



GSOE9820 – Engineering Project Management

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Never Stand Still

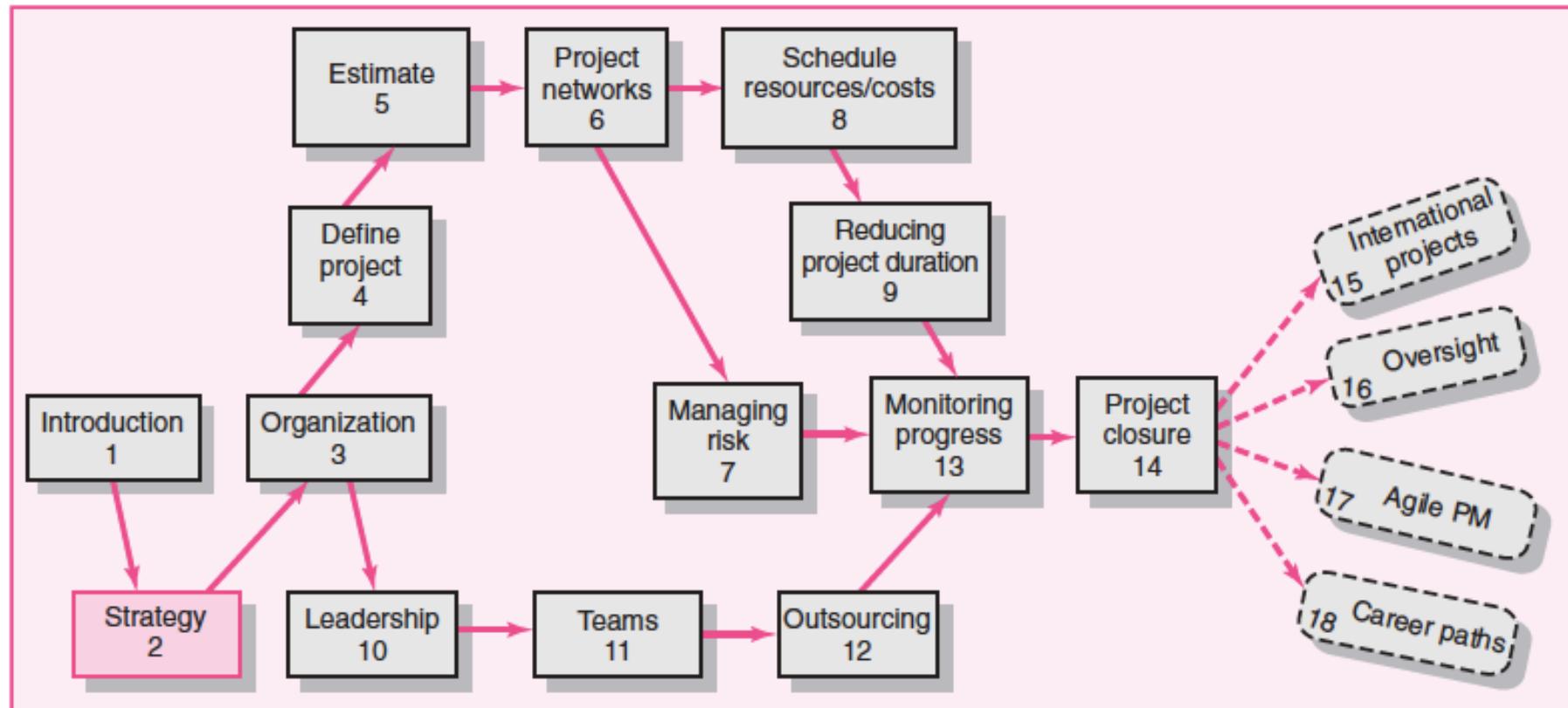
Faculty of Engineering

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

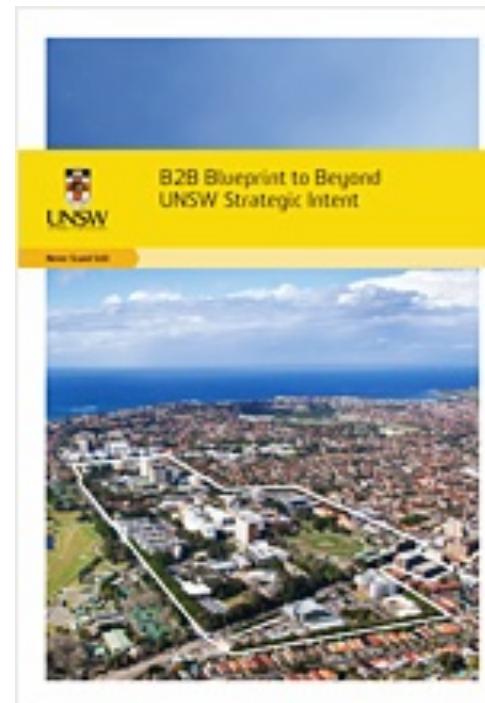
- Creating products or services that are perceived in the marketplace to be so new, so different or so superior (often by applying cutting-edge information technology) that they expand “performance boundaries” and make existing products or services obsolete.
- To provide the lowest cost solutions in 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 “HOW to achieve this using the available resources”.

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

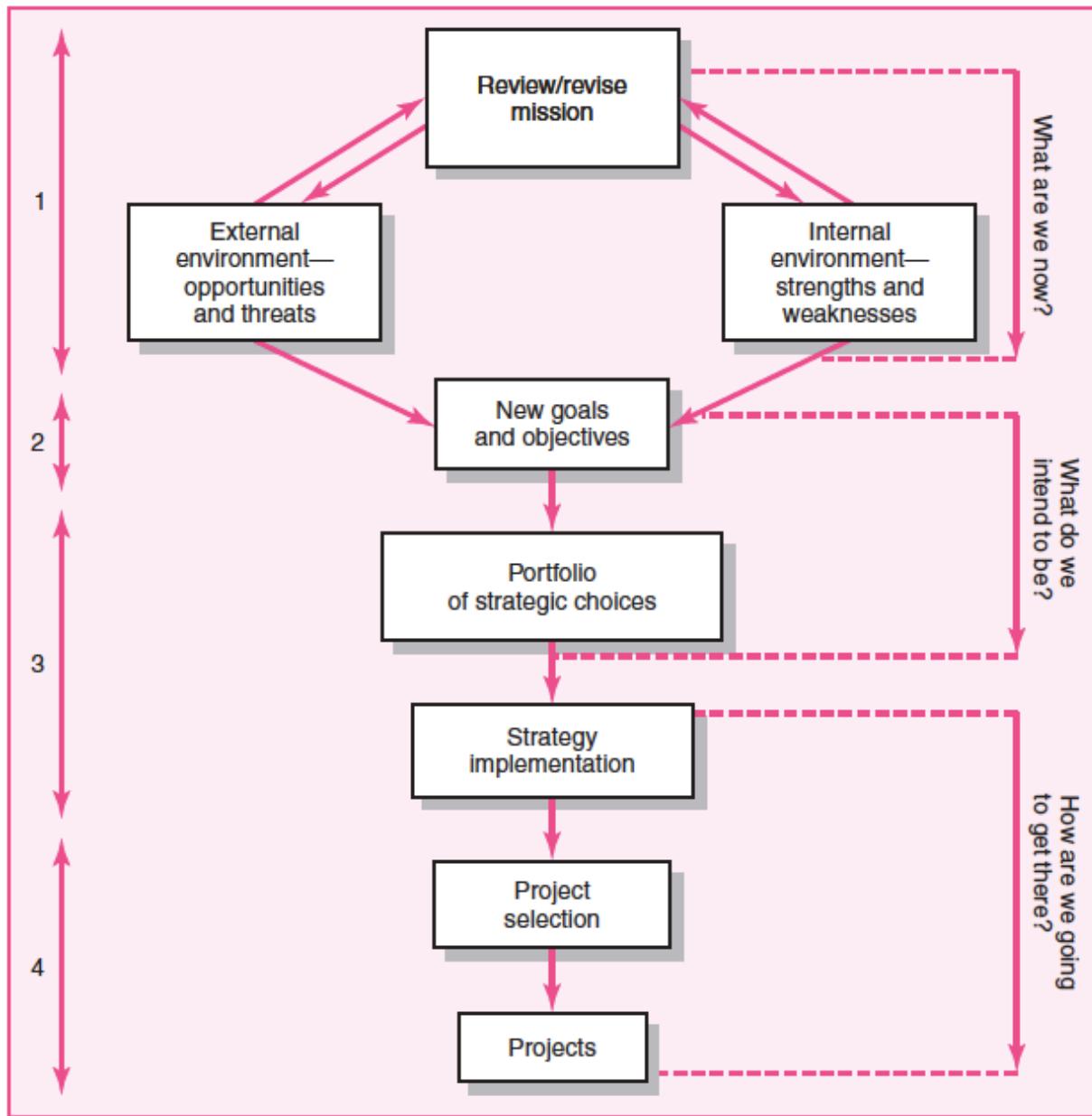
Strategic management process

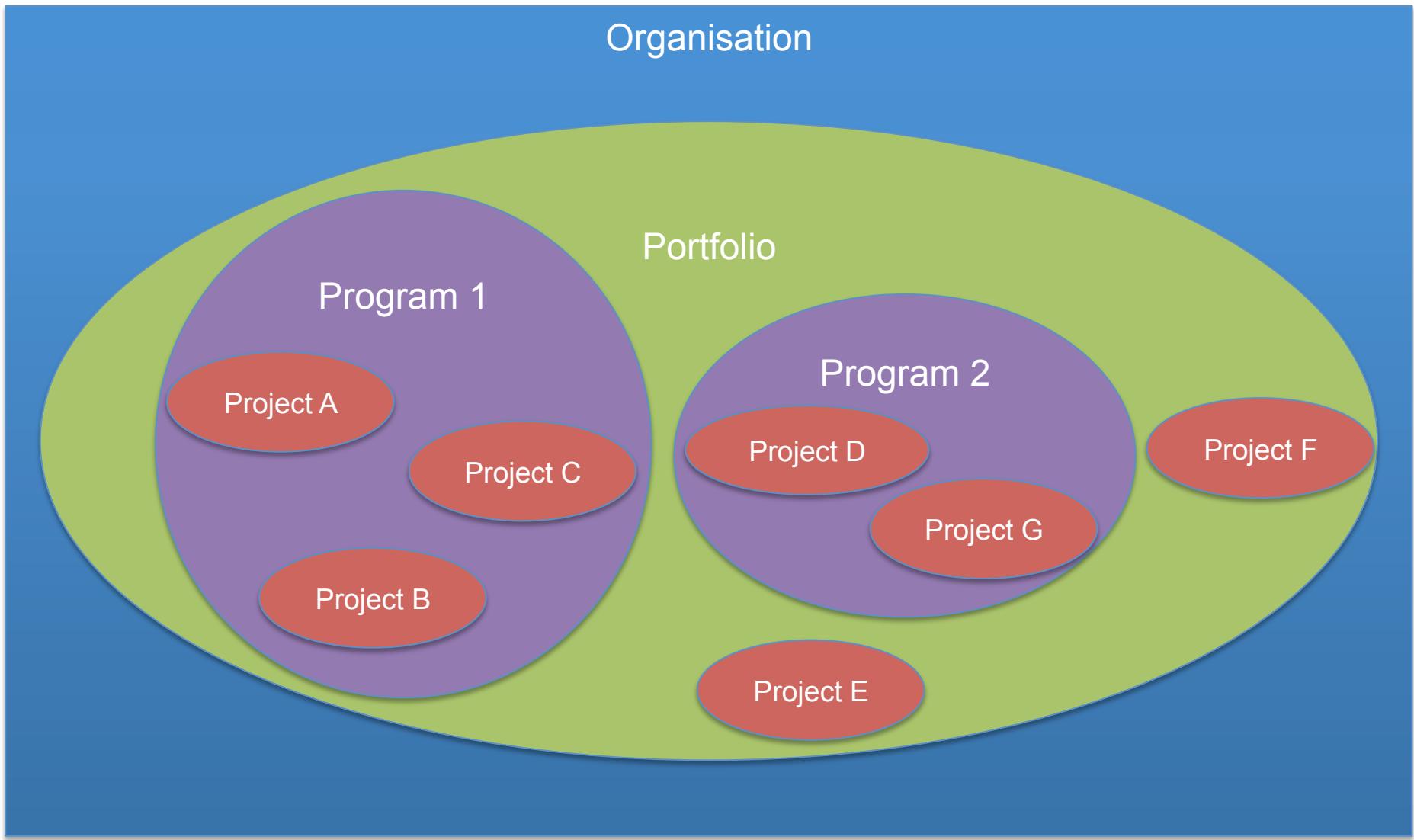
1 - Review and define the organisational mission.

2 - Set long-range goals and objectives.

3 - Analyse and formulate strategies to reach objectives.

4 - Implement strategies through projects.





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

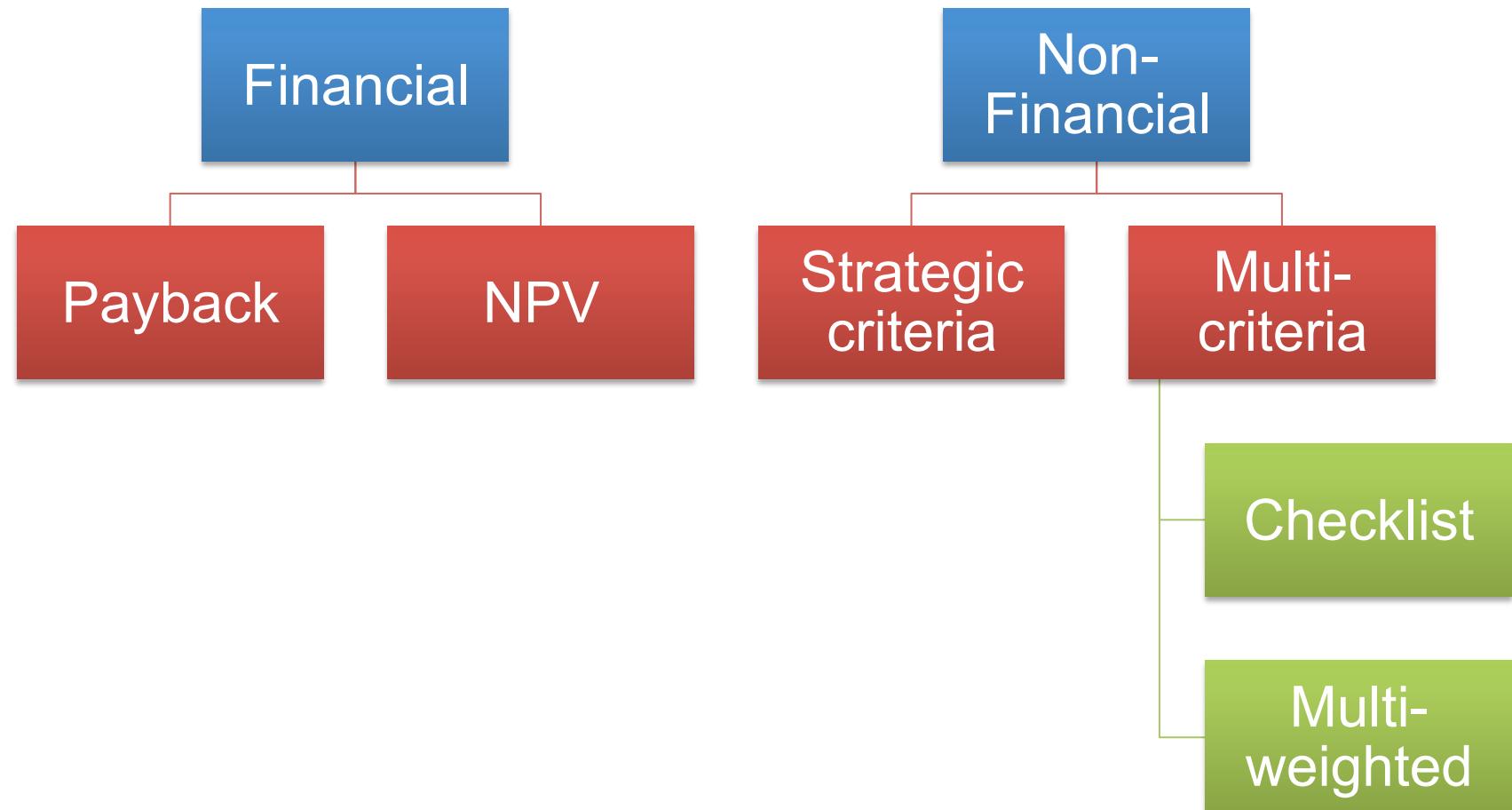
Project classification

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,

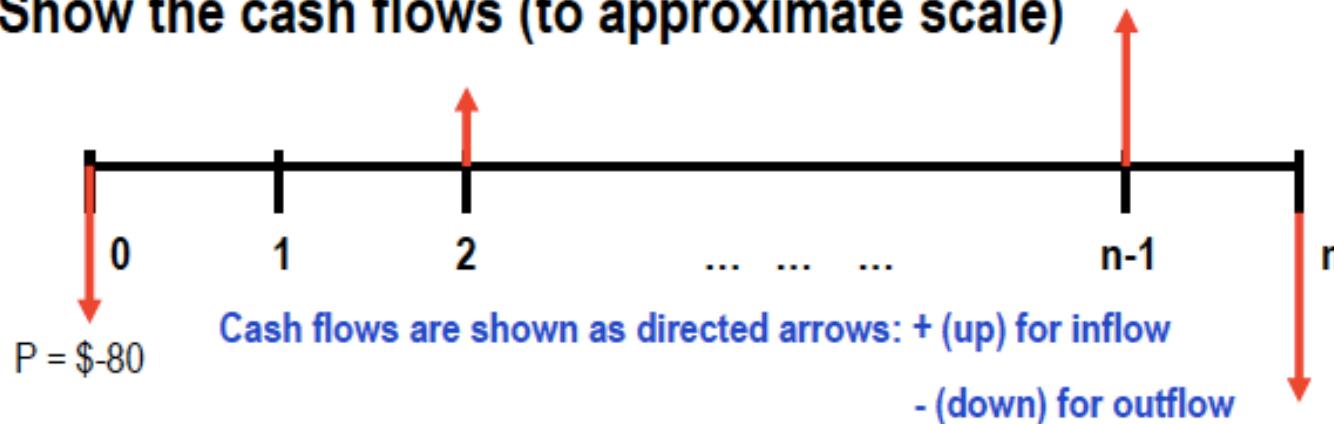
$$NCF = R - D$$

Cash flow diagrams

What a typical cash flow diagram might look like:



Show the cash flows (to approximate scale)



Economic equivalence

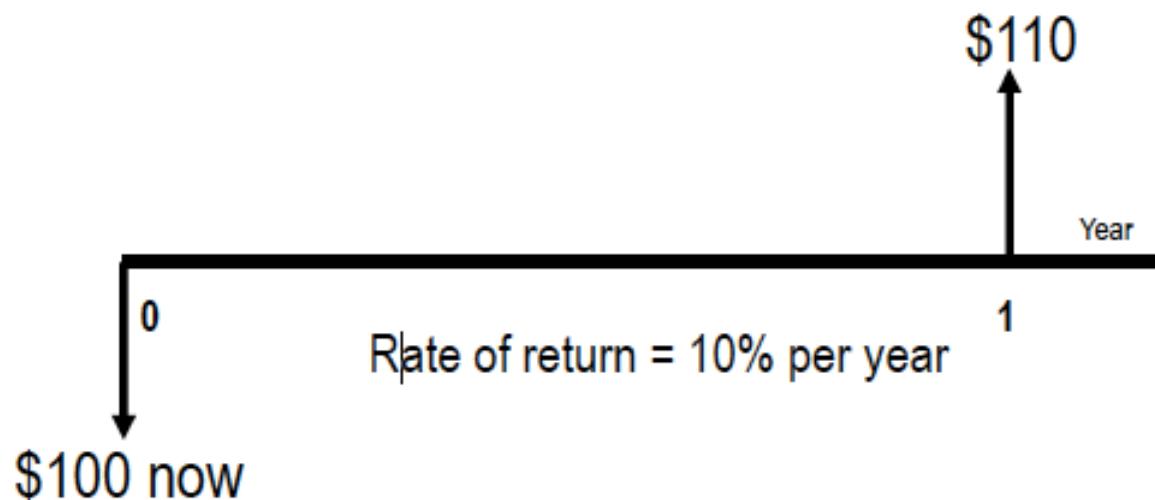
Combination of interest rate (rate of return) and time value of money to determine different amounts of money at different points in time that are economically equivalent.

How it works:

Use rate i and time t in upcoming relations to move money (values of P , F and A) between time points $t = 0, 1, \dots$, 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.

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

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 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 <i>n</i>	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

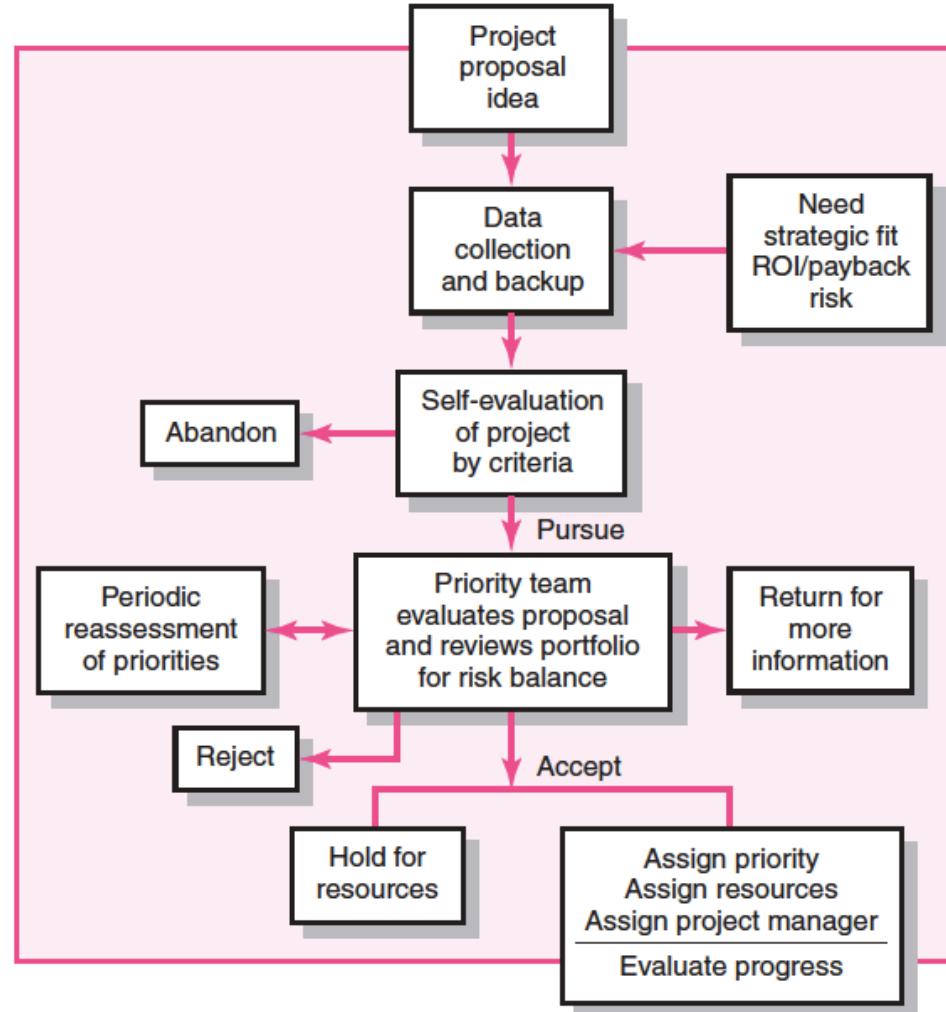
Project
screening
process

Priority
analysis

Project
portfolio
matrix

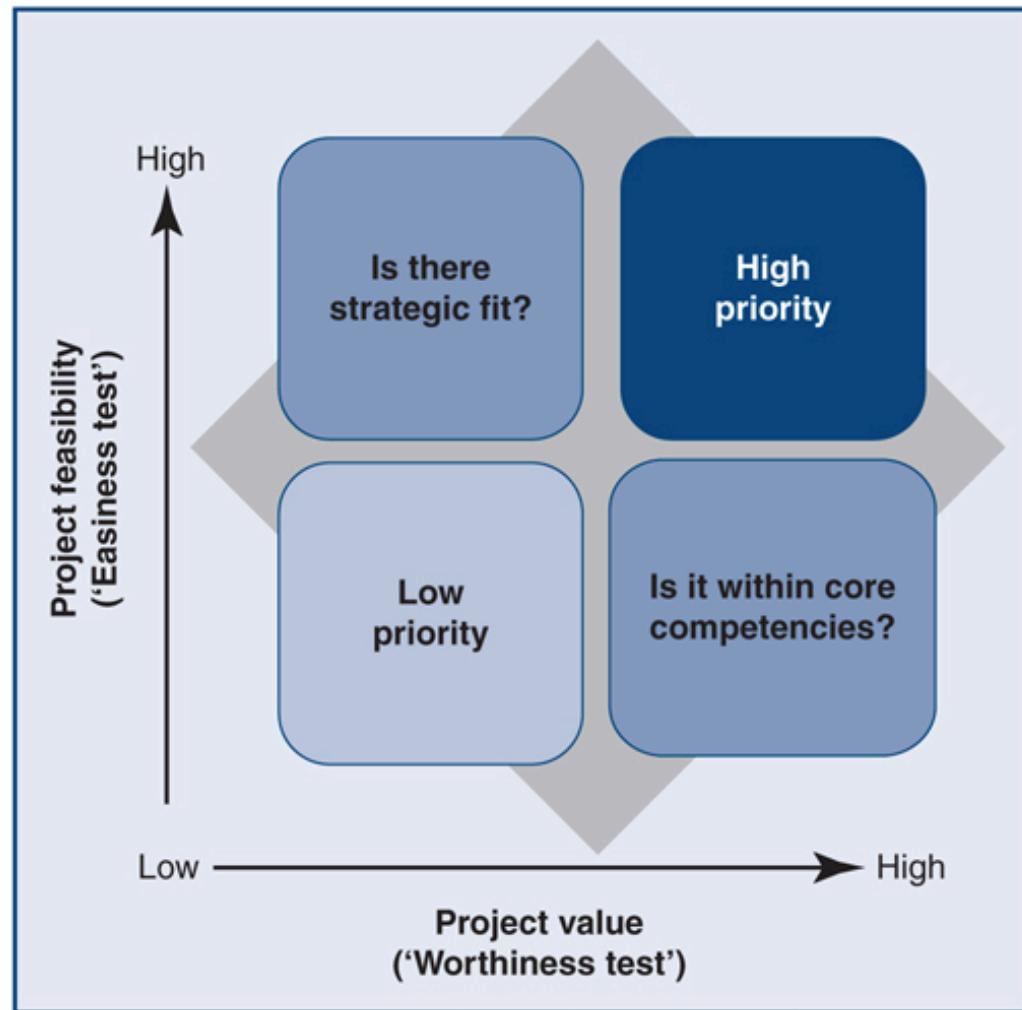
Project
relativity
matrix

Sample project screening process

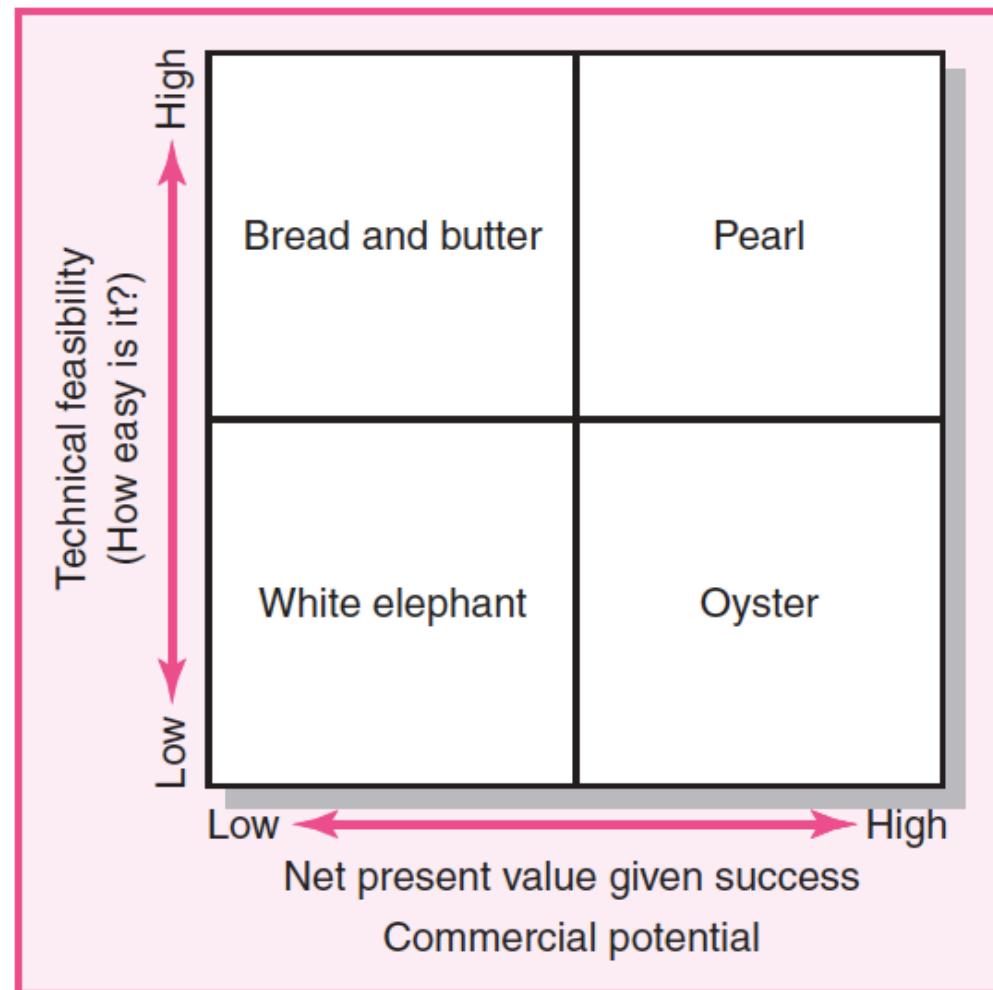


Sample Priority analysis

Project 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

