

# 09. Challenges of Managing IS Projects

Lesson	Topic
1	The Context of Information Systems Management
2	Information Systems in the Modern Organization
3	Staffing and Organizing the Information Systems Function
4	Information Systems Planning
5	The Information Systems Planning Process
6	Sourcing and Acquiring Information Systems Resources
7	Information Technology Outsourcing
8	Managing Information Systems Development
9	Challenges of Managing Information Systems Projects
10	Information Systems Impacts and Related Management Issues

# Learning Outcomes

By the end of this lesson, you will be able to:

- Justify the case for formal project management for IT Projects
- Describe a generalized IT Project Management Process
- Discuss key project variables in IT projects
- Propose tools to estimate and monitor key project variables
- Identify the major IT Project risk factors and related risk mitigating measures

Learning Outcome		Resources	
1	The case for formal project management for IT projects	<b>Readings:</b> <ul style="list-style-type: none"> <li>Text4 pg 320 – 326</li> <li>Text3 pg 300 – 301</li> </ul>	<b>Videos</b> <ul style="list-style-type: none"> <li><a href="#">Intro to IT Project Management</a></li> <li><a href="#">Typical Phases in Project Managements Different</a></li> </ul>
2	IT/IS Project Management Process	<b>Readings:</b> <ul style="list-style-type: none"> <li>Text4 pg 326 – 334</li> <li>Text3 pg 301 – 303</li> </ul>	<b>Videos</b> <ul style="list-style-type: none"> <li><a href="#">Summary of Project Management</a></li> <li><a href="#">Why Software Project Management is Different</a></li> </ul>
3	Variables in IT Projects	<b>Readings:</b> <ul style="list-style-type: none"> <li><a href="#">Reading Resource 1</a></li> <li>Text4 pg 338 – 345</li> </ul>	<b>Videos</b> <ul style="list-style-type: none"> <li><a href="#">The Project Management Triple Constraint</a></li> <li><a href="#">Estimation Tools and Techniques in Project management</a></li> <li><a href="#">Cost Estimation</a></li> <li><a href="#">Effort Estimation</a></li> </ul>
4	IT/IS Project risk factors and related risk mitigating measures	<b>Readings:</b> <ul style="list-style-type: none"> <li>Text2 Page 247 – 251</li> <li>Text3 pg 311 – 314</li> <li>Text3 pg 316 – 318</li> </ul>	<b>Videos</b> <ul style="list-style-type: none"> <li><a href="#">Project Risk Management</a></li> <li><a href="#">Risk Identification Techniques</a></li> </ul>

# Intro: What is a Project?

- A **Project** is a temporary, unique and progressive attempt or endeavor made to produce some kind of a tangible or intangible result (a unique product, service, benefit, competitive advantage, etc.).
- Usually includes a series of interrelated tasks that are planned for execution over a fixed period of time and within certain requirements and limitations such as cost, quality, performance etc.

- Information Technology (IT) projects are organizational investments that require
  - Time
  - Money
  - Other resources e.g. people, technology, facilities, etc.
- Organizations expect some type of value in return of this investment
- IT Project Management is the discipline that combines traditional Project Management with Software Engineering/Management Information Systems to make IT projects more successful.

# Examples of IT Projects

- **Software / Applications Development**
- **eCommerce**
- **Web Development and Hosting**
- **Systems Integration**
- **Network and IT Infrastructure development**
- **Business Analytics/Data Analytics**
- **Security System Development/Management**

## 02. Case for formal Project Management

*Murphy's Law*

Anything that can go wrong will go wrong.

*Finagle's Law of Dynamic Negatives or  
Finagle's Corollary to Murphy's Law*

Anything that can go wrong will - at the worst possible moment.

*Hofstadter's Law*

It always takes longer than you expect, even when you take into account Hofstadter's law.

*Parkinson's Law*

Work expands to fill the time available for its completion.



# What's IT Project Management For?

- Findings from the CHAOS Report - The Standish Group - 1995

<i>Company Size</i>	<i>Average Cost of Develop- ment</i>	<i>Average Cost Overruns</i>	<i>Average Schedule Overrun</i>	<i>Original Features and Functions Included</i>	<i>Successful Projects <sup>a</sup></i>	<i>Challenged Projects <sup>b</sup></i>	<i>Impaired Projects <sup>c</sup></i>
Large	\$2,322,000	178%	230%	42%	9%	61.5%	29.5%
Medium	\$1,331,000	182%	202%	65%	16.2%	46.7%	37.1%
Small	\$ 434,000	214%	239%	74%	28%	50.4%	21.6%

<sup>a</sup> Completed on-time and on-budget

<sup>b</sup> Completed, but over-budget, over schedule, and includes fewer features and functions than originally envisioned

<sup>c</sup> Cancelled before completion

# Any changes since 1995?

- In general, IT Projects are showing higher success rates.

## Reasons:

- Better project management tools & processes
- Smaller projects
- Improved communication among stakeholders
- More skillful IT project managers
- But there is still ample opportunity for improvement

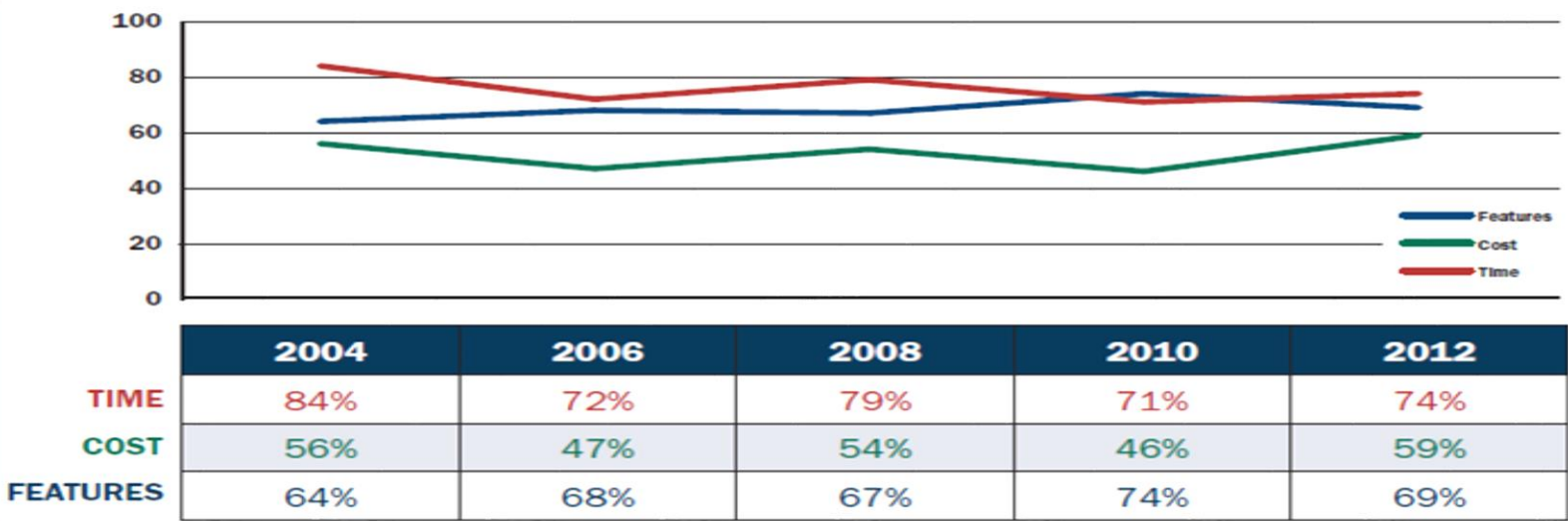


# Project resolution results from CHAOS research for years 2004 to 2012

	2004	2006	2008	2010	2012
Successful	29%	35%	32%	37%	39%
Failed	18%	19%	24%	21%	18%
Challenged	53%	46%	44%	42%	43%

## OVERRUNS AND FEATURES

Time and cost overruns, plus percentage of features delivered from CHAOS research for the years 2004 to 2012.



## CHAOS RESOLUTION BY PROJECT SIZE

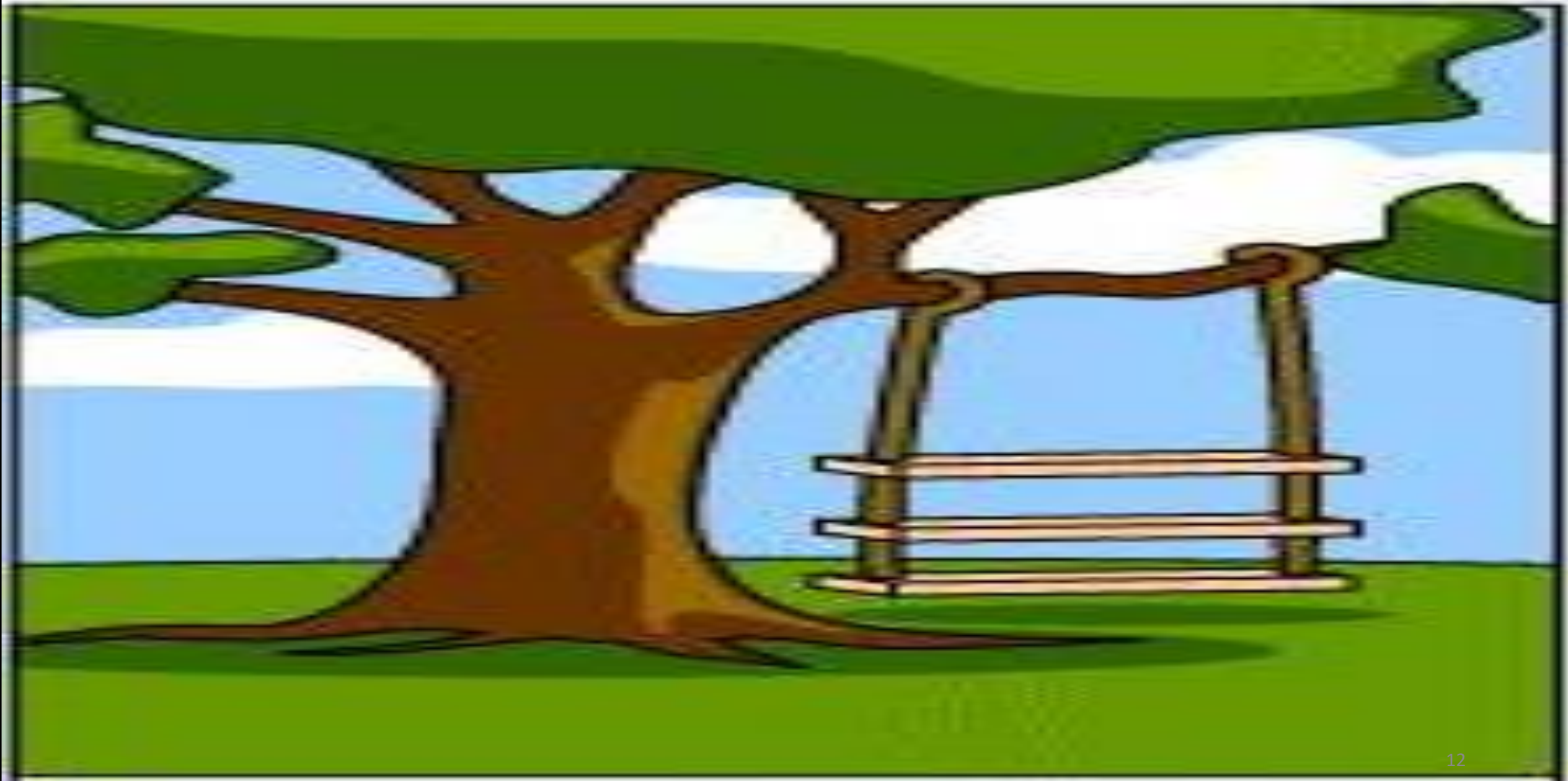
	SUCCESSFUL	CHALLENGED	FAILED
Grand	2%	7%	17%
Large	6%	17%	24%
Medium	9%	26%	31%
Moderate	21%	32%	17%
Small	62%	16%	11%
TOTAL	100%	100%	100%

- Covers periods 2011 to 2015

# More Recently ...

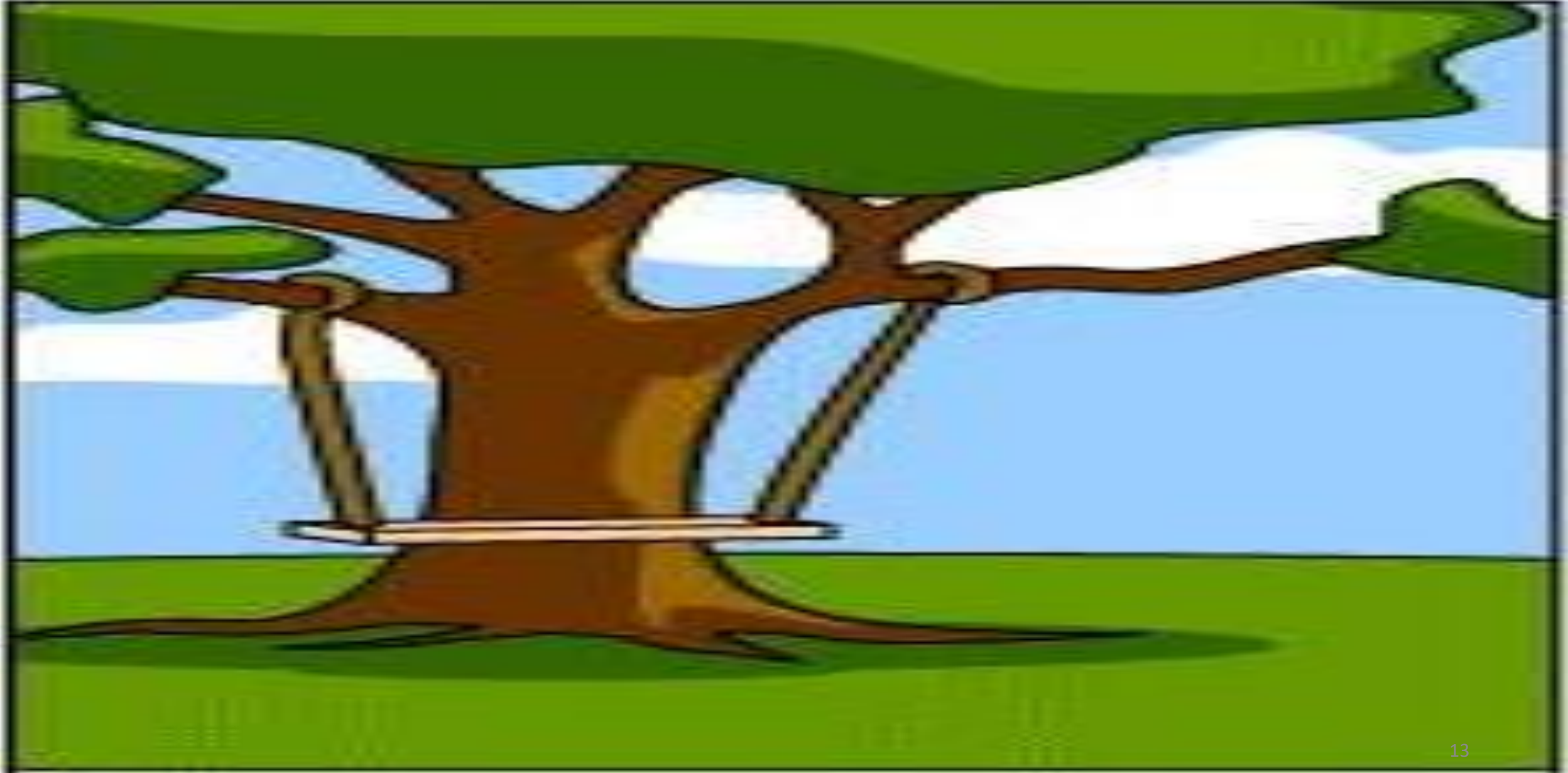


# Project Story: How the customer explained it





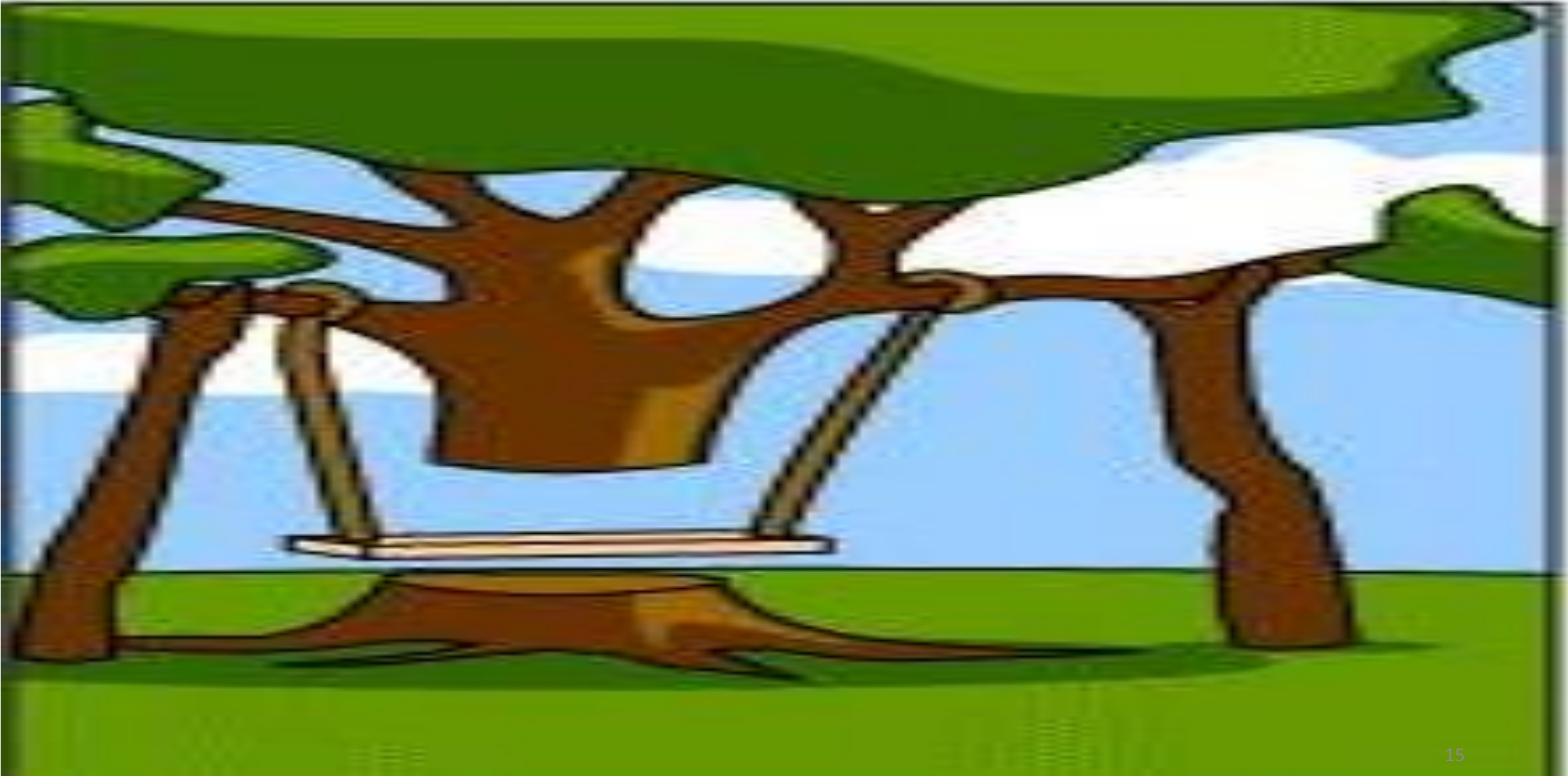
# Project Story: How the Project Leader Understood it



# Project Story: How the Business Consultant Described It



# Project Story: How the Analyst Designed It

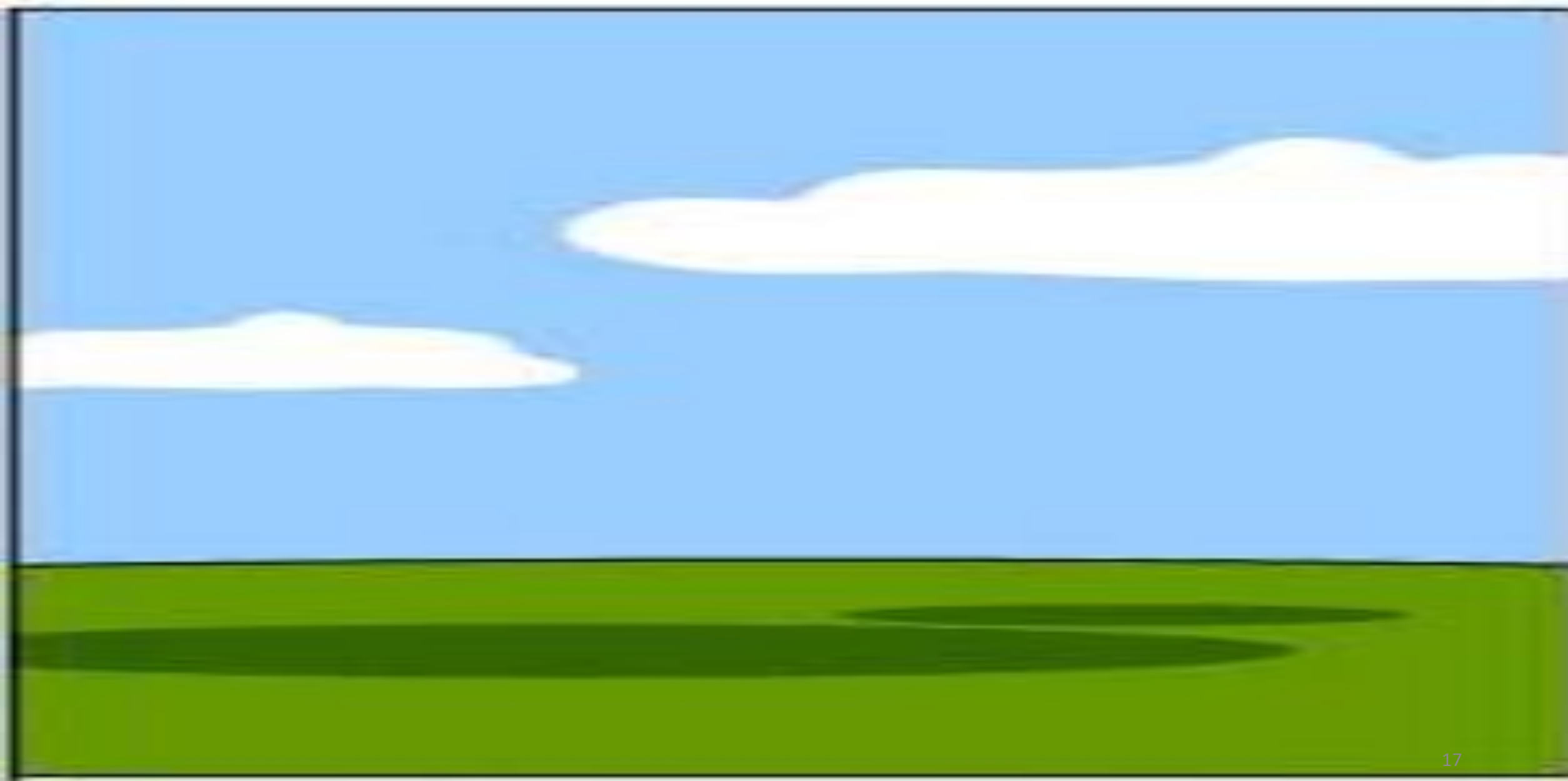




# Project Story: How the Programmer Wrote it



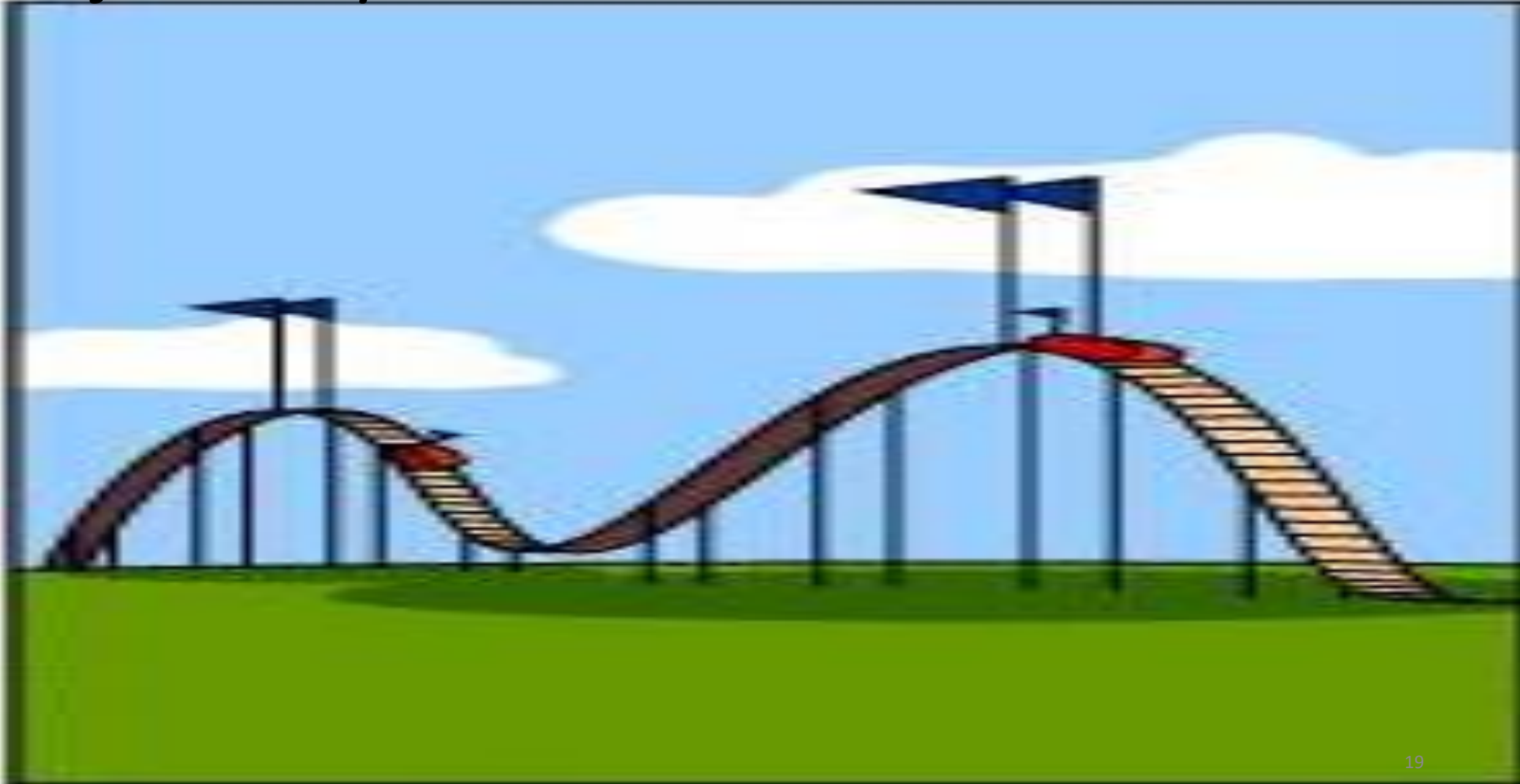
# Project Story: How the Project was Documented



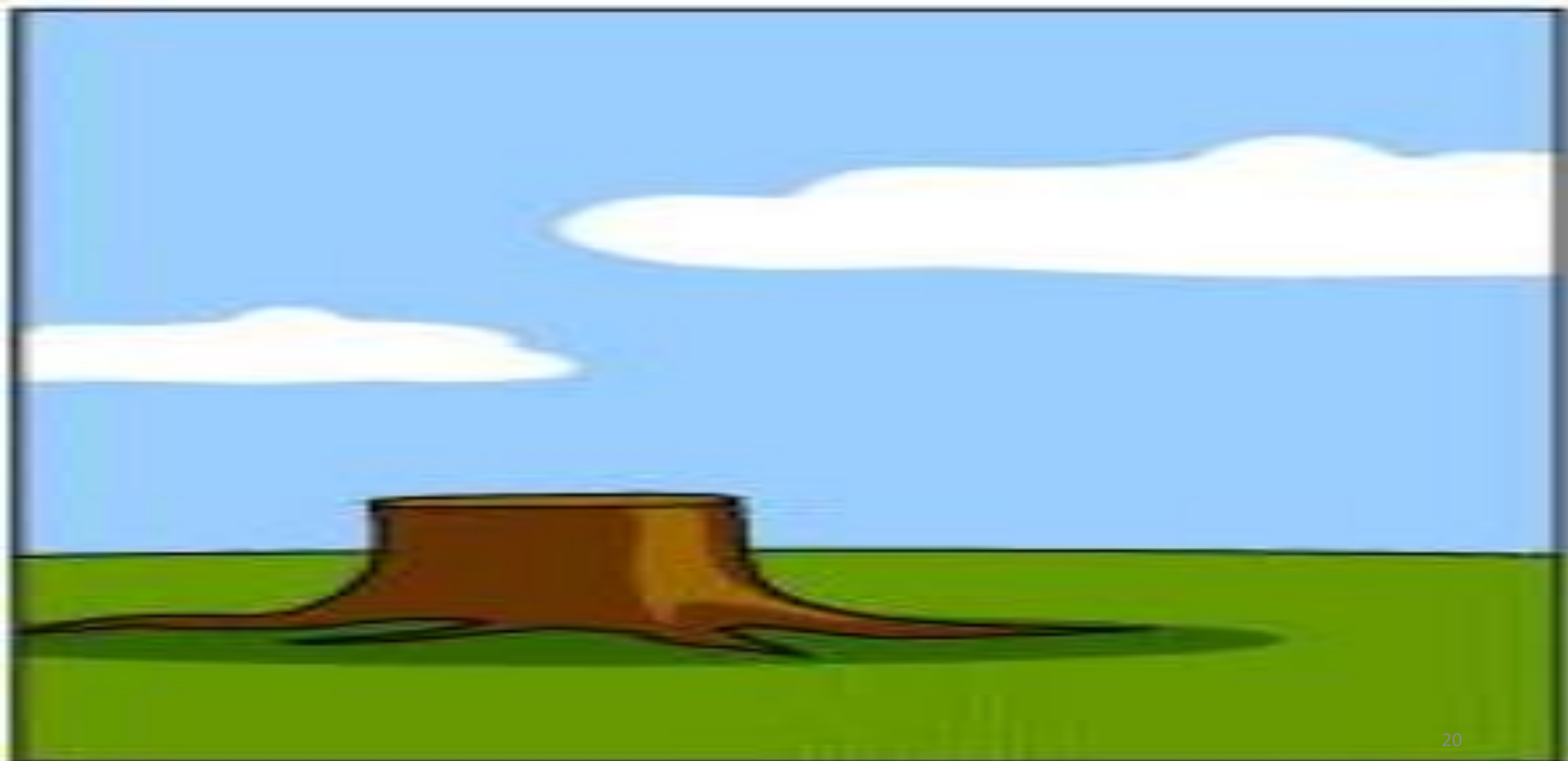
# Project Story: What Operations were Installed



# Project Story: How the Customer Was Billed



# Project Story: How it was Supported





# Project Story: What the Customer Really Needed



# 02. Project Management Process

## PHASES

### INITIATION

Defining and Scoping  
Identifying Stakeholders  
Team Building  
Making the Rules



## DELIVERABLES

Project Charter  
Stakeholder Responsibility Matrix  
Statement of Work  
Team Charter

### PLANNING

Budgeting  
Scheduling  
Activity Planning



Deliverables Breakdown Structure  
Work Breakdown Structure  
Detailed Responsibility Matrix  
Schedule  
Budget  
Activity Plan

### IMPLEMENTATION

Working the Plan  
Monitoring Progress  
Taking Corrective Action  
Reporting Progress



Status/Progress Reports  
Earned Value Analysis  
Change Requests

### CLOSE-OUT

Handing Off to End Users  
Closing Down Operations  
Reporting Outcomes



Final Report  
Personnel Evaluations



# Generic Project Management Phases



## Initiating

Project manager will assign—or ask for team members to volunteer—to complete specific tasks



## Planning

Project Team

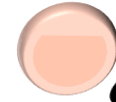
- agrees on a project schedule with the client or among themselves
- create a communication schedule with key stakeholders
- determine the project's standards and set a budget during this phase



## Executing

Where the work 'gets done'.

Project team members may work independently or as a team on tasks that were determined during the previous phases



## Monitoring & Controlling

Project manager monitors each person/team's progress

Aim: to ensure the project is on track to meet task/project deadline and achieve goals

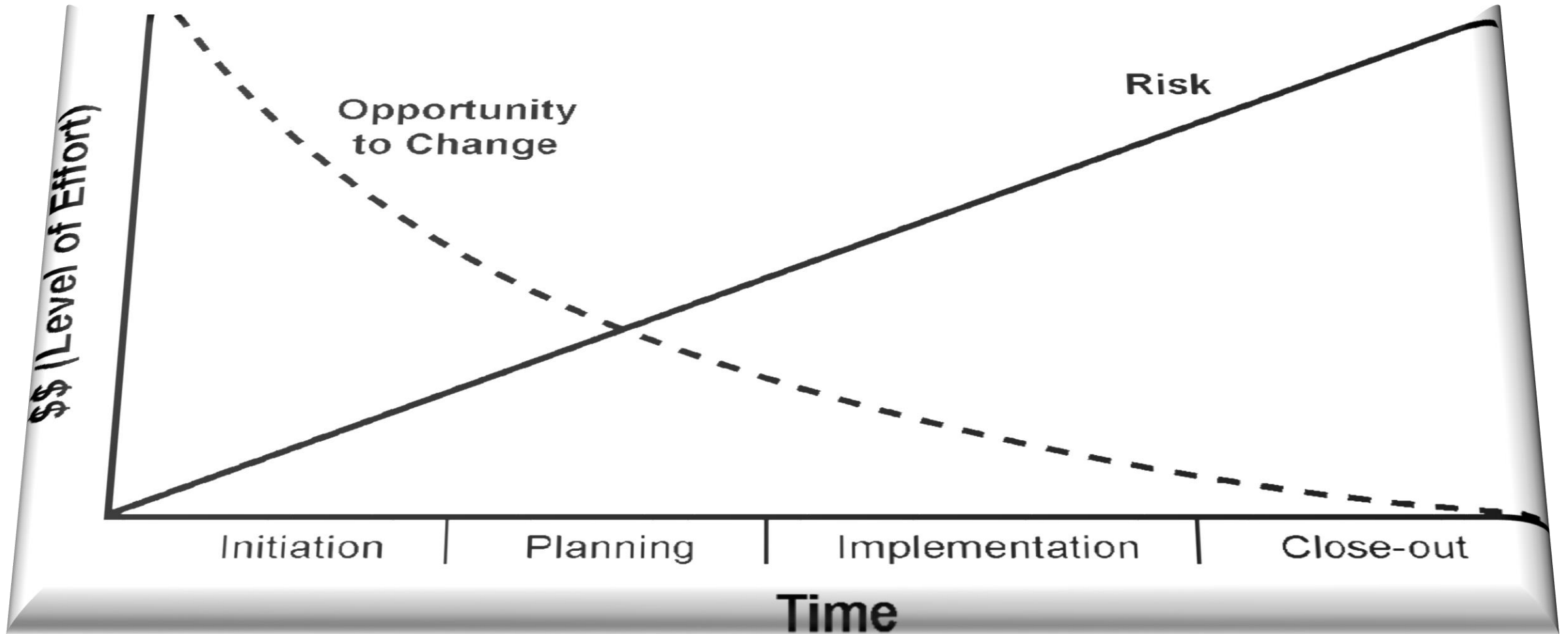
This phase often happens simultaneously to the execution phase



## Closing

Project manager ensures the team completed the project to the agreed-upon standards and communicates that the project is complete

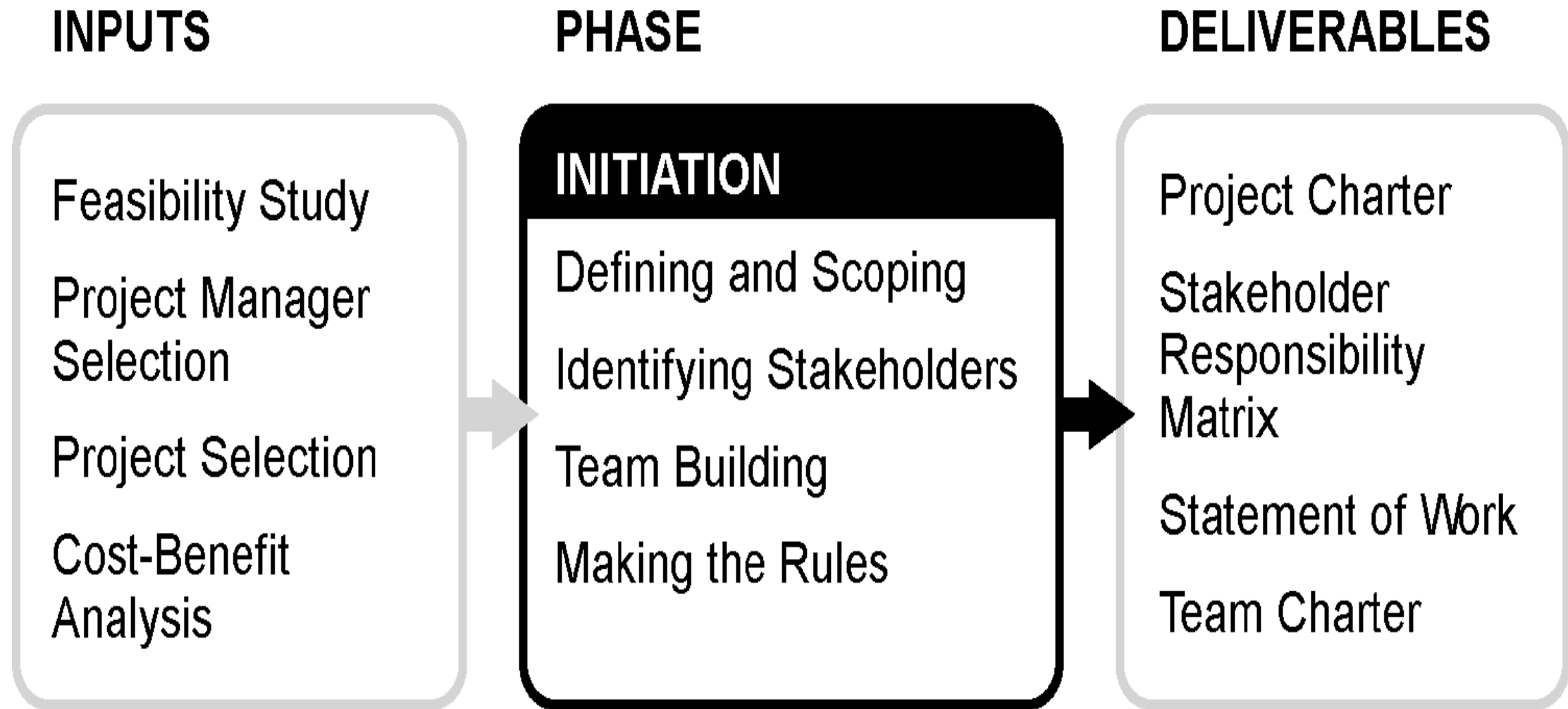
# Project Risk-Cost Progression Graph



# Initiating Questions

- What problem are we trying to solve?
- Is this project the best way to solve it?
- Is this a good use of our resources (time, money, assets, etc.)?
- Do the anticipated benefits outweigh the risks?
- What are the anticipated risks?
- What is the cost of not doing the project?
- Should we walk away?

# Initiation Phase



# Sample Project Charter Elements



# Stakeholder Responsibility Matrix Example

Deliverable		People	Project manager	Task leader	Staffer A	Group director	Purchasing
WBS code	Title						
2.3.	Questionnaire design	A	S, A	P			
3.3.	Respondents		P				
4.4.	Pretest		P	S			
6.5.	Final questionnaire printing	A	P		A	A	

P = Primary responsibility      S = Secondary responsibility      A = Approval

# Statement of Work

- Stakeholders and their responsibilities
- Purpose
- Objectives
- Scope
- Sign-off and review hierarchies
- Reporting and communication plans
- Assumptions or Constraints



# Project Planning:

## PLANNING

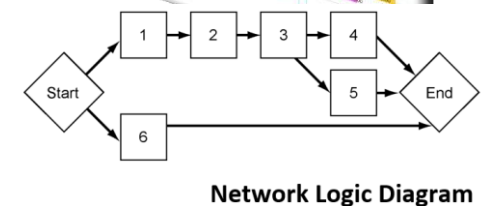
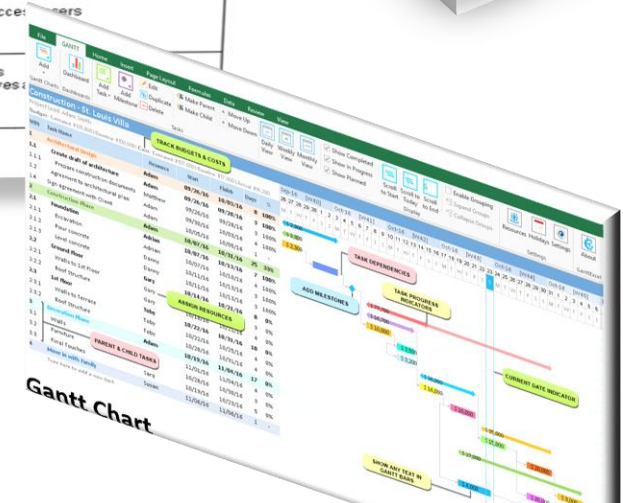
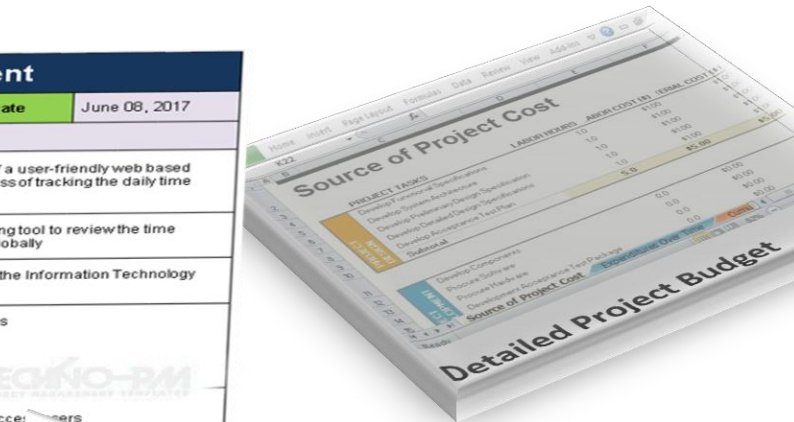
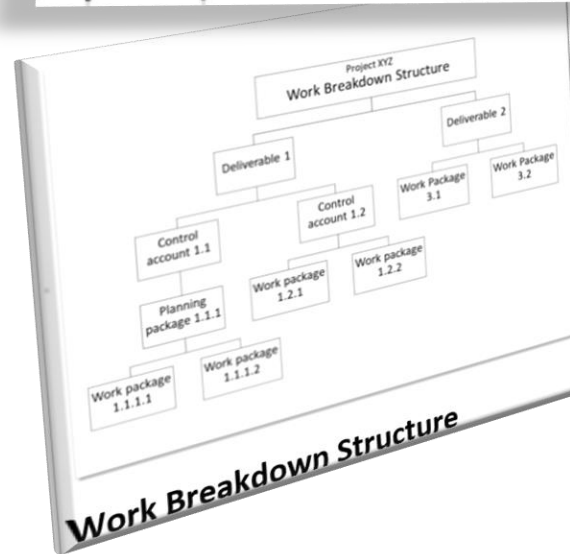
Budgeting  
Scheduling  
Activity Planning

Deliverables Breakdown Structure  
Work Breakdown Structure  
Detailed Responsibility Matrix  
Schedule  
Budget  
Activity Plan

- Develop **Detailed** schedule of:

- Project Scope
- Project Cost
- Project Timelines
- Project Requirements: resources, technologies
- Project Tasks
- Who will perform the tasks?  
Who will be responsible?
- What will the organization receive at the end?

Project Scope Statement			
Title	Timesheet Reporting Tool	Date	June 08, 2017
Project Manager	Nicole Hansen		
Project Justification	The Timesheet Reporting tool will be the creation of a user-friendly web based application. The application will automate the process of tracking the daily time entries made by employees		
Project Scope Description	The timesheet reporting tool will be used as a tracking tool to review the time entries by the Information Technology employees globally		
Project Objective	To create a tool to track the timesheet entries for all the Information Technology employees		
High Level Requirements	<ul style="list-style-type: none"><li>• User access for the tool granted to all employees</li><li>• Admin access to support team</li><li>• Report generation access to project managers</li><li>• Enable users to remotely access the tool</li><li>• Standard templates for all reports</li></ul>		
In Scope	<ul style="list-style-type: none"><li>• Multi – level approvals for timesheets</li><li>• Timesheet tasks additions to the tool by Admin access</li><li>• 'Copy Previous Week' timesheets feature</li><li>• Access tool via Desktop</li></ul>		
Out of Scope	<ul style="list-style-type: none"><li>• New project/task addition to the tool by managers</li><li>• Connectivity with HRMS to update employee leaves</li><li>• Role based task list template</li><li>• Access tool via mobile and tablet</li></ul>		

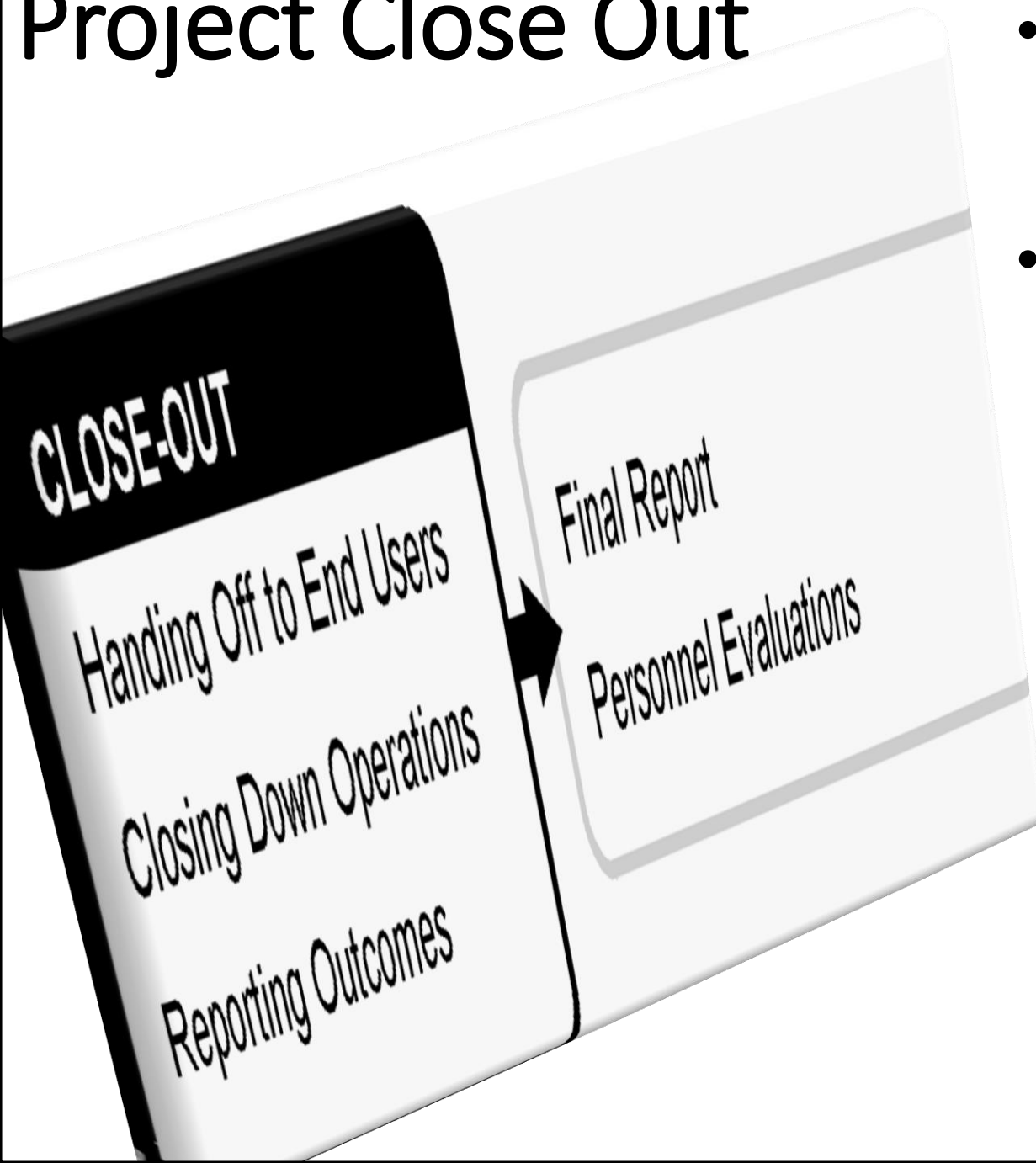


# Project Implementation (Execute & Control)

- Project plan is carried out to deliver the IT product and enable the project goal
- Project manager must ensure the existence / provision of
  - People with appropriate skill, experience & knowledge
  - The technical infrastructure for development
  - Scope, schedule, budget and quality controls
  - Identifying and mitigating variances
  - Plans for: procurement, quality management, change management, testing, implementation, communication etc.



# Project Close Out

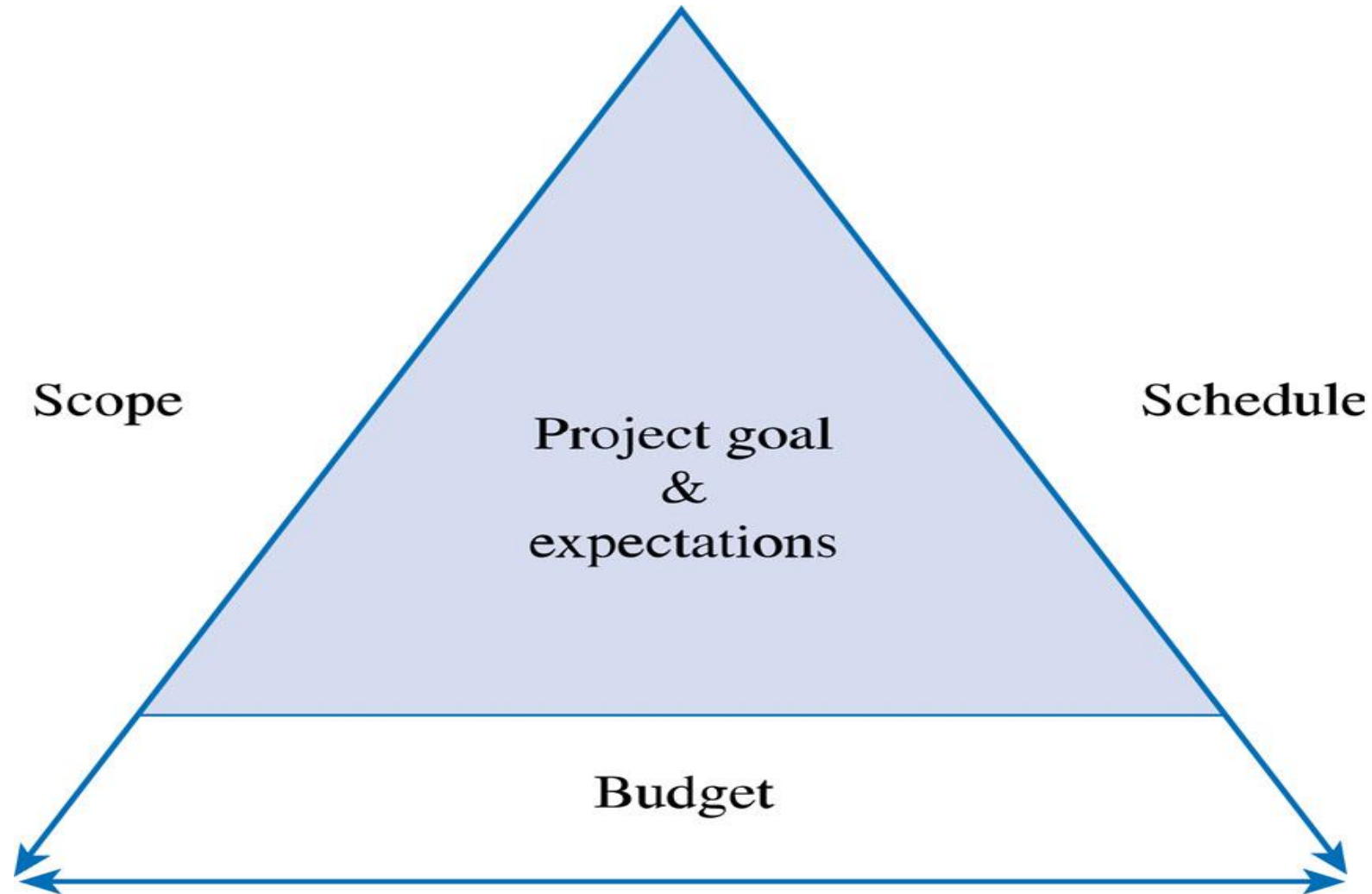


- Key focus: transfer control of project deliverable from project team to client / sponsor
- Other activities:
  - Preparation of final report
  - Presentation to demonstrate completion of all required project deliverables
  - Determination of project's final cost (followed by invoicing / payment of outstanding amounts)
  - Closure of all project accounts, archiving of project documents, files etc
  - Releasing project resources

# Project Close Out

- Post mortem by project manager and team of entire project:
  - What went well? What did not? Why? Room for improvement?
  - Document everything for the sake of future projects
- Evaluation of individual team members by project manager: strengths, areas of improvement
- Third party's evaluation of project, project leader and team:
  - Has project met goals? Did it meet its scope, schedule, budget and quality objectives?
  - Is project sponsor/client satisfied with project work
  - How well did project team work together?
- Evaluate project's organizational value : Attempt valuation of product

## 03. Key Variables in IT Projects: The Triple Constraints

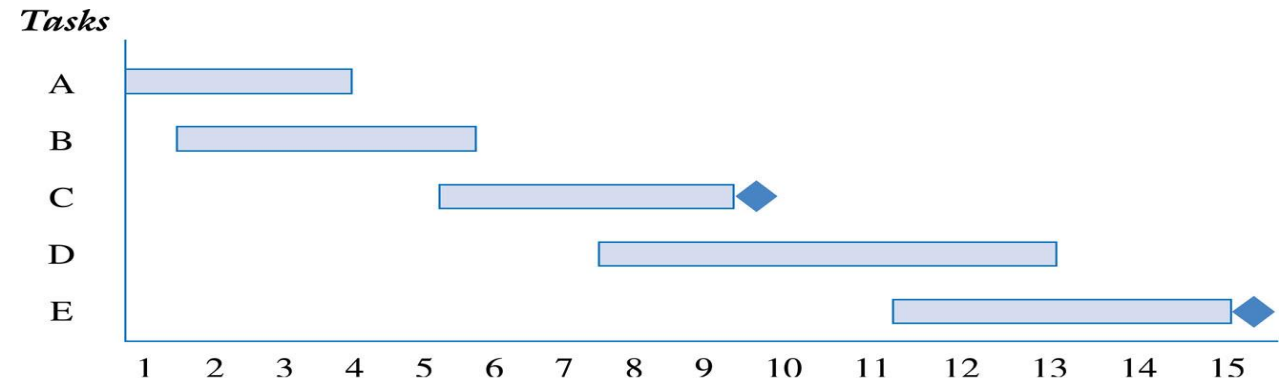


# 04. Estimation and Monitoring IT Project Variables - Schedule Management

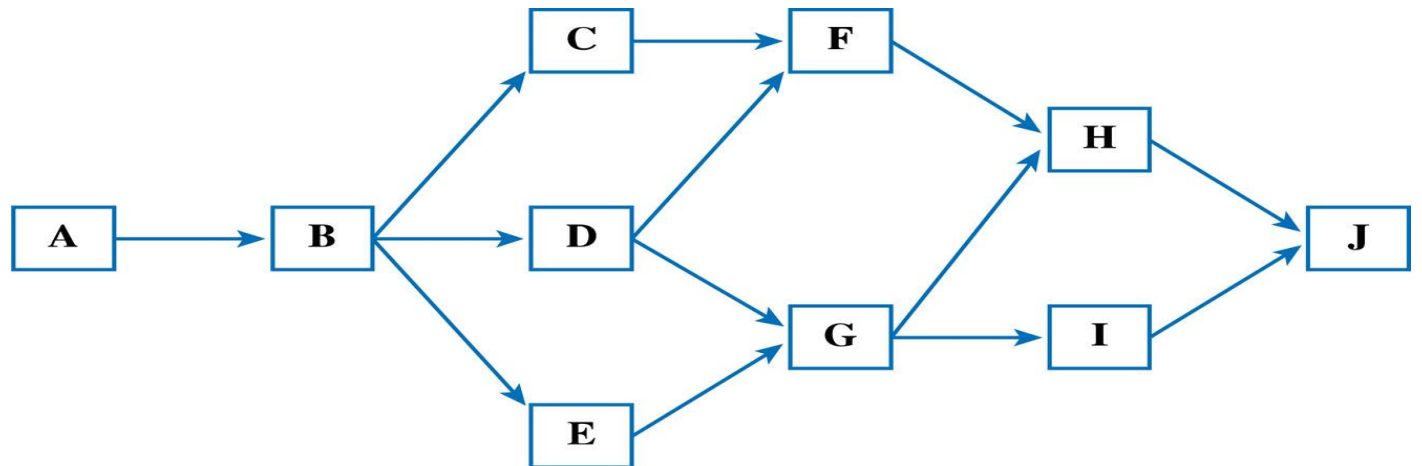
- How much effort is required to complete an activity?
- How much calendar time is needed to complete an activity?
- What is the total cost of an activity?
- Project estimation and scheduling are interleaved management activities
- Key Activities
  - Activity definition
  - Activity sequencing
  - Activity duration estimation
  - Schedule development
  - Schedule control

# Schedule Management Tools

- Gantt Chart



- Project Network Diagrams





# 04. Estimation and Monitoring IT Project Variables

## Project Cost Management

- Cost estimating: A required input to the cost budgeting process
  - A particularly interesting (difficult) task for software projects.

### Why?

- Typical Cost Items:
  - Hardware and software costs.
  - Travel and training costs.
  - Effort costs (the dominant factor in most projects)
    - The salaries of engineers involved in the project;
    - Social and insurance costs.
  - Effort costs must take overheads into account
    - Costs of building, heating, lighting.
    - Costs of networking and communications.
    - Costs of shared facilities (e.g library, staff restaurant, etc.)

# 04. Estimation and Monitoring IT Project Variables Project Cost Management

- Common Methods:
  - Analogy: Estimates cost at a high level by using a similar past project. Uses historical data together with expert judgment
  - Parametric Modeling: Uses a mathematical model to compute costs with variables such as complexity of project, capabilities of project team, specifics of tools in use etc.
  - Definitive Estimates: assigns cost to each work package e.g. based on an estimate of work effort and using a person/hour rate
  - Others: Expert judgement, Parkinson's Law
- Estimates are made as efforts to discover cost. But the relationship between cost and effort is not so straight forward

# Costing and Pricing

Factor	Explanation
<b>Market opportunity</b>	A development organization may quote a low price because it wishes to move into a new segment of the software market. Accepting a low profit on one project may give the opportunity of more profit later. The experience gained may allow new products to be developed.
<b>Cost estimate uncertainty</b>	If an organization is unsure of its cost estimate, it may increase its price by some contingency over and above its normal profit.
<b>Contractual terms</b>	A customer may be willing to allow the developer to retain ownership of the source code and reuse it in other projects. The price charged may then be less than if the software source code is handed over to the customer.
<b>Requirements volatility</b>	If the requirements are likely to change, an organization may lower its price to win a contract. After the contract is awarded, high prices can be charged for changes to the requirements.
<b>Financial health</b>	Developers in financial difficulty may lower their price to gain a contract. It is better to make a smaller than normal profit or break even than to go out of business.

# 04. Estimation and Monitoring IT Project Variables

## Project Cost Management

- Cost budgeting
  - The process of allocating approved project funding across initiatives using a set of established cost estimates, work breakdown structure and the schedule
  - Project budgets are used to communicate what amounts will be spent on categories of resources within a given time period. They tend to be broken down month-by-month
- Address the following questions early ... to avoid problems:
  - Are all project expenses submitted to the project manager for approval?
  - Does the project manager
    - approve timesheets for project team members?
    - receive weekly reports on labour hours charged to the project
  - Are there categories of cost or amounts that require approval from the sponsor or client?

# Project Communication Tracking and Reporting

- Required: Reliable project metrics
  - A qualitative measurement of some attribute of the project.
- Project metrics should focus on the following key areas:
  - Scope
  - Schedule
  - Budget
  - Resources
  - Quality
  - Risk

# Project Communication Tracking and Reporting

- Qualities of a Good Project Metric
  - Understandable
  - Intuitive
  - Quantifiable
  - Objective (no bias)
  - Cost Effective
  - Easy and inexpensive to create
  - Proven
  - “What gets measured gets done”
  - High Impact

# Project Communication Tracking and Reporting

- Reporting Categories:
  - Reviews
    - Formal & informal meetings with stakeholders
    - May focus on specific deliverables or milestones
    - Used to get acceptance, surface problems or issues, or make key decisions
  - Status Reporting
    - Describes present state of the project
    - Compares actual progress to baseline plan
      - Scope, schedule, and budget
    - Like a snap shot of the project at a specific time



# Project Communication Tracking and Reporting

- Reporting Categories
  - Progress Reporting
    - What activities or tasks has the team accomplished?
    - Actual versus planned
  - Forecast Reporting
    - Predicting the project's future status or progress
    - Example: trend analysis

# 05. IT Project Risk Factors & Mitigating Measures

## Why Do IT Projects Fail?

<i>Rank</i>	<i>Factors for Successful Projects</i>	<i>Factors for Challenged Projects</i>	<i>Factors for Impaired Projects</i>
1	User involvement	Lack of user input	Incomplete requirements
2	Executive management support	Incomplete requirements	Lack of user involvement
3	Clear statement of requirements	Changing requirements & specifications	Lack of resources
4	Proper planning	Lack of executive support	Unrealistic expectations
5	Realistic expectations	Technology incompetence	Lack of executive support
6	Smaller project milestones	Lack of resources	Changing requirements specifications
7	Competent staff	Unrealistic expectations	Lack of planning
8	Ownership	Unclear objectives	Didn't need it any longer
9	Clear vision & objectives	Unrealistic time frames	Lack of IT management
10	Hard-working, focused team	New technology	Technology illiteracy

# Challenges of Managing IT Projects

- Unclear Requirements
- Missed Requirement
- Delay in Document Approvals
- Scope Creep
- Unclear risks and Issues
- Project Infrastructure Issues
- Service Introduction Issues
- Undefined Project Dependencies
- Time-Driven Projects
- Undefined Roles and Responsibilities
- Project Infrastructure Delayed
- Unclear Quality Criteria
- Unstructured Project Costing
- Revision of Estimates and Timescales
- Vendor Quality Issues
- Time and Cost Issues
- Over/under-estimation of Projects Variables