“ONE WAY OR THE OTHER
YOU’RE GOING TO **FINISH**
...SO WHY NOT
FINISH STRONG
AND MAKE YOURSELF
IMMENSELY PROUD OF
YOUR **PERFORMANCE**
RATHER THAN EMBARRASSED
BY YOUR LACK OF IT”

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NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

Department of Electronic Engineering

Project Management [TEE 5155]

Introduction to Project Management

Bhekisisa Nyoni

Course Introduction

- The Engineering profession requires both technical and management skills.
  - Professional engineering skills (TCE 1103)
  - Conflict Transformation and Leadership (CTL 1101)
  - The Professional Engineer (TEE 2255)
  - Engineering Management (TEE 3255)
  - Project Management (TEE 5155)

Course Introduction

1. Introduction to Project Management
2. Project Life Cycle and Systems Approach
3. Core PM Knowledge Areas
    - *Project Scoping, Project Time Estimation and Scheduling, Project Costing & Project Quality)*
4. Facilitating PM Knowledge Areas
    - *Project Risk, Project Resources, Project Communication, Project Stakeholder & Project Procurement)*
5. Agile Project Management
6. Project Management Information Systems

Section Overview

- Introduction
- Definition of key PM concepts (project, project management)
- Projects and Strategic Planning
- Difference between projects and operations
- Project success and failure factors
- Project stakeholders and governance

Introduction

- *A project is a problem scheduled for solution.*

Introduction

- Examples of Projects:
  - Software development
  - Hardware (Embedded systems) development
  - System Integration (PLC based systems)
  - Network design / upgrade
  - Planned maintenance
  - Film Production
  - Product development e.g. Driverless vehicle
  - Communication campaigns e.g. Voter education
  - Designing and construction a building
  - Launch of a new product (marketing)
  - Disaster recovery i.e. damage caused by Idai
  - FIFA 2023 World Cup in Qatar
  - Wedding ceremony

Introduction

- Why undertake projects:
  1. Growth or to exploit a business opportunity
  2. Solving problems - Development purposes
     - Handling Crisis
  3. Research purposes
  4. Procedural or Government regulations e.g. CENSUS, ELECTIONS
  5. Manage Change (internally or externally)
  6. Self gratification

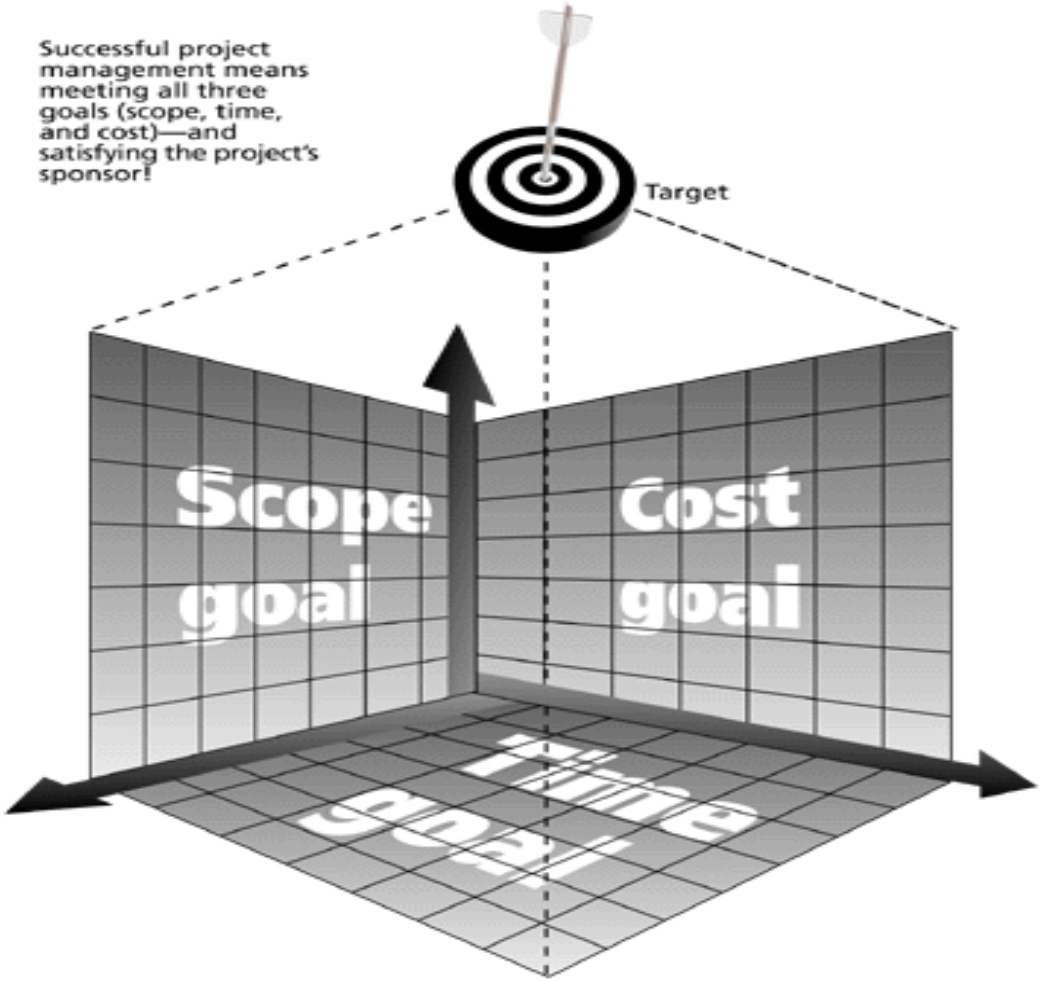
Introduction

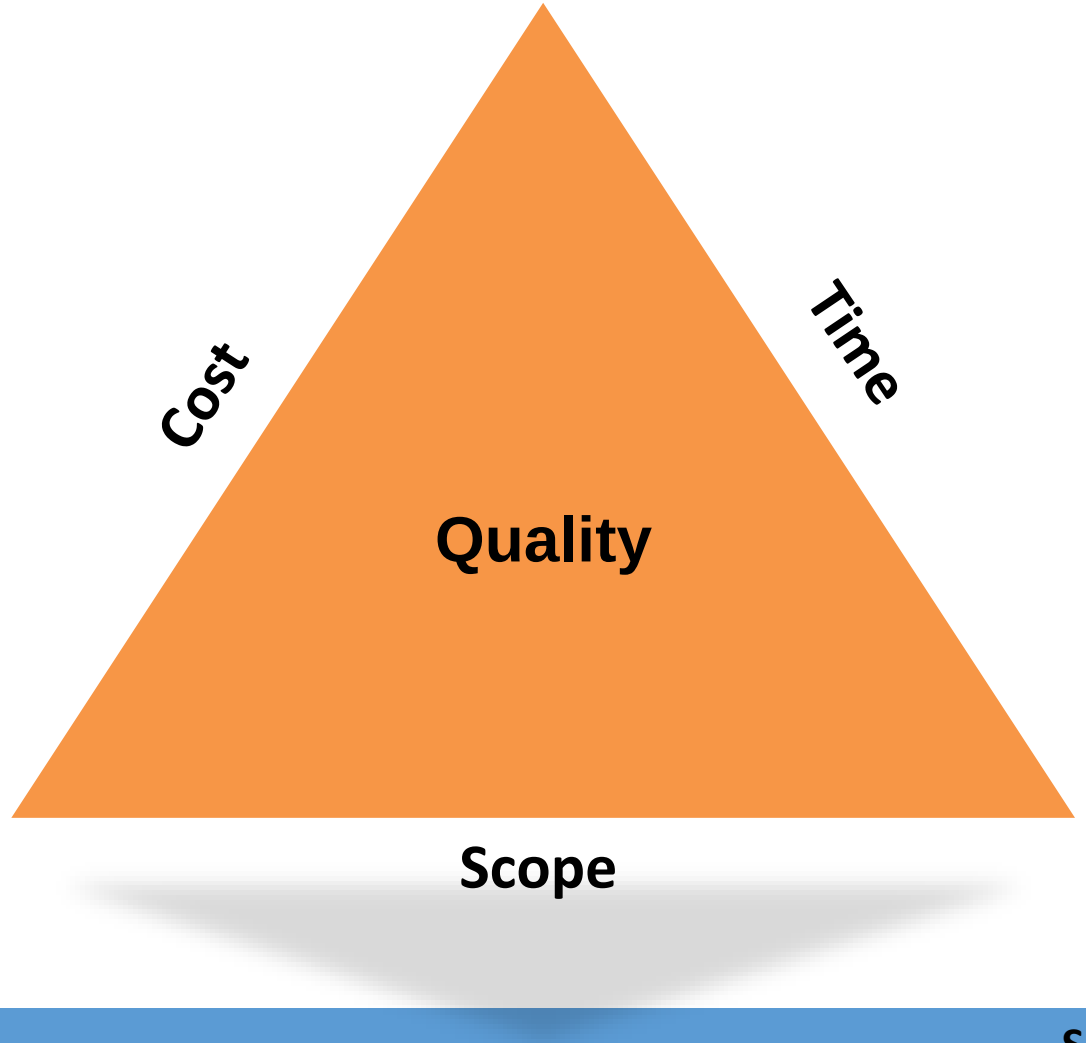
- The U.S.A spends $2.3 trillion (a quarter of the nation's GDP) on projects every year.
- The world as a whole spends nearly $10 trillion of its $40.7 trillion gross product on projects of all kinds.
- More than 16 million people regard project management as their profession.
- More than half a million new IT app development projects were initiated during 2001, up from 300,000 in 2000.

Introduction

- Managing a project typically includes:
  - Identifying requirements;
  - Addressing or exceeding the stakeholder needs, concerns, and expectations;
  - Initiating and maintaining communication;
  - Balancing the competing *project constraints*, which include, but are not limited to: *Scope, Quality, Schedule, Budget, Resources and Risks.*

Introduction





Introduction

- The development of the project management plan is an iterative activity and is progressively elaborated throughout the project's life cycle.
- Progressive elaboration involves continuously improving and detailing a plan as more detailed and specific information and more accurate estimates become available.

Definition of key PM concepts

- The PMBOK defines a project as *a temporary endeavour undertaken to create a unique product or service or result (outcome)*

Definition of key PM concepts

- The temporary nature of projects:
  - Indicates a definite beginning and end.
  - Temporary does not necessarily mean the duration of the project is short.
  - Temporary does not typically apply to the product, service, or result created by the project; most projects are undertaken to create a lasting outcome (that outlives the project).

Definition of key PM concepts

- A project can result in:
  - A *product or improved product* that can be either a component of another item e.g. chip producers, an enhancement of an item, or an end item in itself;
  - A *service or improved service* or a capability to perform a service;
  - A *result*, such as an outcome or document (e.g. behaviour change or a research project that develops knowledge).

Definition of key PM concepts

- A project is *a unique set of co-ordinated activities, with definite starting and finishing points, undertaken by an individual or organisation to meet specific objectives within defined schedule, cost and performance parameters*. – BS 6079-1 'Guide to Project Management'.

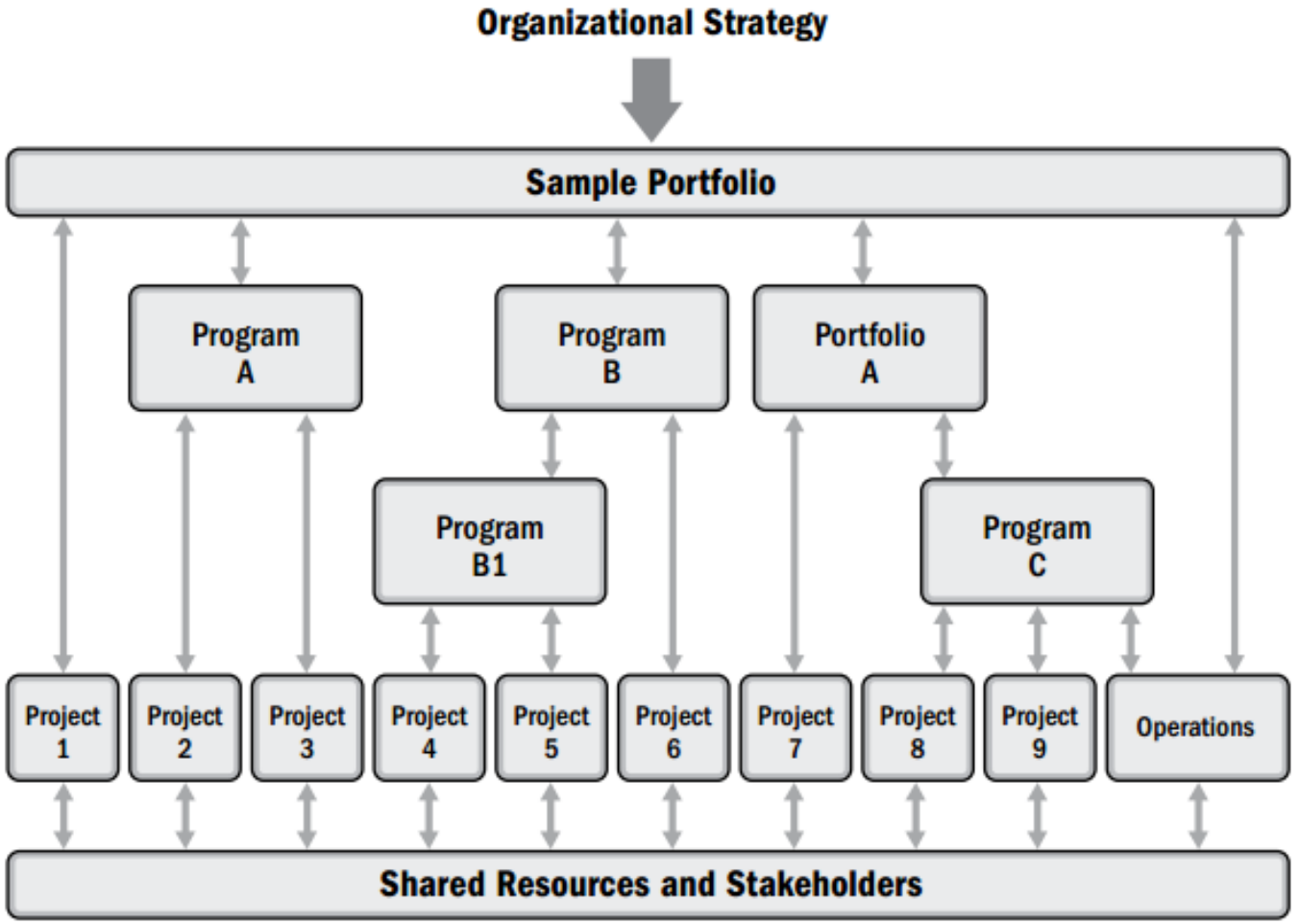
Definition of key PM concepts

- Project management is *the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.* - PMBOK

Definition of key PM concepts

- Project management is accomplished through the appropriate application and integration of the 47 PM processes, which are categorized into 5 Process Groups and 10 knowledge areas.
- The 5 Process Groups are:
    1. Initiating,
    2. Planning,
    3. Executing,
    4. Monitoring and Controlling,
    5. Closing.

Definition of key PM concepts



Definition of key PM concepts

- A *program* is defined as a group of related projects, subprograms and program activities managed in a coordinated way to obtain benefits not available from managing them individually.
- Projects within a program are related through the common outcome or collective capability.

Definition of key PM concepts

- A *portfolio* refers to projects, programs, sub-portfolios, and operations managed as a group to achieve strategic objectives.
- The projects or programs of the portfolio may not necessarily be interdependent or directly related.

Projects and Strategic Planning

- Projects are often used to directly or indirectly achieve strategic objectives in organisations.
- Projects are typically authorized and undertaken as a result of one or more of the following strategic considerations:

Projects and Strategic Planning

- Market demand (e.g. Econet's Ecocash or a automobile company a project to build more fuel-efficient cars in response to gasoline shortages)
- Strategic opportunity/ business need (e.g., Econet's DPA EV charging stations project or a training company creating a new course to increase its revenue)
- Social need (e.g., an NGO authorizing a project to provide potable water systems, latrines, and sanitation education to communities);

Projects and Strategic Planning

- Environmental consideration (e.g., TESLA or a public company authorizing a project to reduce pollution);
- Customer request (e.g., an electric utility authorizing a project to build a new substation to serve a new industrial park);
- Technological advance (e.g., Apple authorizing a new project to enter the EV industry);
- Legal requirement (e.g., a treatment plant authorizing a project to dispose waste chemicals properly).

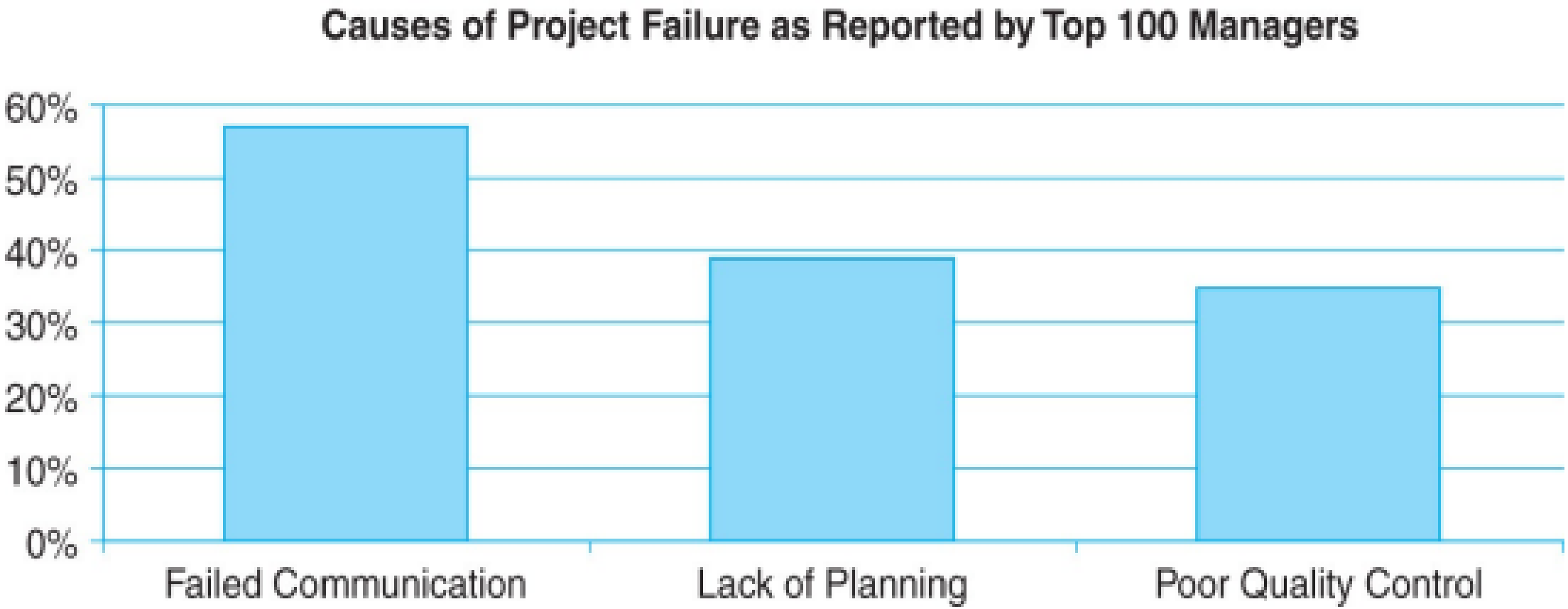
Difference between Projects & Operations

- Operations management is responsible for overseeing, directing, and controlling business operations.
- Operations support the day-to-day business, and are necessary to achieve strategic and tactical goals of the business.
- Examples include: production, manufacturing, accounting, software support and maintenance.

Difference between Projects & Operations

- Though temporary in nature, projects can help achieve the organisational goals when they are aligned with the organisation's strategy.
- Unlike the ongoing nature of operations, projects are temporary endeavours.

Project success and failure factors



Project success and failure factors

- Lack of Business Alignment. Insufficient attention to checking that a valid Business Case exists for the project
- Inadequate planning and co-ordination of resources, leading to poor scheduling
  - Poor scoping, leading to confusion over what the project is expected to achieve
  - Poor scheduling (estimation of duration and costs) – cost and schedule overrun
- Lack of communication with stakeholders leading to incorrect products

Project success and failure factors

- Inadequate definition and lack of acceptance of project management roles and responsibilities,
- Lack of Accountability within the Project
- Lack of quality control, resulting in the delivery of products that are unacceptable or unusable.
- Insufficient attention to quality at the outset and during development

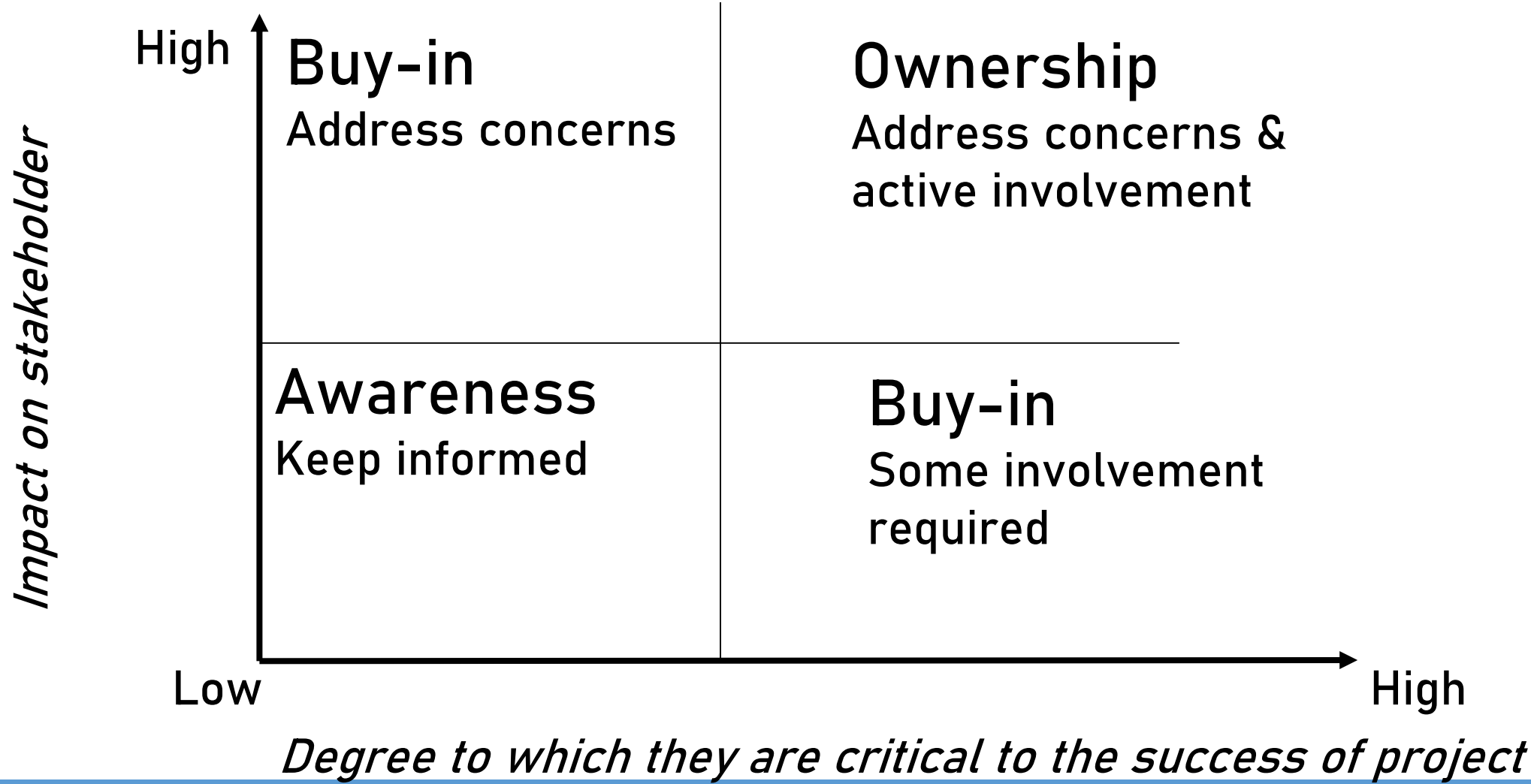
Project stakeholders and governance

- A stakeholder is an individual, group, or organisation who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project.

Project stakeholders and governance

- *Key or Primary Stakeholders* – Directly involved in the project
- *Secondary Stakeholders* – Exert influence over the project
- *Tertiary Stakeholders* – Affected by or may affect the project

Project stakeholders and governance



Project stakeholders and governance

- Project Governance is the framework by which an organisation doing a project is directed & controlled.
- Project governance includes:
  1. defining the management structure;
  2. the policies, processes and methodologies to be used;
  3. limits of authority for decision-making;
  4. stakeholder responsibilities and accountabilities;
  5. interaction(s) such as reporting and the escalation of issues or risks.

Introduction to Project Management