

CONSTRUCTION PROJECT PLANNING AND CONTROL PART 1

**QORSHEYNTA IYO KOONTAROOOLKA
MASHAARIICDA DHISMAHA**

CONSTRUCTION PROJECT PLANNING AND CONTROL



1 Introduction to Project Scheduling

2 Bar (Gantt) Charts

3 Logic Networks

4 The Critical Path Method

5 Precedence Networks

6 Resource Management

CONSTRUCTION PROJECT SCHEDULING AND CONTROL

3 THIRD
EDITION



SALEH MUBARAK

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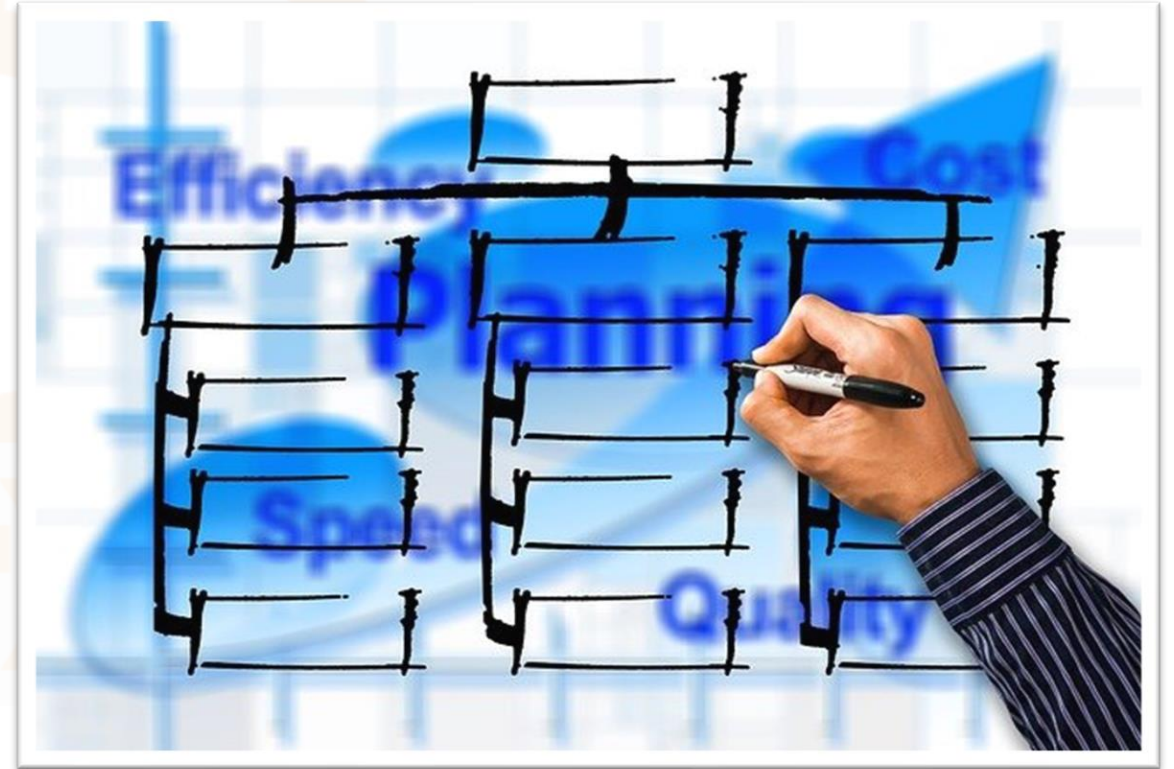
CHAPTER 1: INTRODUCTION TO PROJECT SCHEDULING

1. Types of Management
2. What is a project? What is project Management?
3. Definition of Planning and scheduling
4. Project Control
5. Why Schedule Projects? Who is the Scheduler?
6. Successful Scheduling System
7. Scheduling as part of project management

BY: ABDIWALI KHALIF

1.1 TYPES OF MANAGEMENT

- General management
 - Specialty management: financial, human resources, IT, etc.
- Program management
- Portfolio management
- Project management
 - Specialty project management



PROGRAM MANAGEMENT

- **Program** : A group of related projects managed in coordinated way to obtain benefits and control not available from managing them individually.
Programs may include elements of related work outside of the scope of the discrete projects in the program
- Programs may be:
 - Temporary/one-time programs
 - Ongoing (usually periodic/annual)
- A program can be a large and complex project



PORTFOLIO MANAGEMENT

- **Portfolio** is a collection of projects or programs and other work that are grouped together to facilitate effective management of that work to meet strategic business objectives.
- The projects or programs of the portfolio may not necessarily be dependent or directly related



1.2 WHAT IS A PROJECT?

- *Project: A temporary endeavor undertaken to create a unique product, service, or result (Project Management Institute, PMI, PMBOK, 5th edition, 2013)*
 - There are no two projects that are the same
 - Location (Soil type, weather, labor)
 - Regulations
 - Every project has
 - A start, a finish points, and A deliverable.
 - e.g., I will buy a house. project?
 - I will save \$50,000 in five years to buy a house. Project?



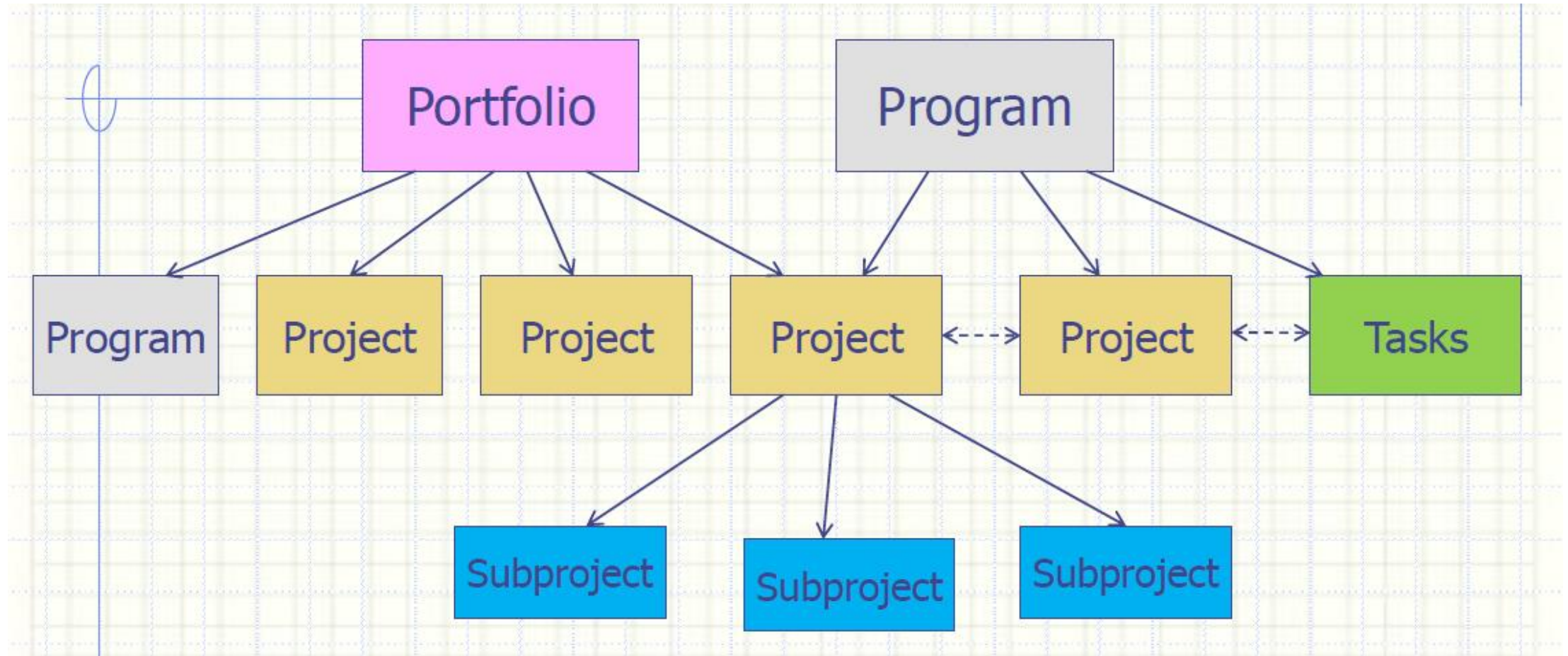
WHAT IS PROJECT MANAGEMENT?

- **Project Management** is the application of *knowledge, skills, tools, and techniques* to project activities to meet the project requirements.
- Accomplished through the application and integration of the project management processes of *initiation, planning, execution, monitoring and controlling, and closing*.

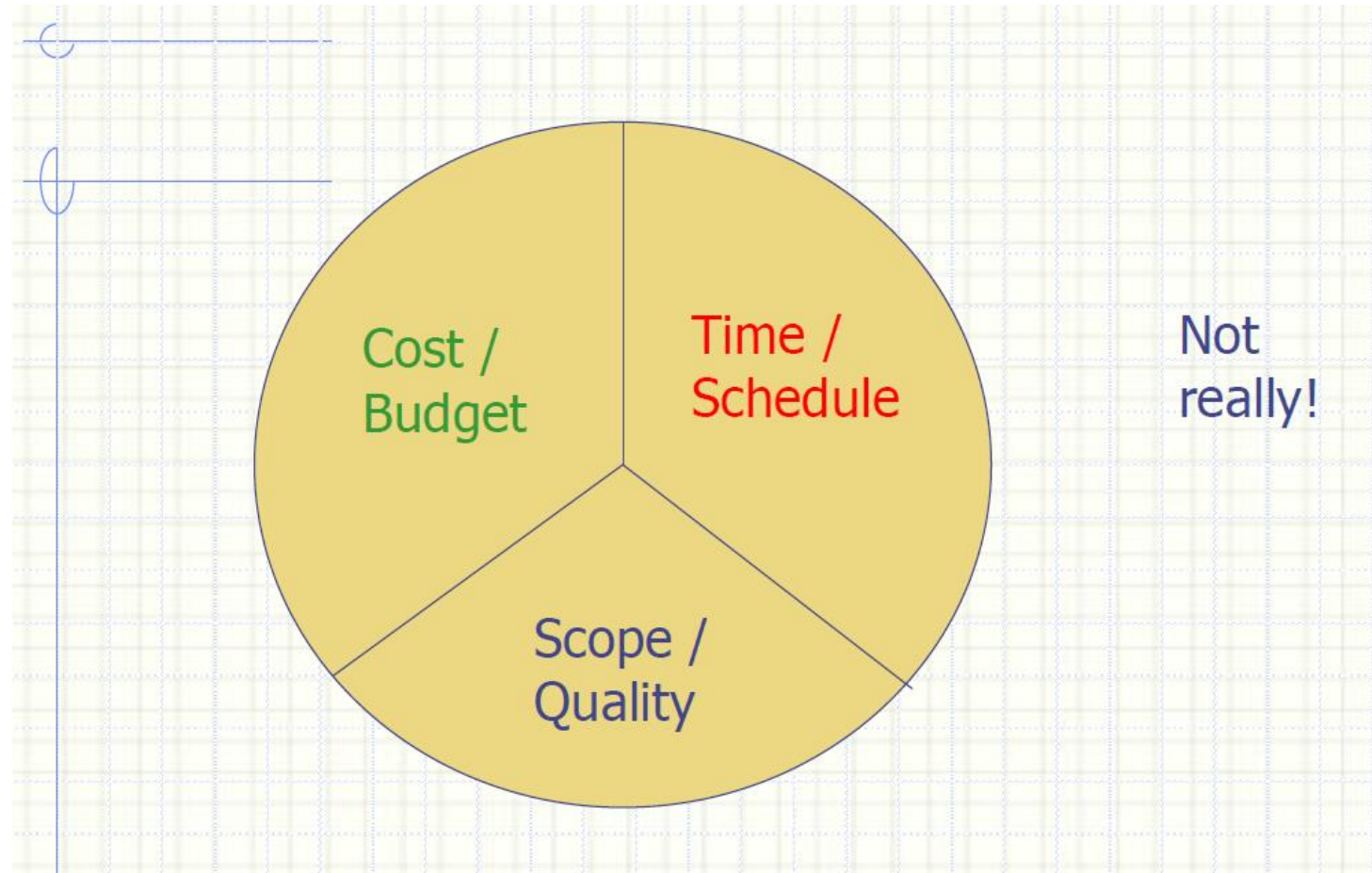
Project Management Institute, PMI, PMBOK, 5th edition, 2013



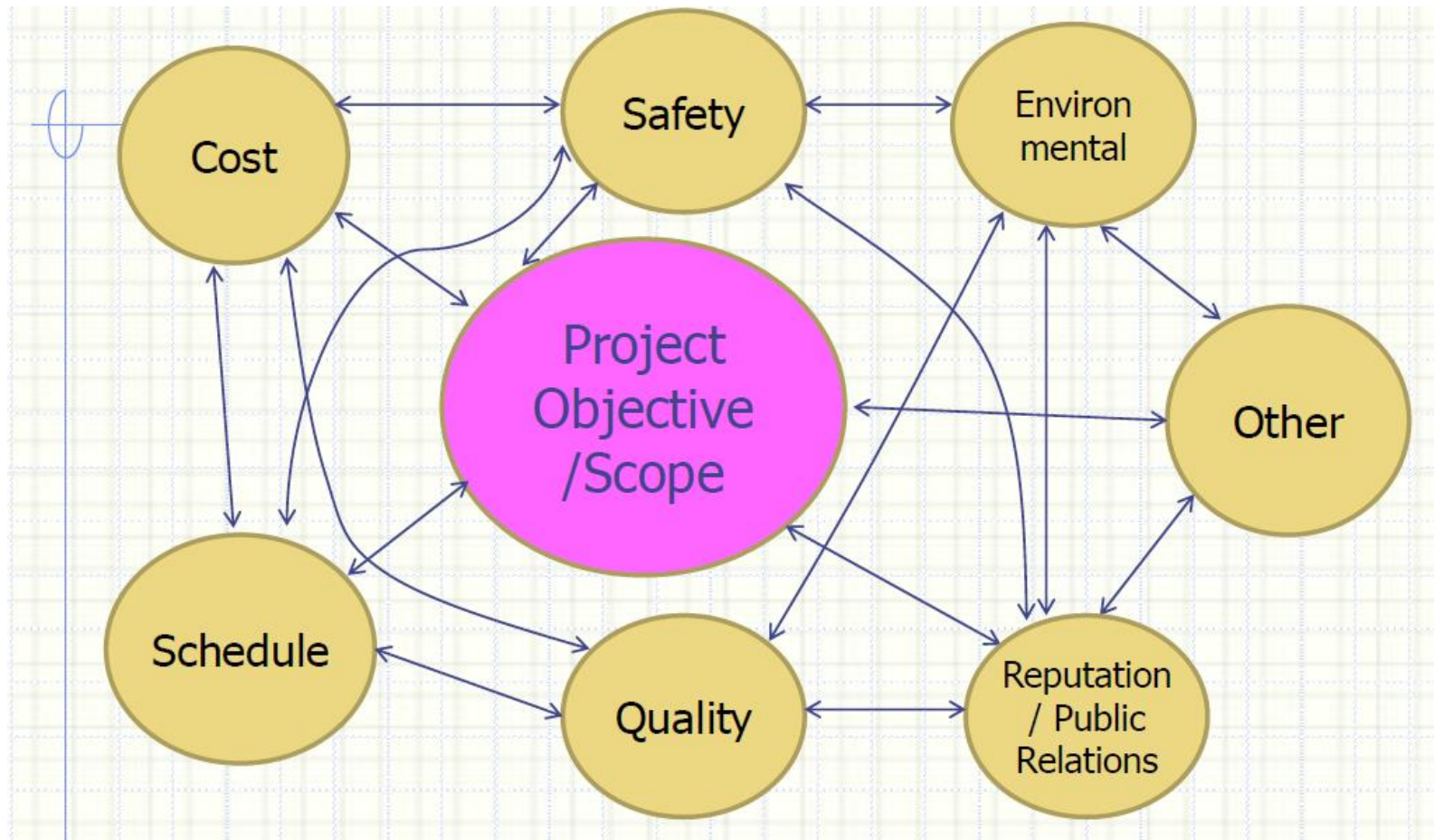
THE HIERARCHY OF TYPES OF PROJECT MANAGEMENT



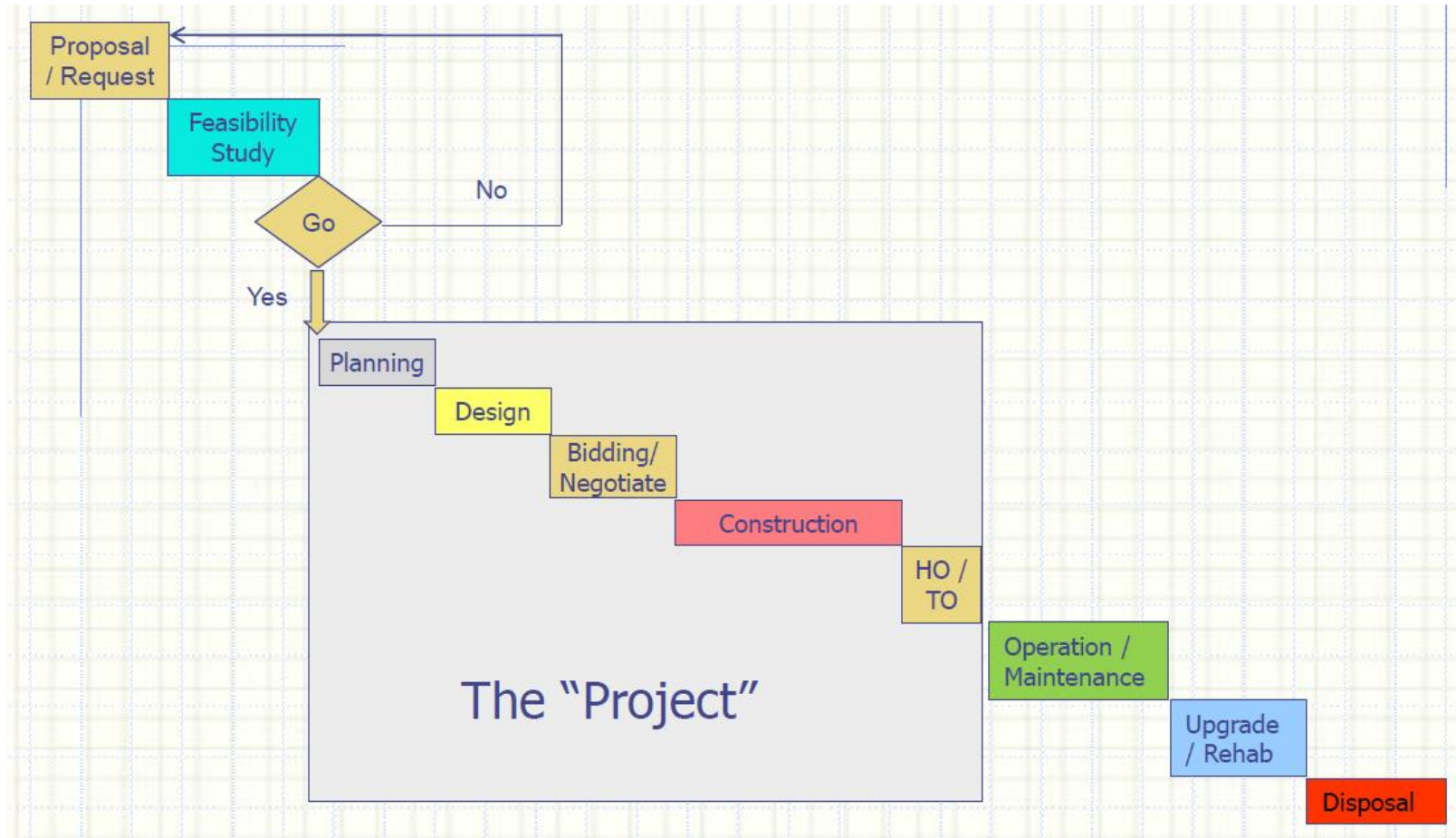
PROJECT OBJECTIVES? - UJEEDOOYIN



PROJECT REQUIREMENTS: OBJECTIVE AND CONSTRAINTS



LIFE CYCLE OF THE PROJECT



CONSTRUCTION PROJECT MANAGEMENT PLAN



- Project management in construction includes:
 - Scheduling / Time Management,
 - Budget / Cost Management,
 - Risk Management
 - Procurement management,
 - Scope / Change management,
 - Logistics management,
 - Project administration (Document Management),
 - Quality management,
 - HSE / HSSE management,
 - Other
- *They are all interrelated*

1.3 PLANNING AND SCHEDULING



- Planning and scheduling are two terms that are often thought of as synonymous
 - **They are not!**
 - Scheduling is just one part of the planning effort
- Organization plan: Financial planning, Hiring plan.
 - Strategic plan: long term plan in terms of operations and growth.
- Personal plan: Career plan, Retirement plan, Marriage plan, Trip Plan.
- Project scheduling is the determination of the timing and sequence of operations in the project and their assembly to give the overall completion time



PROJECT PLANNING IN CONSTRUCTION

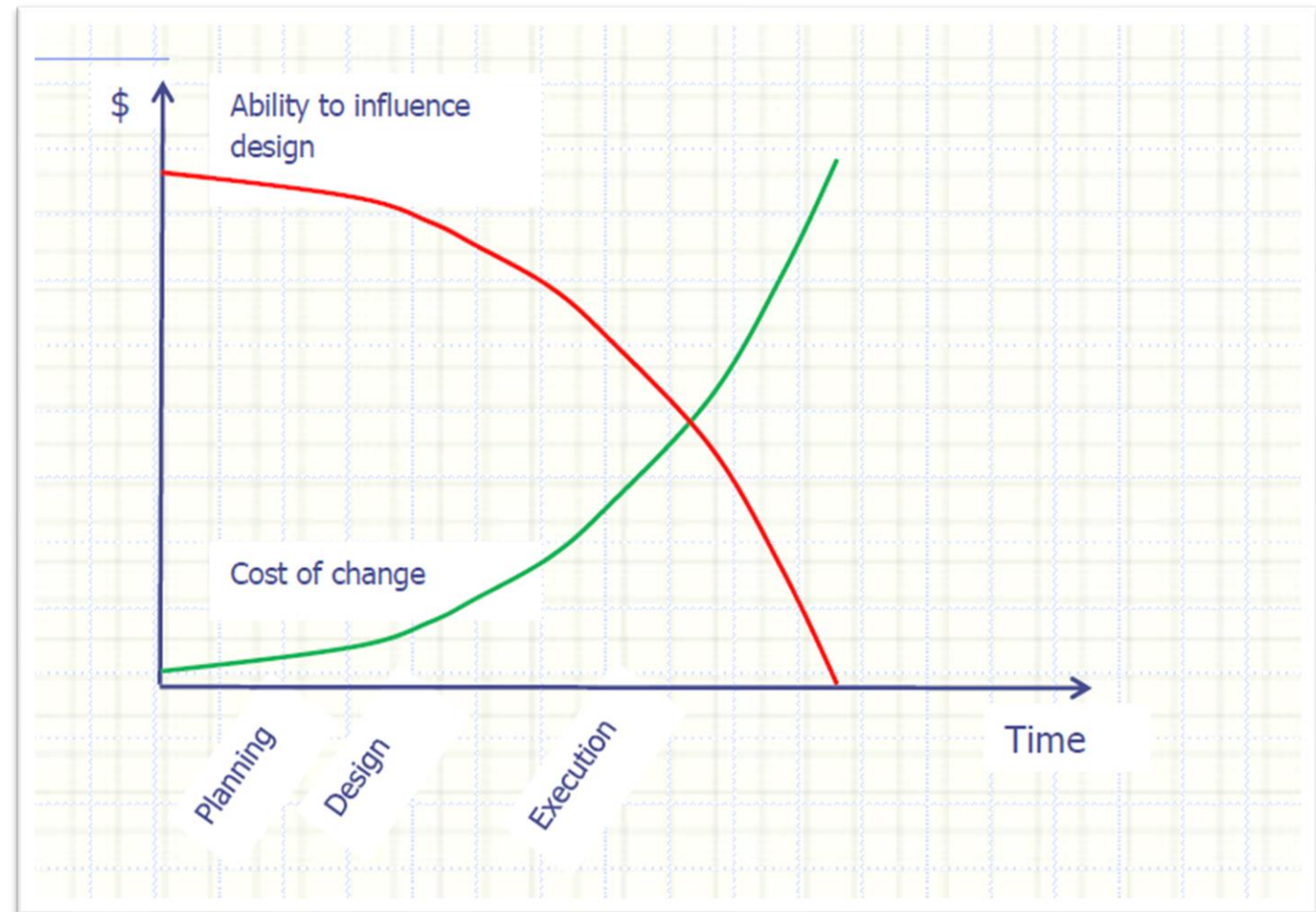
- Project planning serves as a foundation for several related functions such as cost estimating, scheduling, and project control.
- The plan can include elements that has to do with scope, design and alternate designs, cost, time, finance, land, procurement, operations, etc.
- The plan can take different shapes and have different contents depending on:
 - The purpose of the plan
 - The timing of the plan
 - The level of details needed



THE PLANNING STAGE

IMPORTANCE OF PLANNING

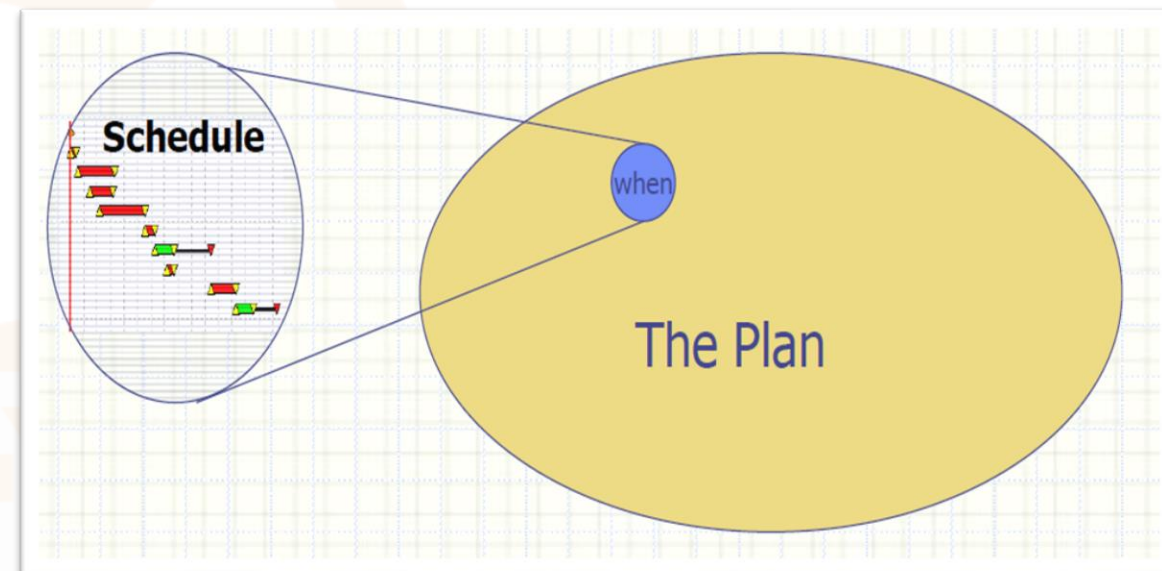
- High rate of return interms of:
 - Saving time, money, effort
 - change orders, claims and disputes
- Owners rush to construction and design.
- Planning and execution time: The inverse relationship!
- Managing risk!
 - It starts ***before*** signing the contract!



PLANNING AND SCHEDULING

- Planning is the process of determining how a project will be undertaken. It answers the questions:

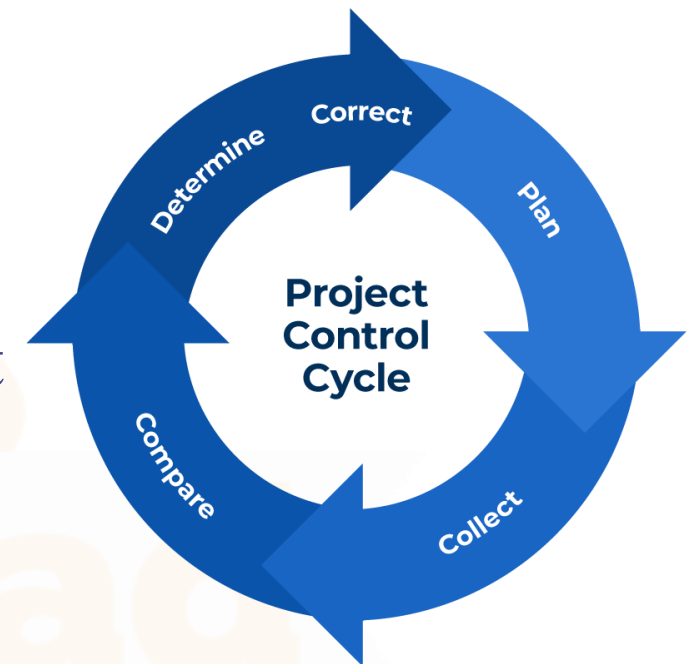
- What?
- How?
- Who?
- How much?
- Why
- Where?
- By whom?
- When? (in general terms)



- Scheduling deals with “*when*” on a detailed level.

1.4 PROJECT CONTROL

- Project scheduling, like cost estimating, is a prediction of future occurrence; time or money
- Once project execution starts, actual performance may not, and usually do not, follow the prediction (called the *baseline* when it become an official part of the contract).
- Here comes Project Control to track both schedule and cost, find variances (where, how much, and why), and take corrective action to bring the project back to the plan.



1.5 WHY SCHEDULE PROJECTS? WHO IS THE SCHEDULER?

Why Do Owners Schedule Projects?

1. Get an idea on project's expected finish date.
2. Ensure contractor's proper planning for timely finish.
3. Use for cash flow prediction ([example1](#)) ([example2](#)).
4. Use for project control and verification of progress payment requests.
5. Use for change orders' impact (and what-if scenarios).
6. Use to verify contractor's delay claims.

1.5 WHY SCHEDULE PROJECTS? WHO IS THE SCHEDULER?

Why Do Contractors Schedule Projects?

1. Ensure ability to meet owner's requirements.
2. Have an efficient work plan / Coordinate with subcontractors.
3. Use for cash flow prediction ([example1](#)) ([example2](#)).
4. Use for preparation of progress payment requests / project control.
5. Use to assess change orders' impact.
6. Use to prove a delay claim.
7. Plan material procurement (order, deliver).

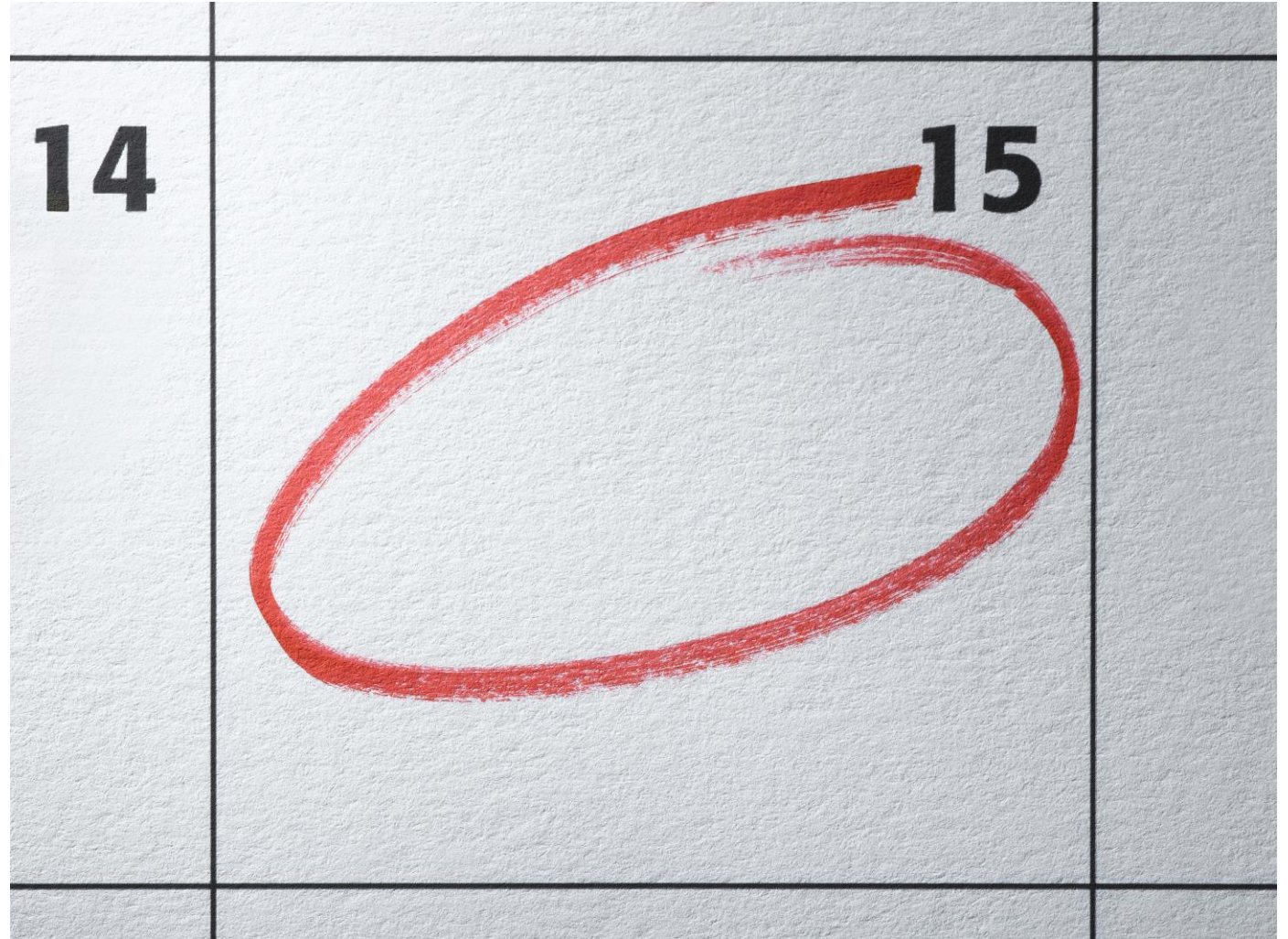
1.5 WHY SCHEDULE PROJECTS? WHO IS THE SCHEDULER?

Who Else Needs the Schedule?

- The designer A/E
- The PMC / CM
- Lending institutions
- Government (licensing / permitting)
- Legal consultants / attorneys
- Other?

THE SCHEDULER.....

- Is the "scheduler":
 - an engineer / architect?
 - a computer whiz?
 - a mathematician?
 - a project /construction manager?
 - a communicator?
- The Certification 1:
 - AACEI, Planning and Scheduling Professional (PSP)
- The Certification 2:
 - PMI, Scheduling Professional PMI-SP



ORACLE®

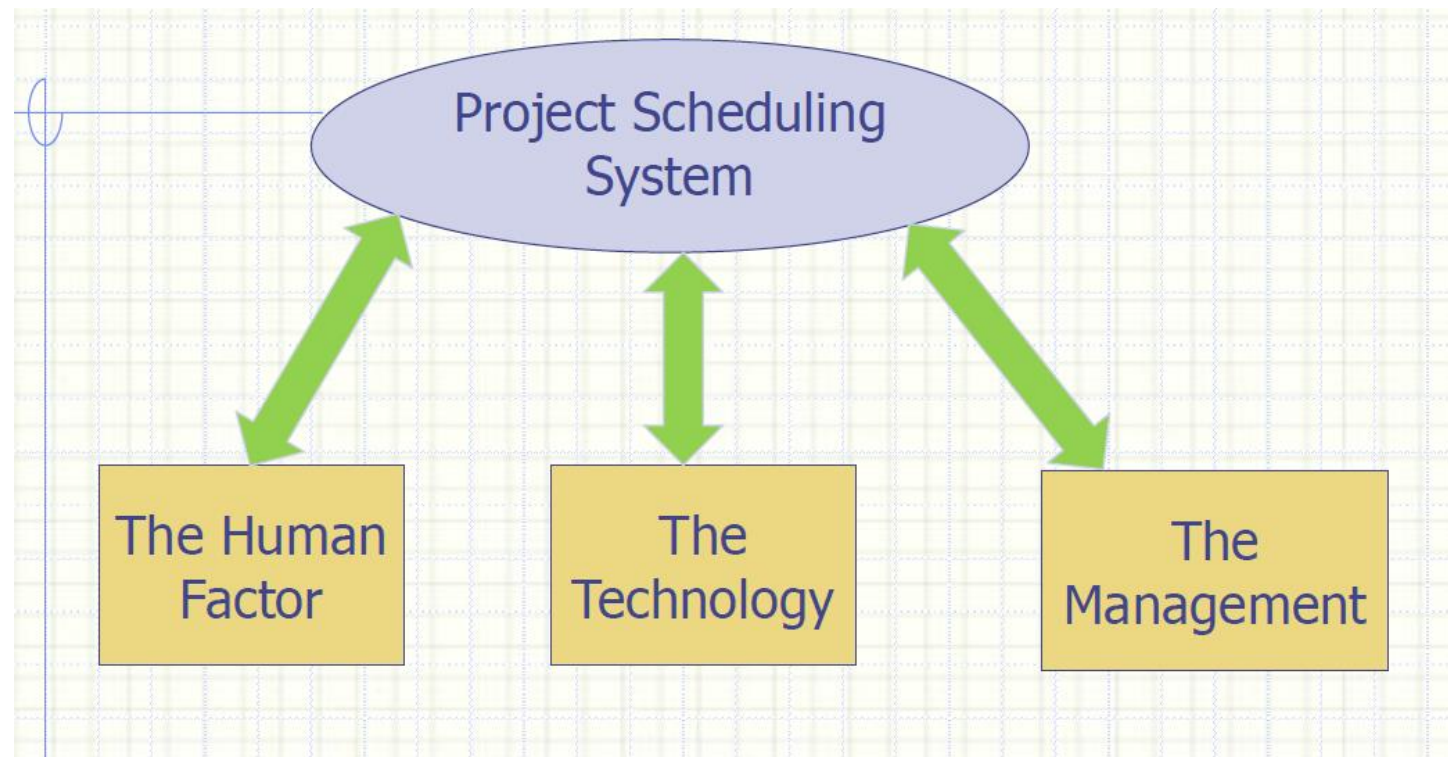
PRIMAVERA P6

THE SCHEDULER

- The three types of knowledge:
 1. Knowledge in the principles of scheduling and project control
 2. Knowledge in the specific technical field. e.g. Commercial, Industrial, Transportation buildings.
 3. Knowledge in computer software such as Primavera P6 or Cost Estimating Software.
- Knowledge acquired by education or experience?
- Importance / priority of these types
- Full-time, part-time, consultant? pros and cons

1.6 SUCCESSFUL SCHEDULING SYSTEM

- The Tripod of Good Scheduling System





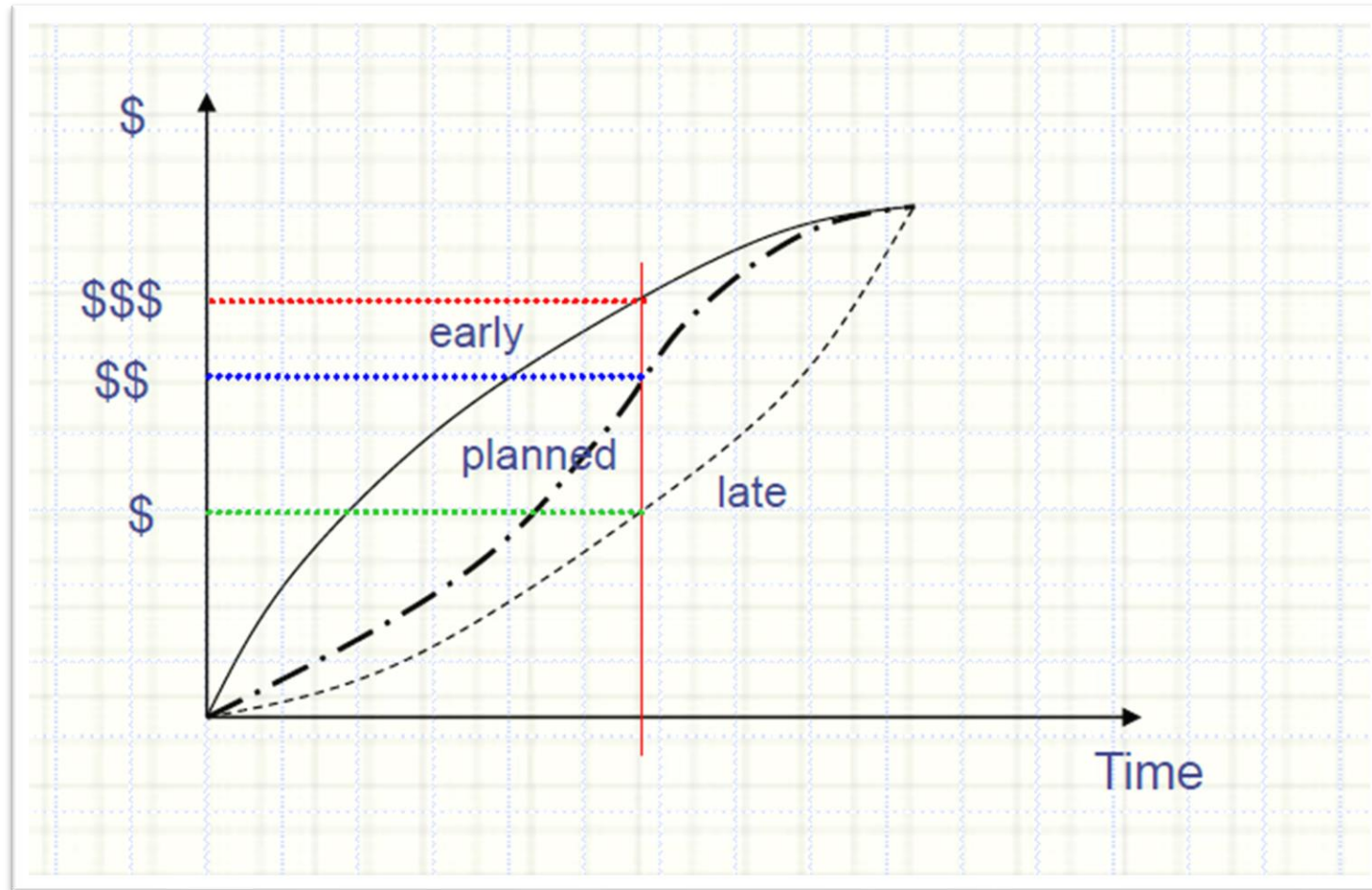
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END OF CHAPTER ONE



EXAMPLE 1: CASH FLOW EXAMPLE



EXAMPLE 2: CASH FLOW: IN AND OUT

