3 Project performance.

Objective: *To assemble a theoretical framework to make judgements about a project.*

Focus questions:

Why do we need to assess projects?

What's wrong with conventional notions of project success?

How can these flaws be addressed?

What issues are raised by the proposed approach?

Update: Term paper topics

- Major term paper
- Minor term paper

Review of last class

- Questions.
- What were the key issues to arise for you?
- Discussion.

Establishing a rationale

- Why do we need to judge a project's performance?
- How are projects judged according to conventional wisdom?
- A project that you funded has just finished. How do you know if it was successful?
- What issues does all this raise for the PM profession?

Background

- Conventional tests of "success" for projects are confused and flawed.
- Regression-based tests appear to address both issues.
- This approach has emerged from a research project being undertaken by the lecturer and Ofer Zwikael (RSM).

Coverage

- A framework of project performance measurement.
- The concept of regression testing.
- The conventional approaches.
- Project management success.
- Project success.
- Investment success.
- Discussion.

The rationale for project performance measurement

- Project performance must be assessed:
  - At the *beginning* so that the Funder can decide whether or not to proceed with the project.
  - At the *end* to make judgements about:
    - The Investment.
    - The Project owner.
    - The Project manager).
- Thus there are **four** forms of project assessment

Some important terms revisited

- Outcomes:
  - Measurable end effects (desirable & undesirable).
  - "Reduced waiting time for elective surgery".
  - Project owner is accountable for securing target outcomes.
- Outputs:
  - Deliverable artifacts.
  - "Re-engineered hospital processes".
  - Project manager is accountable for delivering these.

The concept of project worth

- Worth = Fn(Benefits, Disbenefits, Costs)
- **Loosely** the "equation of worth" is:

  W "=" B-D-C
- Where:
  - Benefits are driven by desirable outcomes.
  - Disbenefits driven by undesirable outcomes.
  - Costs are driven by the project's outputs.

Note: Worth is simply an index of value that will *rarely* be measurable in dollar terms.

Feedback mini quiz 3A: context

- A project is being undertaken to fix an old historic bridge which is in danger of collapse.

Feedback mini quiz 3A: questions

- In Col #4 provide the correct classifications (drawn from Col #3) for the examples in Col #2.

#	Example	Random classification	Your classification	Suggested classification	Marks (0 | 1)
1	Replace the deck	Output			
2	Strengthened foundations	Process			
3	Steel tie rods	Deliverable			
4	A safer bridge	Objective			
5	Lane width of 5m	Fitness-for-purpose feature			

Feedback mini quiz 3A: answers

#	Example	Random classification	Your classification	Suggested classification	Marks (0 | 1)
1	Replace the deck			Process	
2	Strengthened foundations			Output (deliverable)	
3	Steel tie rods			Input	
4	A safer bridge			Deliverable (output)	
5	Lane width of 5m			Fitness-for-purpose feature	

CONCEPTS OF PROJECT PERFORMANCE

Project *Worth*

Worth "=" Benefits – Disbenefits – Cost

- Why do I have quotes around the "= "?
- Worth need not (and in general will not) have a dollar value. (E.g. the Child sex offenders project).
- What drives Benefits?
- What drives Disbenefits?
- What drives Cost?
- Note that *Worth analysis* is different to *Benefit-Cost analysis*.

Class coverage

- The conventional view of project success.
- A framework for project assessment.

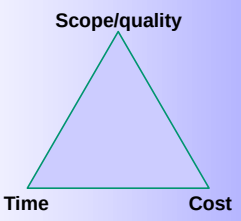
Focus questions

- What is meant by project success?
- How should it be determined?

The conventional test of project success

- How does it work?
- What issues does it give rise to?

The (notorious) “iron triangle”



Issue: Does not account for *detrimental* outcomes.

Detrimental outcomes

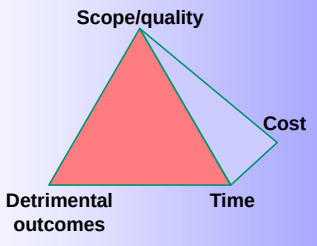
- "Undesirable outcomes that are unexpected, unacceptable and avoidable".
- Example: catastrophic staff loss following development of a new digital pressure controller by an industrial instrument manufacturer:
  - To specification.
  - On time.
  - Within budget.

The digital pressure controller example

- Project by a scientific instrument manufacturer to develop a new digital pressure controller to relace a very successful analogue unit.
- Project
  - Produced a unit that met its design specs.
  - Came in on time and within budget.
  - Put senior engineering staff under such pressure that the core team resigned.
  - Company lost significant market share.

Enter: the "steel tetrahedron"!

(A tetrahedron is a triangle base pyramid)



A project assessment framework

- Assessment processes (2*).
- Assessment targets (3*).
- Of the six (2*3) resulting **judgements** (combinations), only four are relevant—(see slide #5).
- Each judgement requires its own peculiar test (4*).
- Each judgement is triggered by one of 3* triggers.

The two assessment *processes*

1. *Ex ante* assessment (="appraisal").
   - Undertaken by funder to decide ig project should proceed.
   - Informed by a *business case & project plan*.
2. *Ex post* assessment (="evaluation").
   - Undertaken by two to make judgements about success.
   - Informed by *closeout* reports.

This class is concerned with *evaluation*.

Three assessment *targets*

1. The Investment represented by the project.
2. The Project Owner.
3. The Project Manager.

Note: A *separate* judgement must be made about success for *each* of the three targets.

Implication: There are **three** separate tests for project success—not **one**!

The four relevant project assessment tests

		Assessment processes	
		Appraisal	Evaluation
Assessment targets	The investment	✓	✓
	The Project owner	×	✓
	The Project manager	×	✓

The *judgements* about a project

- *Appraisal* is carried out before the project starts—to determine if the proposed **investment** *makes sense*.
- *Evaluation* is carried out when the project is over to *judge the success of*:
  - **The project manager.**
  - **The project owner.**
  - **The investment.**

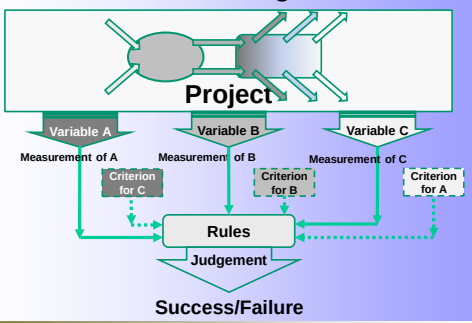
Assessment requires a test.

- How do you construct a test?
- What does the anatomy of a test look like?

A test has four components

1. A specific set of performance variables.
2. Measurements of all those variables.
3. A criterion (reference value) for each.
4. A rule showing how to use the resulting measures and criteria to make a judgement.

Project success tests: general structure



Example of a test

1. A variable (*cost*).
2. A measurement of that variable (*the actual cost incurred by the project at the end of execution*).
3. A criterion (set as *an approved budget*).
4. A rule ("*If the project's actual cost exceeds the budget, then it is judged as Failure, otherwise it is judged a Success*").

Note: While this is a *valid example* of a test, it happens to be a *very poor test*—and hence rarely used (in this form)

When exactly do we assess a project?

- We do our assessments when certain specific events occur.
- These events are called triggers.
  - One trigger at the start of a project.
  - Another three at the end.

Three assessment process triggers

- Appraisal
  - The tabling of the Modified business case/project plan.
- Evaluation
  - Delivery of all project outputs—when we judge the Project Manager.
  - *Securing* of target outcomes—when we judge:
    - The Project Owner.
    - The Investment.

Feedback Mini quiz 3B: questions

- What happens to each of the various classes of work if the "wrong" rules of management are applied?

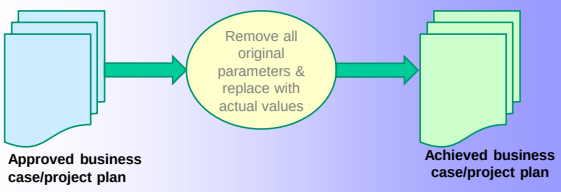
Class of process "Rules of management"	Ad hoc task	Business process	Project
Ad hoc			
Operational management			
Project management			

Feedback mini quiz 3B: answers

Class of process "Rules of management"	Ad hoc task	Business process	Project
Ad hoc	Optimal	Takes too long. Error prone	Takes too long. Costly
Operational management	Not possible—there is no script	Optimal	Not possible—there is no script
Project management	Takes too long	Takes too long	Optimal

The regression test

- Applies to both the business case & project plan.

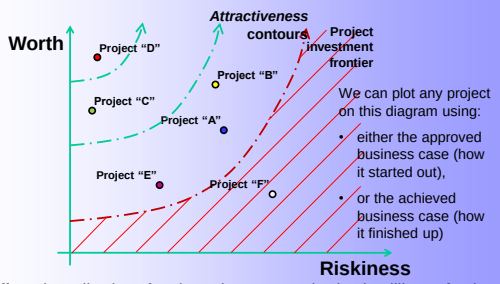


Note that most risk has "evaporated" in the achieved business case

To test for *investment* success

- Ask the funder: "If we had given you the *achieved* business case, would you have agreed to fund the project?"
- If the answer is …
  - **"No"**: then the project is declared an *investment failure*.
  - **"Yes"**: then the project is declared an *investment success*.
- In making this decision the funder looks at:
  - Worth
  - Risk

The project portfolio



We can plot any project on this diagram using:

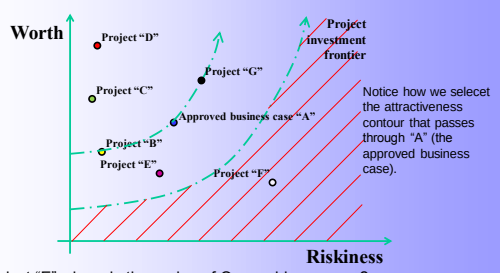
- either the approved business case (how it started out),
- or the achieved business case (how it finished up)

- **Portfolio**: The collection of projects that an organisation is willing to fund—subject to its budget constraints.

To test for *Ownership* success

- Ask the funder: "In your view, is the *achieved* business case at least equivalent to the *approved* business case?"
- If the answer is …
  - **"No"**: then the project is declared an *ownership failure*.
  - **"Yes"**: then the project is declared an *ownership success*.

Testing for Ownership success



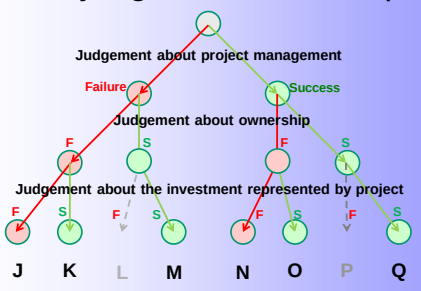
Notice how we selecet the attractiveness contour that passes through "A" (the approved business case).

- For project "E" where is the region of Ownership success?

To test for *Management* success

- Ask the Owner: "In terms of quality, cost, time and detrimental outcomes, is the *achieved project plan* at least equivalent to the *approved project plan*?"
- If the answer is …
  - **"No"**: then the project is declared a *management failure*.
  - **"Yes"**: then the project is declared a *management success*.

The valid judgments about a project



Discussion

- Why is it impossible to get either of scenarios "L" & "P"?

Some examples

- In the sequence: (management, ownership, investment)
- Q (S, S, S): Apollo 11.
- N (S,F, F): Sydney X-City tunnel.
- K (F, F, S): Hubble space telescope.
- J (F, F, F): FAA's Advanced Automation System

Summary

- There is a serious (fatal?) flaw in the conventional test of project success.
- We have explored the formal structure of a success test.
- There are **three** (not one) tests of project success:
  - Investment
  - Ownership
  - Management