
GSOE9820 – Engineering Project Management

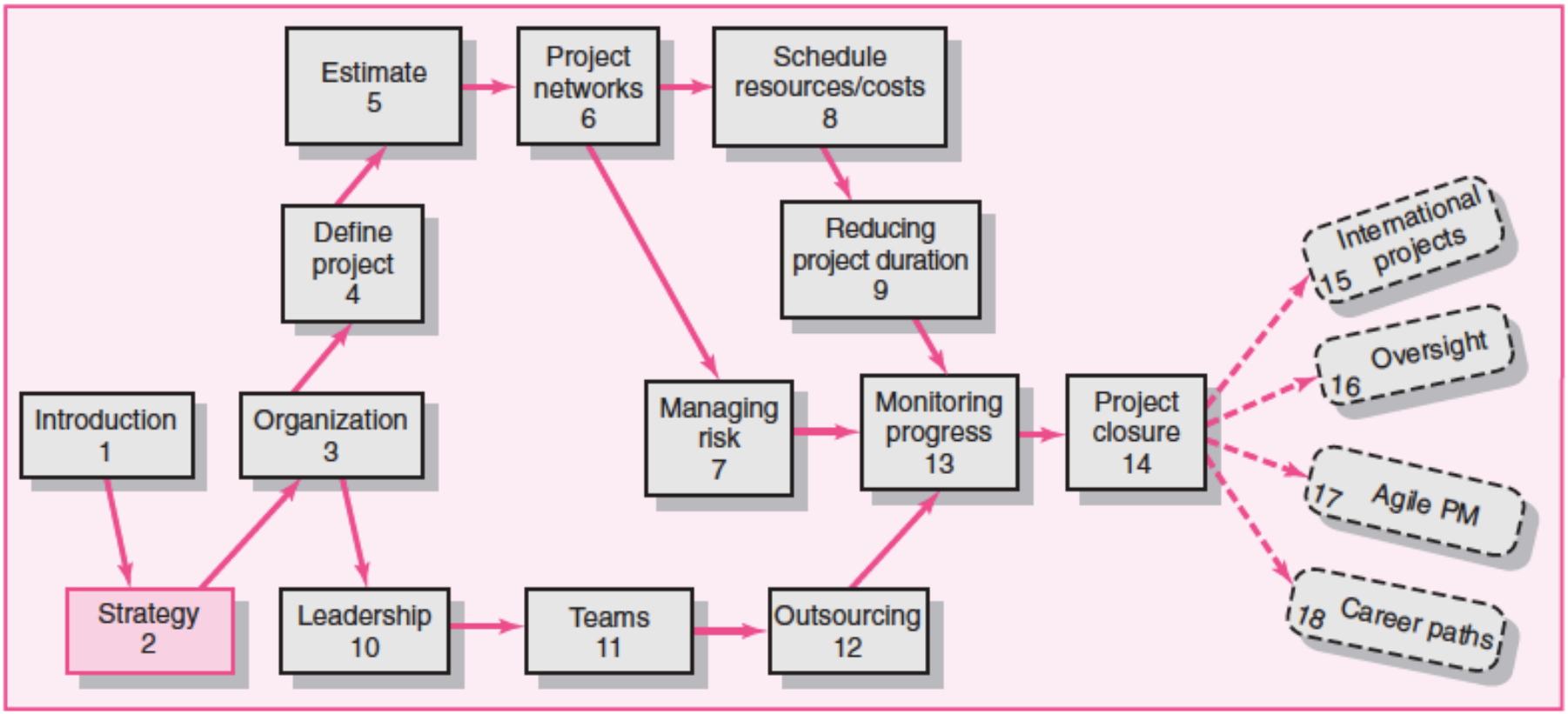
Corey Martin

Never Stand Still | Faculty of Engineering | School of Mechanical and Manufacturing Engineering

# Week 2

# Organisational strategy and project selection

# Course Road Map




Reference: Project management – the managerial process 5th ed.

# What is strategy?

A plan of action designed to achieve a long-term or an overall aim.

http://www.oxforddictionaries.com

A careful plan or method for achieving a particular goal usually over a long period of time.

http://www.merriam-webster.com

# Organisational strategy

An expression of how an organization needs to evolve over time to meet its objectives along with a detailed assessment of what needs to be done.

Developing an organizational strategy for a business involves first comparing its present state to its targeted state to define differences, and then stating what is required for the desired changes to take place.

# Where does strategy fit?

# Examples of some common organisational strategies

- To increase the size of the organisation to realize economies of scale and increase market share.
- To move into new areas of focus to utilize the organisation's existing resources, as the organisation's primary markets mature or decline.
- To acquire or merge with similar organisations in order to reduce competition.

# Examples of some common organisational strategies

- Creating products or services that are perceived in the marketplace to be so new, so different or so superior (often by applying cutting-edge information technology) that they expand “performance boundaries” and make existing products or services obsolete.

- To provide the lowest cost solutions in the marketplace.

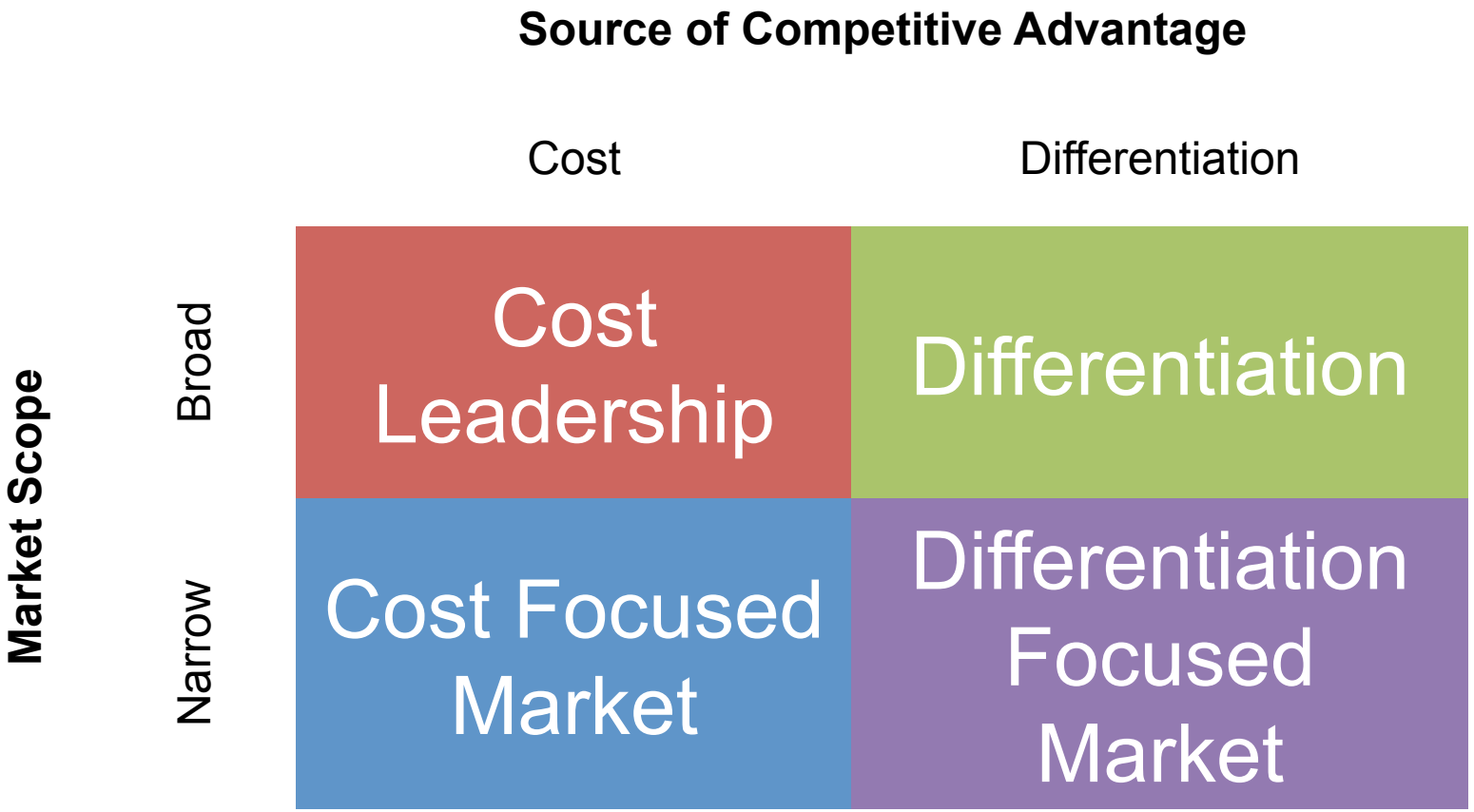
# Characteristics of objectives

| | | |
|---|---|---|
| **S** | Specific | Be specific in targeting an objective |
| **M** | Measureable | Establish a measurable indicator(s) of progress |
| **A** | Assignable | Make the objective assignable to one person for completion |
| **R** | Realistic | State what can realistically be done with available resources |
| **T** | Time related | State when the objective can be achieved, that is, duration |

# Example - UNSW

http://www.unsw.edu.au/sites/default/files/documents/UNSW3268_B2B_Design_AW3.pdf

# Porter’s generic strategy model




**Source :** Porter, Michael E. (1985). *Competitive Advantage*.

# Why is strategy important for project managers

- Project managers must respond to changes with appropriate decisions about future projects and adjustments to current projects.

- Project managers who understand their organisation's strategy can become effective advocates of projects aligned with the firm's mission.

# Common mistakes when projects do not align with strategy

- Focusing on problems or solutions with low strategic priority.
- Focusing on the immediate customer rather than the whole market place and value chain.
- Overemphasizing technology that results in projects that pursue exotic technology that does not fit the strategy or customer need
- Trying to solve customer issues with a product or service rather than focusing on the 20% with 80% of the value (Pareto's Law).
- Engaging in a never-ending search for perfection only the project team really cares about.

# Strategic management

Strategic management is the process of assessing “WHAT an organisation is” and deciding “WHERE the organisation would like to be in the future” and and “HOW to achieve this using the available resources”.

End result is often to improve its competitive position/competitive advantage

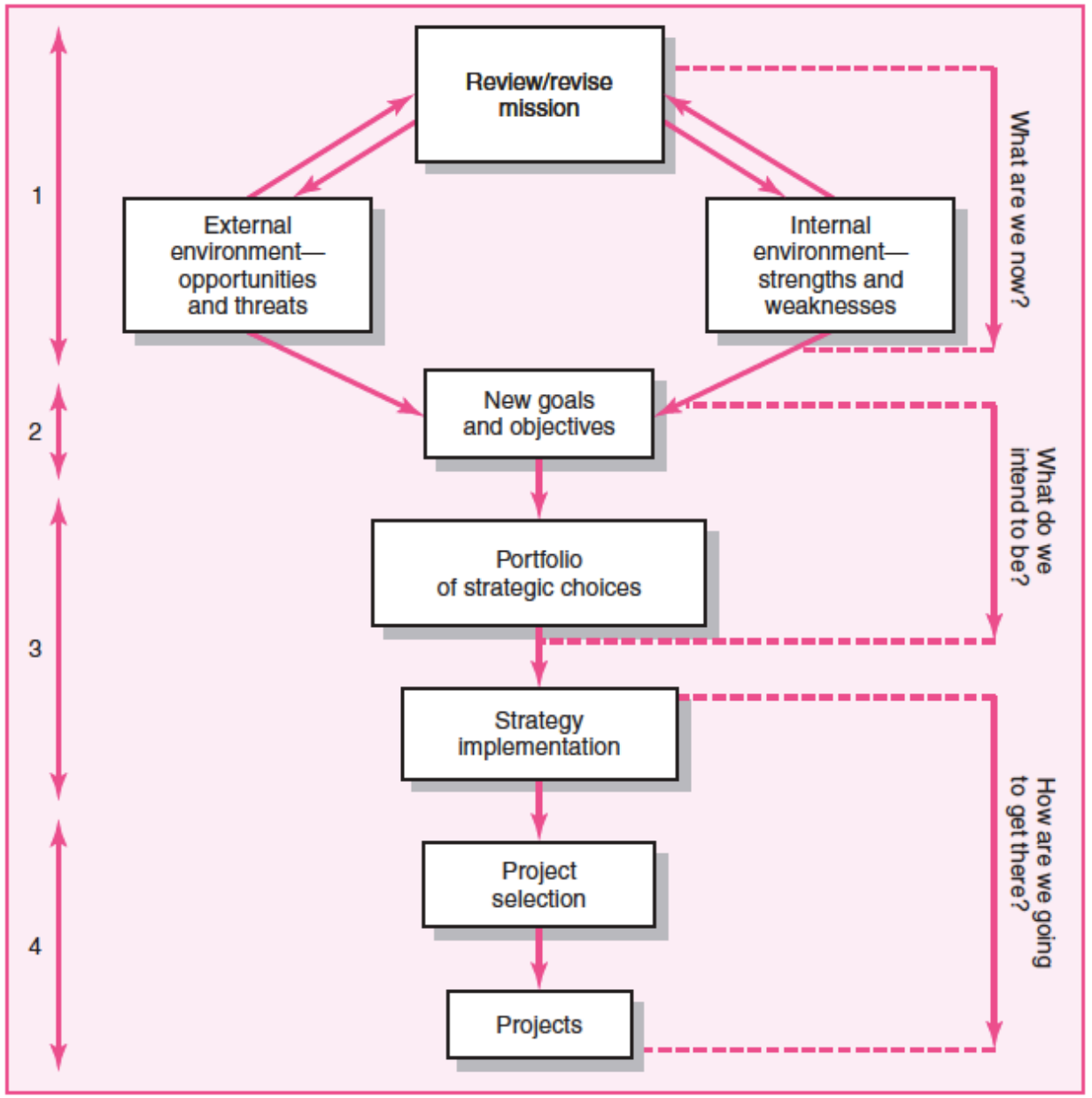
# Strategic management process

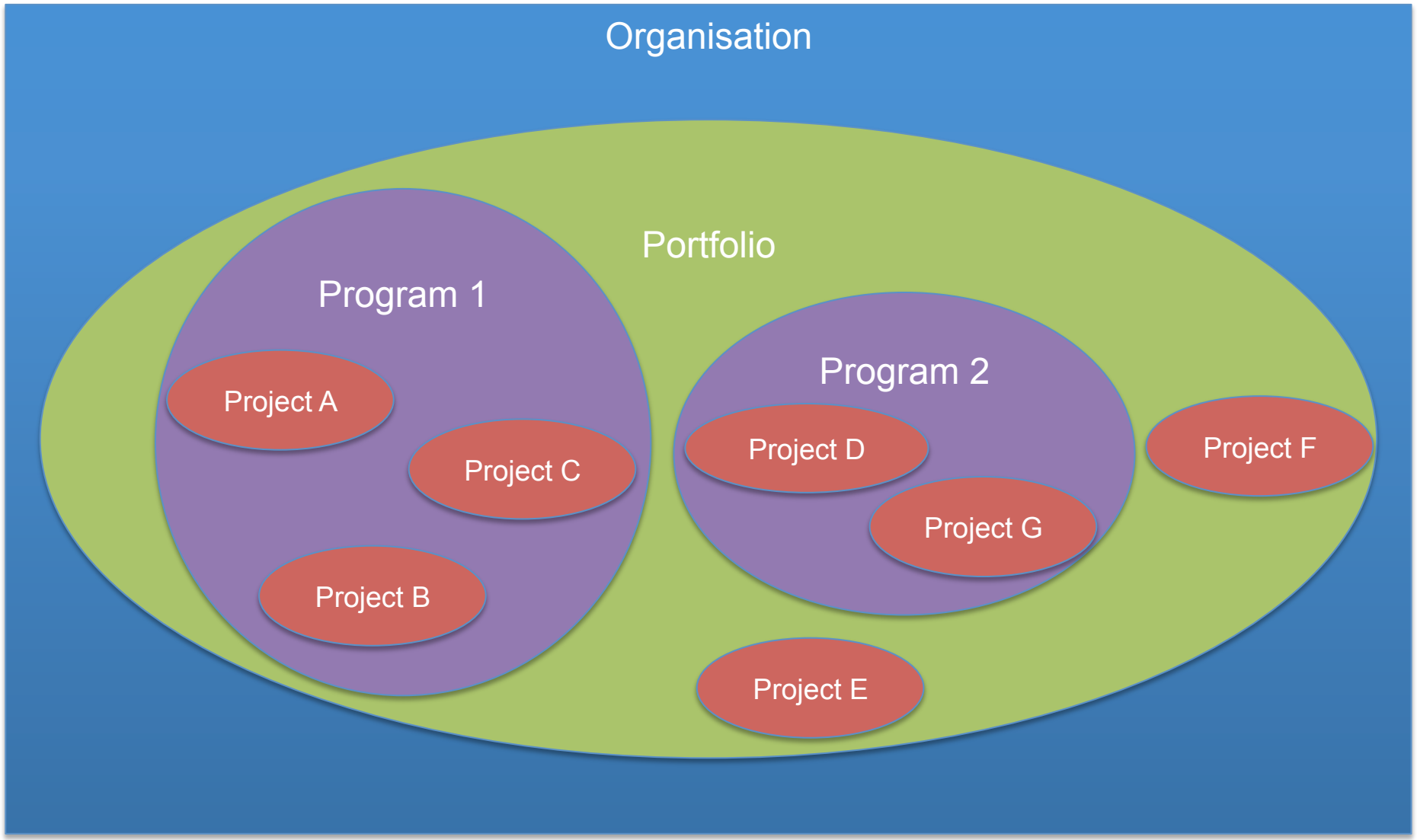
1 - Review and define the organisational mission.

2 - Set long-range goals and objectives.

3 - Analyse and formulate strategies to reach objectives.

4 - Implement strategies through projects.


Review/revise mission
External environment—opportunities and threats
Internal environment—strengths and weaknesses
New goals and objectives
Portfolio of strategic choices
Strategy implementation
Project selection
Projects
1
2
3
4
What are we now?
What do we intend to be?
How are we going to get there?


Organisation
Portfolio
Program 1
Project A
Project C
Project B
Program 2
Project D
Project G
Project F
Project E

# Portfolio management system

The aim of a portfolio management system is to ensure that projects are aligned with strategic goals and prioritised appropriately.

It can often be the link between strategic organisation goals and the project.

# Benefits of portfolio management

- Builds discipline into project selection process.
- Links project selection to strategic metrics.
- Prioritizes project proposals across a common set of criteria, rather than on politics or emotion.
- Allocates resources to projects that align with strategic direction.
- Balances risk across all projects.
- Justifies killing projects that do not support organization strategy.
- Improves communication and supports agreement on project goals.

# Components of a portfolio management system

- Project classification
- Selection criteria
- Proposal sourcing
- Proposal evaluation
- Ongoing management

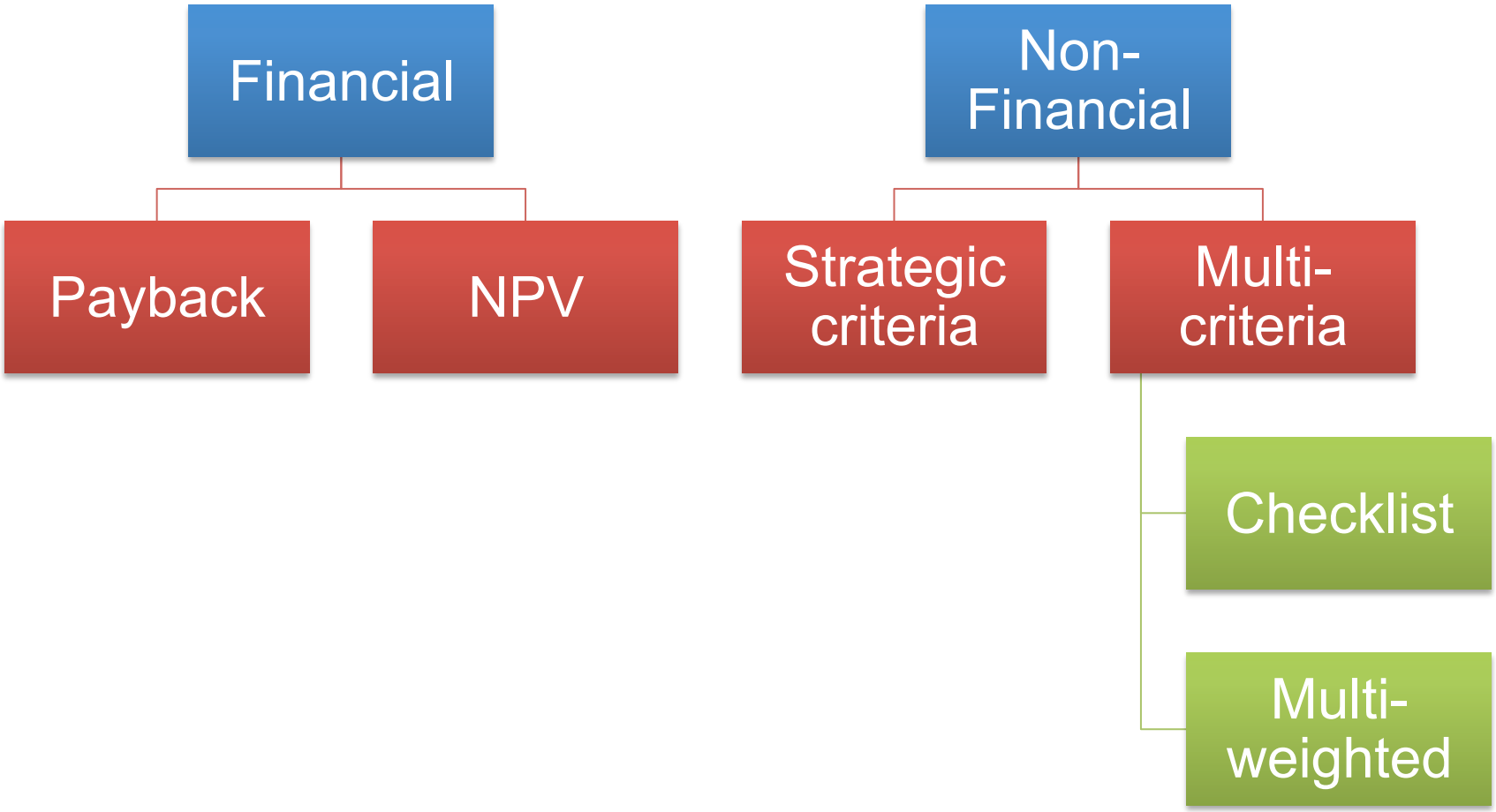
# Project classification

Compliance

Strategic

Operational

# Selection criteria



# Time value of money

Time value of money explains the change in the amount of money over time for funds owed by or owned by a corporation (or individual).

- Corporate investments are expected to earn a return
- Investment involves money
- Money has a ‘time value’

# Commonly used financial symbols

***t*** = time, usually in periods such as years or months

***P*** = value or amount of money at a time *t* designated as present or *t*=0

***F*** = value or amount of money at some future time, such as at *t* = *n* periods in the future

***A*** = series of consecutive, equal, end-of-period amounts of money

***n*** = number of interest periods; years, months

***i*** = “interest rate” or “rate of return” per time period

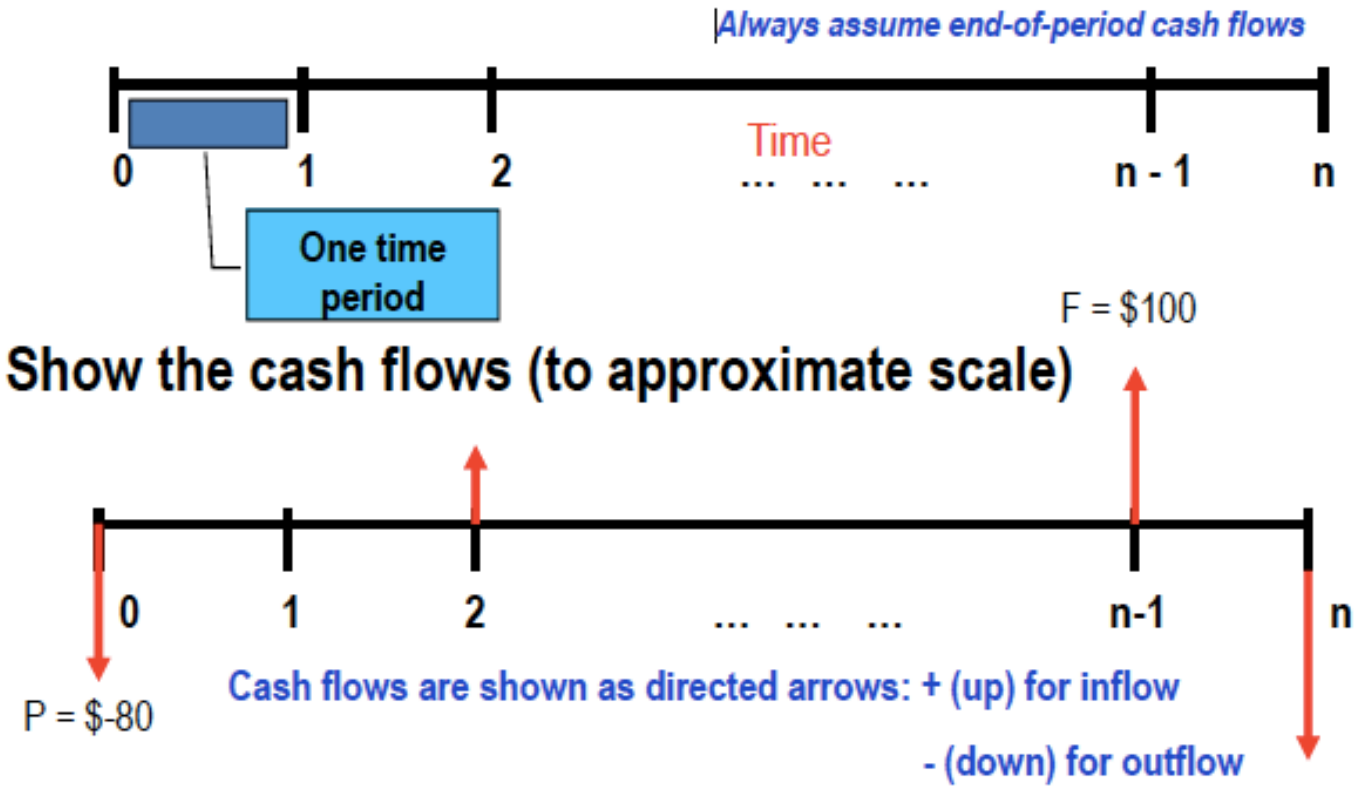
# Cash Flows: Terms

- Cash Inflows – Revenues (R), receipts, incomes, savings generated by projects and activities that flow in. (plus sign used).
- Cash Outflows – Disbursements (D), costs, expenses, taxes caused by projects and activities that flow out. (Minus sign used).
- Net Cash Flow (NCF) for each time period,

$$NCF = R - D$$

# Cash flow diagrams

What a typical cash flow diagram might look like:



# Economic equivalence

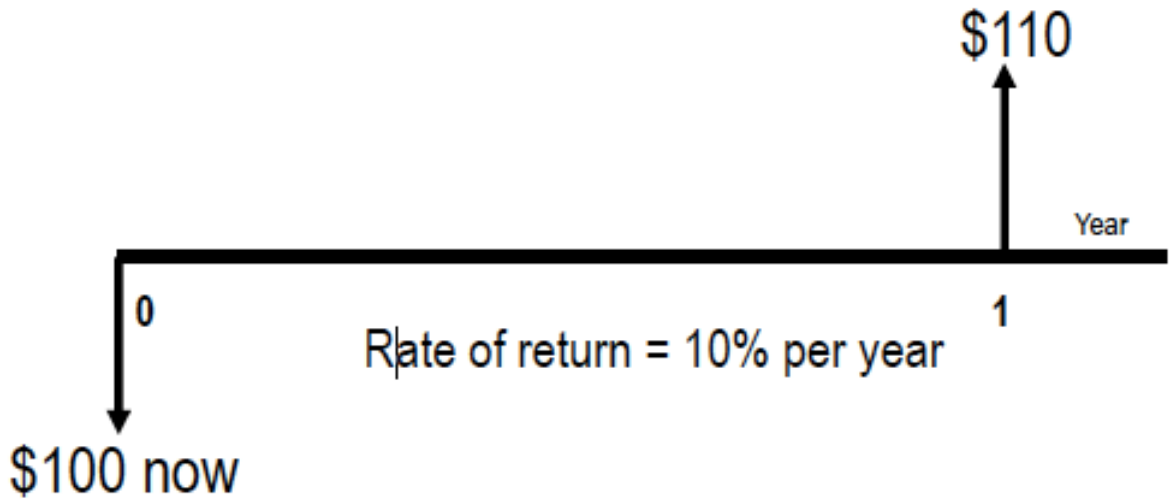
Combination of interest rate (rate of return) and time value of money to determine different amounts of money at different points in time that are economically equivalent.

How it works:

Use rate $i$ and time $t$ in upcoming relations to move money (values of $P$, $F$ and $A$) between time points $t = 0, 1, \ldots,$ to make them equivalent (not equal) at the rate $i$.

# Example of equivalence

Different sums of money at different times may be equal in economic value at a given rate




$100 now is economically equivalent to $110 one year from now, if the $100 is invested at a rate of 10% per year.

# Payback model

Measures the time the project will take to recover the project investment.

- Uses more desirable shorter paybacks.
- Emphasizes cash flows, a key factor in business

Limitations of Payback:

- Ignores the time value of money
- Assumes cash inflows for the investment period (and not beyond)
- Does not consider profitability

Payback model is often used as an initial method to 'screen' the alternatives.

$$Payback\ period\ (yrs) = \frac{Estimated\ Project\ Cost}{Annual\ Savings}$$

# Net Present Value (NPV)

- Calculate the present worth of each alternative project at a specific interest rate.
- Equal-service or equal-duration of the projects is assumed.
- Selection criterion: Select alternative with the most favourable present worth value, that is, the *numerically largest* NPV.

$$Project\ NPV = P + \sum_{t=1}^{n} \frac{Net\ cash\ flow}{(1+i)^{t}}$$

# Strategic criteria examples

- To capture larger market share
- To make it difficult for competitors to enter the market
- To develop an enabler product, which by its introduction will increase sales in more profitable products
- To develop core technology that will be used in next generation products
- To reduce dependency on unreliable suppliers
- To prevent government intervention and regulation

# Multi-Criteria selection models

## Checklist model

- Uses a list of questions to review potential projects and to determine their acceptance or rejection.
- Fails to answer the relative importance or value of a potential project and doesn't to allow for comparison with other potential projects.

# Checklist model example

| Topic | Question |
|---|---|
| Strategy/alignment | What specific organization strategy does this project align with? |
| Driver | What business problem does the project solve? |
| Success metrics | How will we measure success? |
| Sponsorship | Who is the project sponsor? |
| Risk | What is the impact of not doing this project? |
| Risk | What is the project risk to our organization? |
| Risk | Where does the proposed project fit in our risk profile? |
| Benefits, value, ROI | What is the value of the project to this organization? |
| Benefits, value, ROI | When will the project show results? |
| Objectives | What are the project objectives? |
| Organization culture | Is our organization culture right for this type of project? |
| Resources | Will internal resources be available for this project? |
| Approach | Will we build or buy? |
| Schedule | How long will this project take? |
| Schedule | Is the time line realistic? |
| Training/resources | Will staff training be required? |
| Finance/portfolio | What is the estimated cost of the project? |
| Portfolio | Is this a new initiative or part of an existing initiative? |
| Portfolio | How does this project interact with current projects? |
| Technology | Is the technology available or new? |

# Multi-weighted scoring model

- Uses several weighted qualitative and/or quantitative selection criteria to evaluate project proposals.
- Allows for comparison of projects with other potential projects

# Multi-weighted scoring model

| Criteria / Weight | Stay within core competencies | Strategic fit | Urgency | 25% of sales from new products | Reduce defects to less than 1% | Improve customer loyalty | ROI of 18% plus | Weighted total |
|---|---|---|---|---|---|---|---|---|
| | 2.0 | 3.0 | 2.0 | 2.5 | 1.0 | 1.0 | 3.0 | |
| Project 1 | 1 | 8 | 2 | 6 | 0 | 6 | 5 | 66 |
| Project 2 | 3 | 3 | 2 | 0 | 0 | 5 | 1 | 27 |
| Project 3 | 9 | 5 | 2 | 0 | 2 | 2 | 5 | 56 |
| Project 4 | 3 | 0 | 10 | 0 | 0 | 6 | 0 | 32 |
| Project 5 | 1 | 10 | 5 | 10 | 0 | 8 | 9 | 102 |
| Project 6 | 6 | 5 | 0 | 2 | 0 | 2 | 7 | 55 |
| ⋮ | | | | | | | | |
| Project *n* | 5 | 5 | 7 | 0 | 10 | 10 | 8 | 83 |

# Proposal sourcing

Internal

– Within the organization


External

– From external sources (contractors and vendors)

– Request For Proposal (RFP) *(Refer to Appendix 2.1 for more detailed information)*

# Proposal evaluation methods

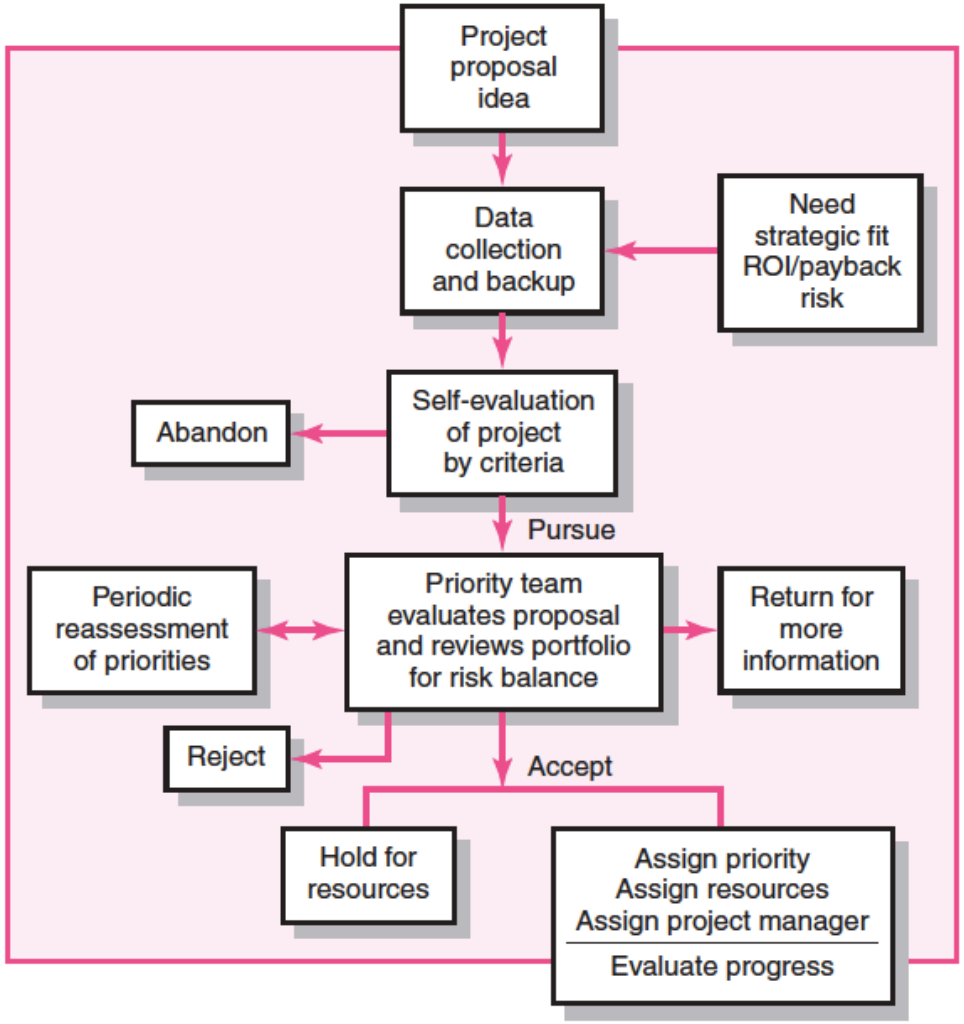
Project screening process

Priority analysis

Project portfolio matrix

Project relativity matrix

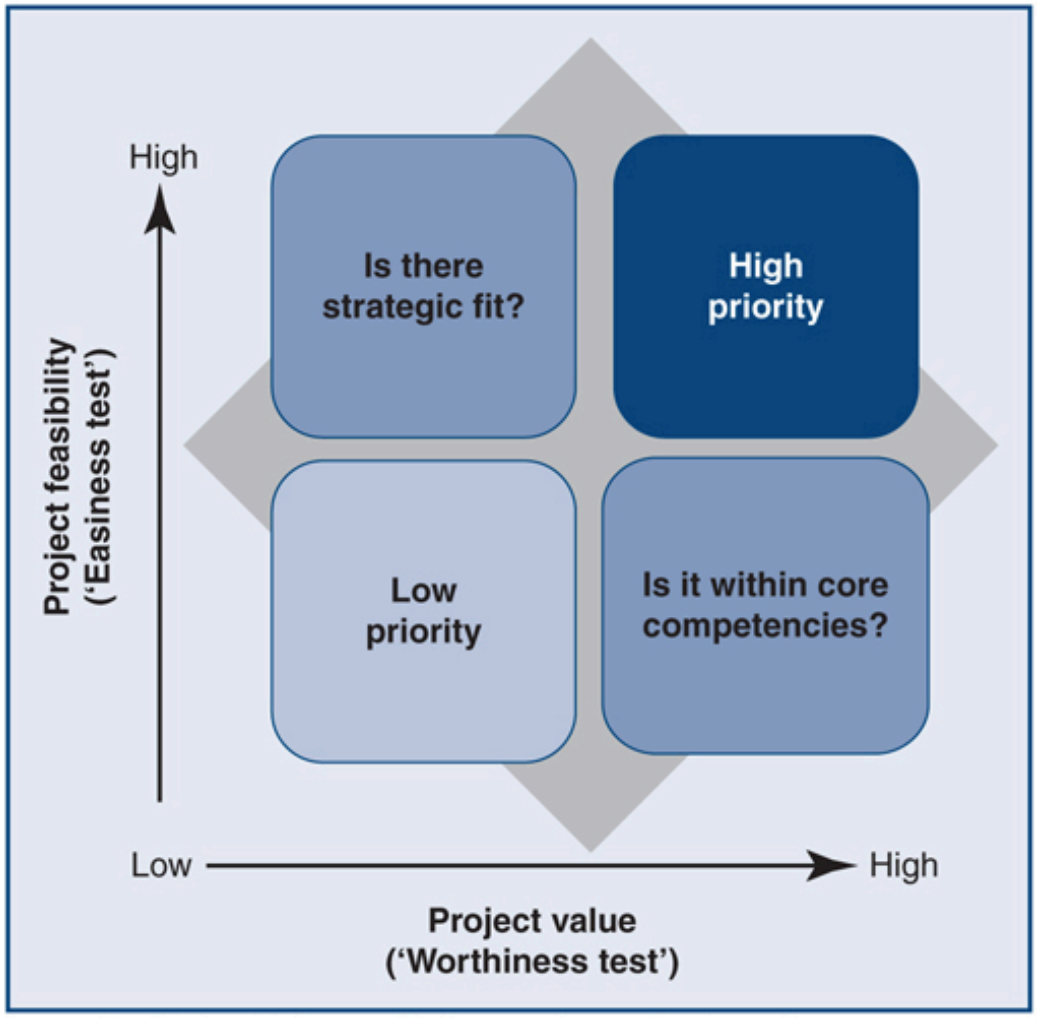
# Sample project screening process



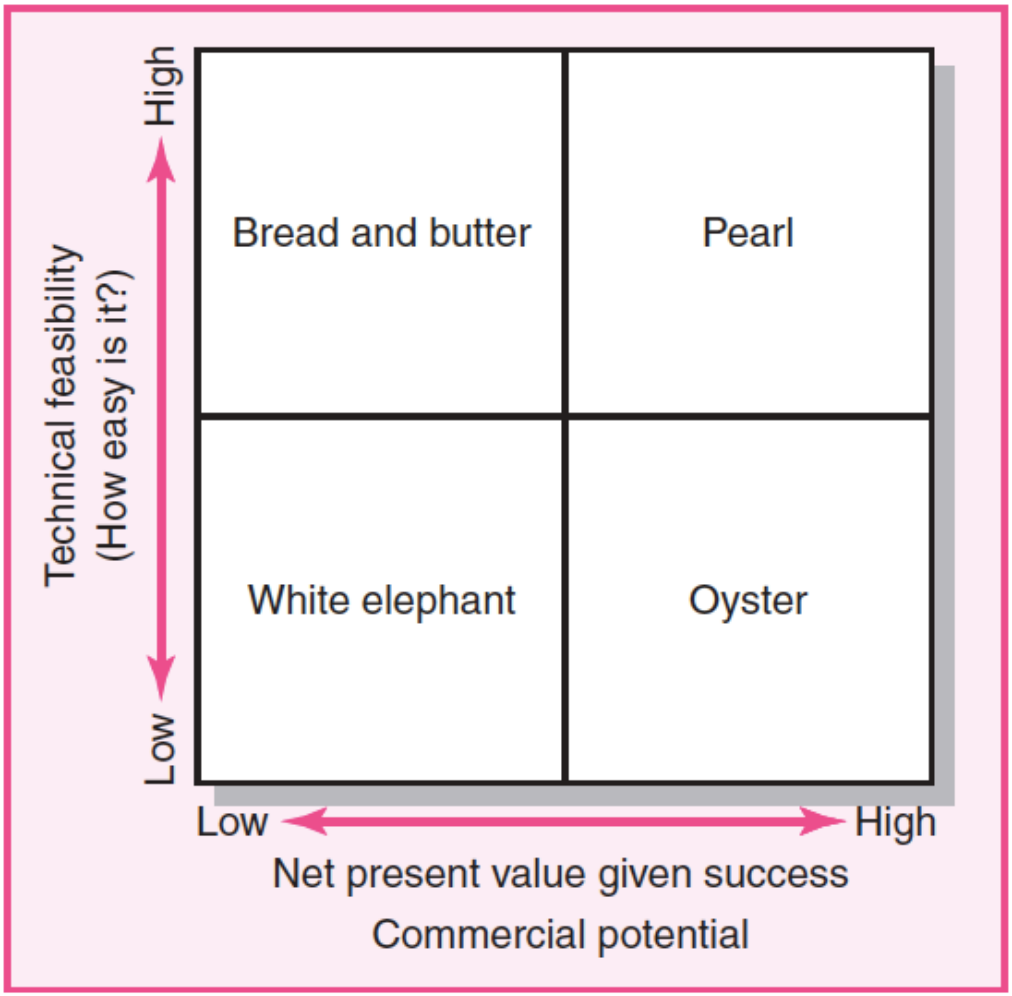
# Sample Priority analysis

| | | | Project number | | | |
|---|---|---|---|---|---|---|
| **Must objectives** | | **Must meet if impacts** | **...26** | **27** | **28** | **29** |
| All activities meet current legal, safety, and environmental standards | | Yes-Meets objective<br>No-Does not meet obj<br>N/A-No impact | **n/a** | | | |
| All new products will have a complete market analysis | | Yes-Meets objective<br>No-Does not meet obj<br>N/A-No impact | **yes** | | | |
| | | | | | | |
| **Want objectives** | **Relative Importance 1-100** | **Single project impact definitions** | **Weighted score** | **Weighted score** | **Weighted score** | **Weighted score** |
| Provides immediate response to field problems | **99** | 0 ≤ Does not address<br>1 = Opportunity to fix<br>2 ≥ Urgent problem | **99** | | | |
| Create $5 million in new sales by 20xx | **88** | 0 < $100,000<br>1 = $100,000–500,000<br>2 > $500,000 | **0** | | | |
| Improve external customer service | **83** | 0 ≤ Minor impact<br>1 = Significant impact<br>2 ≥ Major impact | **166** | | | |
| | | | | | | |
| | | | | | | |
| Total weighted score | | | | | | |
| Priority | | | | | | |

# Project portfolio matrix



# Project relativity matrix



# Ongoing portfolio management

Involves monitoring and adjusting selection criteria to reflect the strategic focus of the organisation.

**Responsibilities**

- Small organisations – key individual
- Large organisations – project office

**Senior management**

- Provide guidance in selecting criteria that are aligned with the organization's goals
- Decide how to balance available resources among current projects

# Next week …

## Defining Projects