O  
D

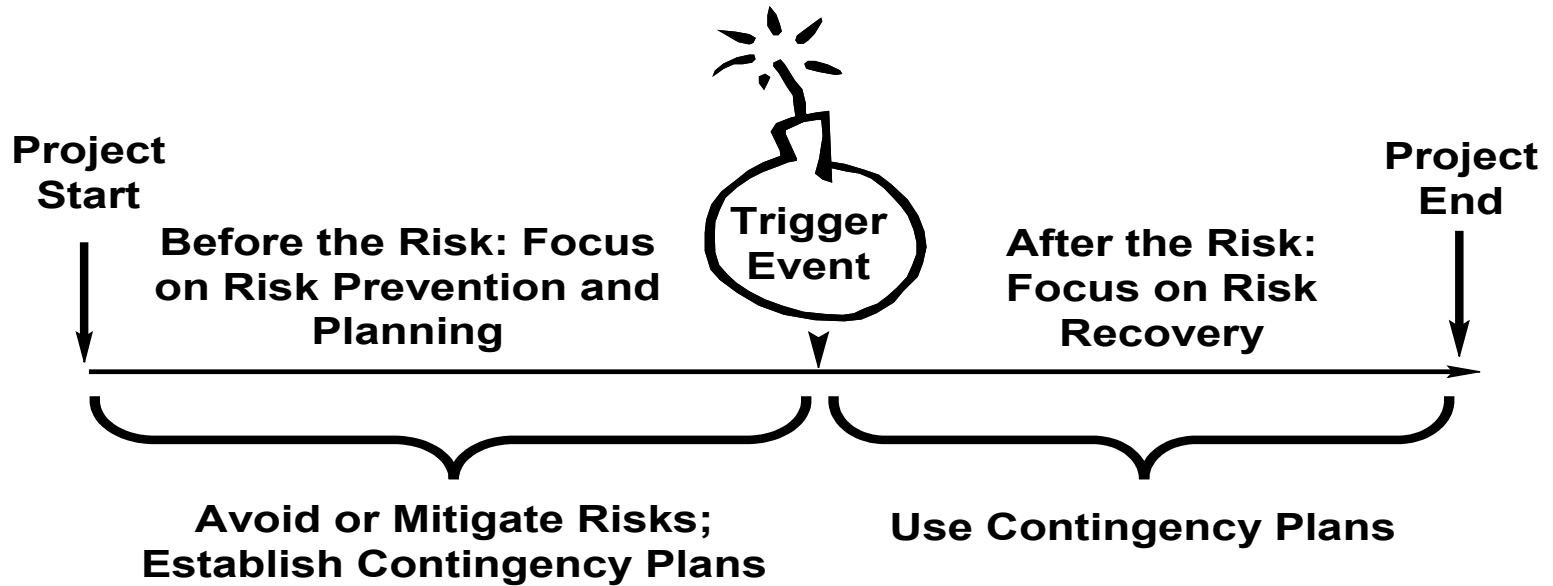
Likely	Medium Risk	High Risk	Extreme Risk
Unlikely	Low Risk	Medium Risk	High Risk
Highly Unlikely	Insignificant Risk	Low Risk	Medium Risk
	Slightly Harmful	Harmful	Extremely Harmful

CONSEQUENCES

# Risk Strategies



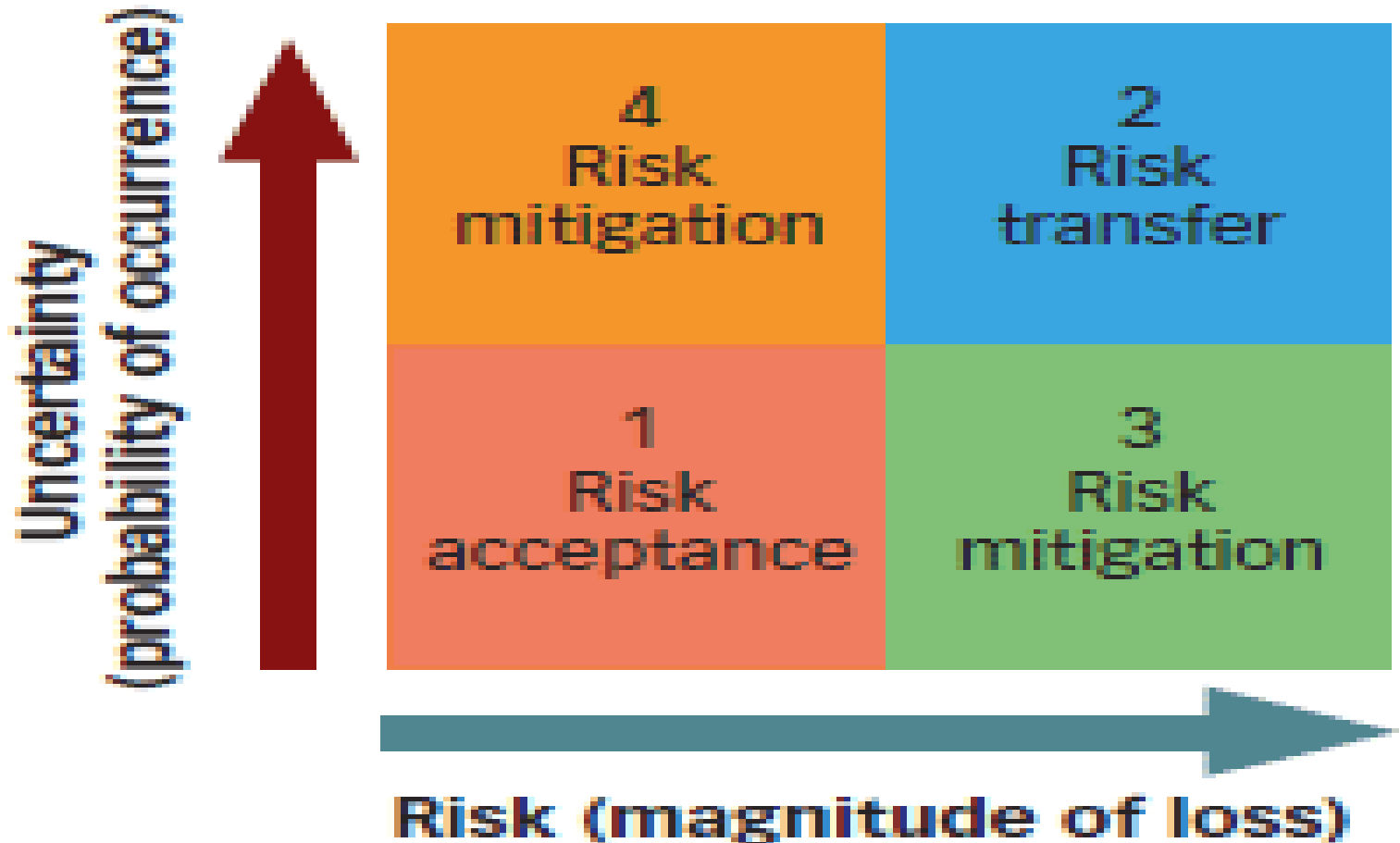
# Timeline for Known Risks



# Activity Risk Management

Peter Sherman, Quality Progress, February 2015

## Risk levels / FIGURE 1





# Jet Propulsion Lab – A Case Study (2010)

- **Focus:** A high-innovation company to balance innovation and risk management.
- **Challenge:** Gentry Lee, senior systems engineer and de-facto chief risk officer, is applying a new comprehensive risk management system to a **\$600 million** high-profile **Mars Biological Explorer (MBE) landing mission**. The case illustrates JPL's risk culture for high-visibility and expensive missions in the post-Challenger era (1986 onward) with tightly constrained budgets.



# Jet Propulsion Lab – A Case Study (2010)

Four stages of MBE Mission – **Launch, Cruise, Entry-Descent-Landing**, and Surface Operations

## Type of Risks:

- **“Business As Usual” Risks** – Operational Control to guide spacecraft to Mars
- **“Unknown Unknown” Risks** – Entry-Descent-Landing stage
- **“Development” Risks** – Engineering entering into new territory (need new technologies)

# Jet Propulsion Lab – A Case Study (2010)

## Six Major Risks Considered:

- The **Heat Shield** (protect the Spacecraft from burning up (# 10))
- The **Parachute** would deploy when the Spacecraft has slowed to 1,000 mph (# 10)
- The onboard **Radar** had to sense when the craft was within 15 seconds of hitting the surface, and fire the retro-rockets to guide the craft from 150 mph to smooth landing (# 12)
- The **Solar Arrays** power system to power the craft on Mars (# 4)
- The **Bio-Marker Science Analyzer (BMSA)** instrument – centerpiece of the Mission (# 12)
- **Sub-Surface Sample Acquisition System** to collect soil and deliver minimum volume through one of the BMSA inlet ports (# 8)



# Jet Propulsion Lab – YouTube Video

NASA Mars Science Laboratory (Curiosity Rover)

Mission Animation (5.28 min):

[https://www.youtube.com/watch?v=gwinFP8\\_qIM](https://www.youtube.com/watch?v=gwinFP8_qIM)



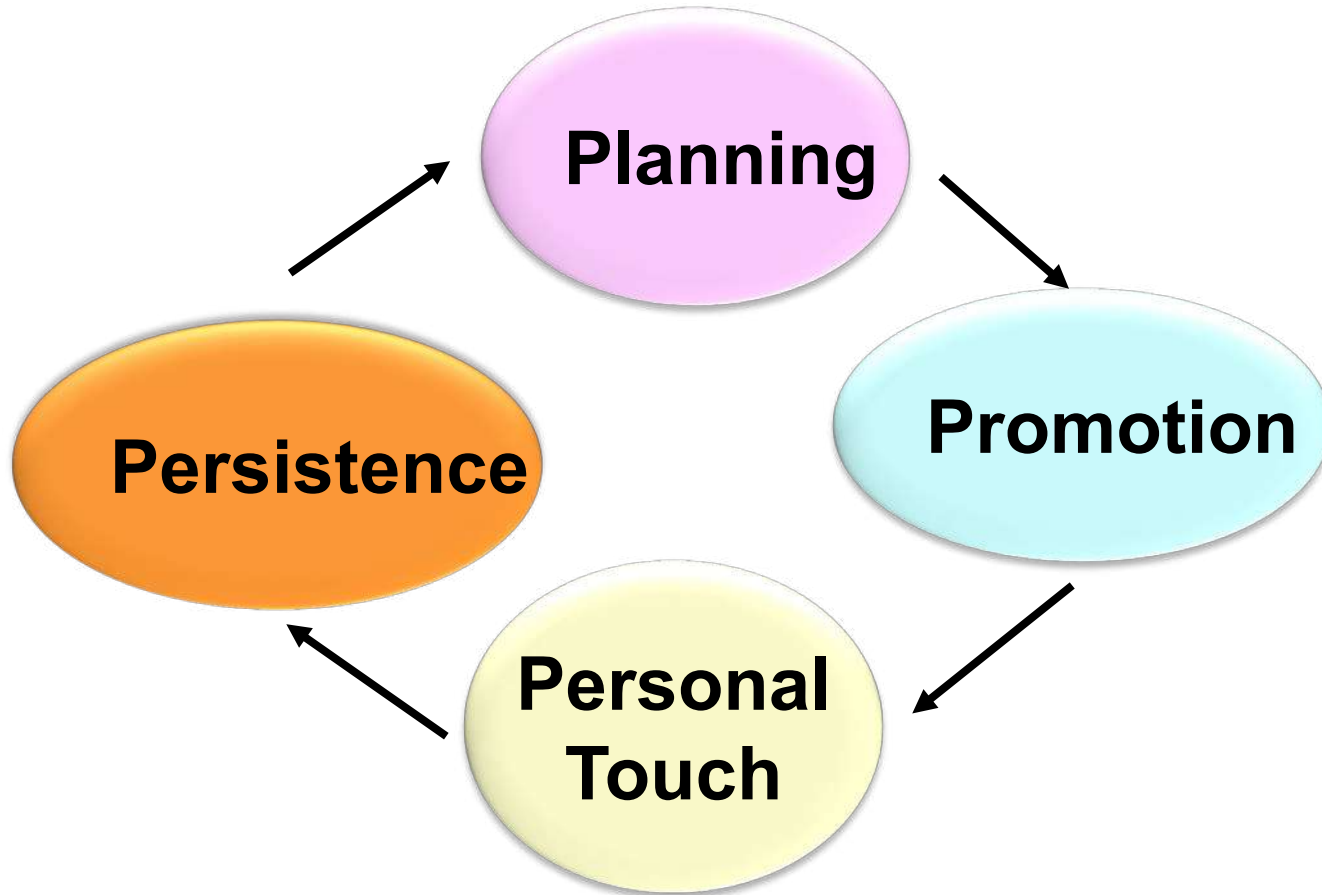




# Major Resources

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- Useem, Michael, Jordan, Rodrigo, & Koljatic, Matko (2011). "How to Lead during a Crisis: Lessons from the Rescue of the Chilean Miners", MIT SMR, Vol. 53, No. 1, Fall.
- Wheelwright , Steven C. and Clark, Kim B. (2003). "Creating Project Plans to Focus Product Development", Project Management: The View from 30,000 Feet (HBR Collection), September.

# Project Productivity Model (4Ps)





# Project Management - Summary

- **In India, all Higher Education Institutes need to include Project Management course in their Curricula.**
- **Design the Project Management course by integrating Leadership, Decision Making, Time Management, Teamwork, Problem Solving, and Risk Management.**
- **Leverage Project Management Knowledge to solve Society's Real Problems and Help in Nation Building.**



# Your Two Key Takeaways on PM

1. -
2. -



# Soft Skills Program Topics

(8:30 pm – 10:30 pm IST)

1. 24-04-23 Leadership Excellence
2. 27-04-23 Effective Decision Making
3. 01-05-23 Effective Time Management
4. 03-05-23 Effective Teamwork
- 5. 08-05-23 Effective Project Management**
6. 10-05-23 Career Development Guidance



**Thanks!**  
**Questions, Comments, Key Takeaways?**



# Presenter

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**Dr. Manu Vora** is Chairman and President of Business Excellence, Inc. a global quality management consulting firm. He has **over 48 years** of leadership experience and has guided Fortune 500 companies with Baldrige Performance Excellence assessment. For **over 30 years**, as an Adjunct Professor he teaches Operations Management courses at business schools globally. He has contributed at **over 680** educational institutes world-wide. He is a sought-after speaker on business excellence and quality management topics with **over 1,270 presentations** globally and published **75 scholarly articles**. As an ASQ Influential Voice, he has published **50 blog posts**. In 2013, he gave two TEDx Talks, TEDxIITBHU Varanasi and TEDxIIT Chicago. Since 2013, he has delivered Soft Skills and Quality Management topics using technology to **over 100 colleges/universities** in India benefitting **over 1,200,000** students/ faculty/ professionals. In 2016 he delivered a **Project Management for organizational Excellence**, a **GIAN Course** approved by the **MHRD-GoI** at his alma mater, IIT (BHU). In 2016 he was appointed a **Fulbright Specialist** by the U. S. Department of State. He completed his first Fulbright Specialist Project in March 2018 at IIT (BHU). He serves on the Advisory Board of IUCEE Foundation. He received '**NRI of the Year Award 2018**' in Philanthropy category from Times Now and ICICI Bank. In March 2022, he was recognized by the **World Book of Records, UK for his Social Work**.

He has B.Tech. (Honours, IIT BHU Chemical 1968), M.S. (1970) & Ph.D. (1975) in Chemical Engineering from Illinois Institute of Technology, Chicago, and a MBA (1985) with Marketing Management from Keller Graduate School of Management in Chicago. As the Founder Director and President of Blind Foundation for India (BFI), his team has raised **over \$6 million** to help over one million visually impaired people in India. *ASQ has bestowed on him five Medals. He received "2017 Life-Time Achievement Award from Association of IIT-BHU Alumni, Delhi", "2015 BHU Distinguished Alumnus Award", "2015 & 2000 Rotary International Paul Harris Fellow Medal", "2013 Top 40 Alumni for the First 40<sup>th</sup> Anniversary of Keller Graduate School of Management", "2012 IIT Chicago Alumni Medal", "2011 Ellis Island Medal of Honor", and "2010 U. S. President's Volunteer Service Award". In 1968 he received J. N. Tata Scholarship to pursue his graduate work in the U.S. In 2023 he was included in the **Jewels of India, Volume II** book of prominent Indo-American personalities in the U.S.*