PM101: Lecture 4

Project justification

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Building the case for the project

The idea for the project

Project mandate – High level outline of what the project could be.

Definition

Deciding what to do and why

Project brief – Defines the goal and requirements of the project, the outline business case, and customer's quality expectations.

Planning

Working out how to do it, who will do it and when

Project plan – A detailed description of what will be carried out and how the work will be organised and managed.

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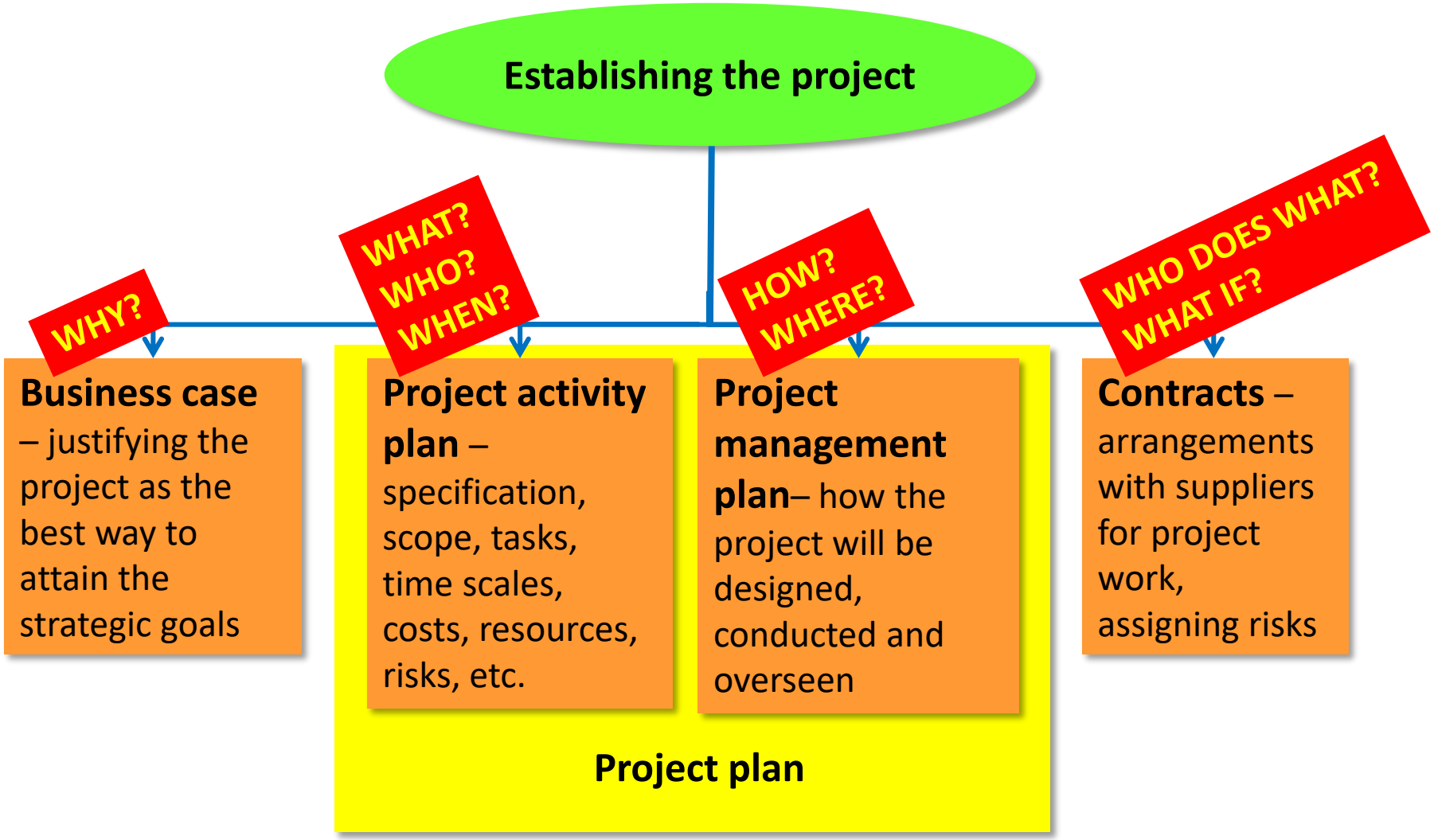
Four essential components



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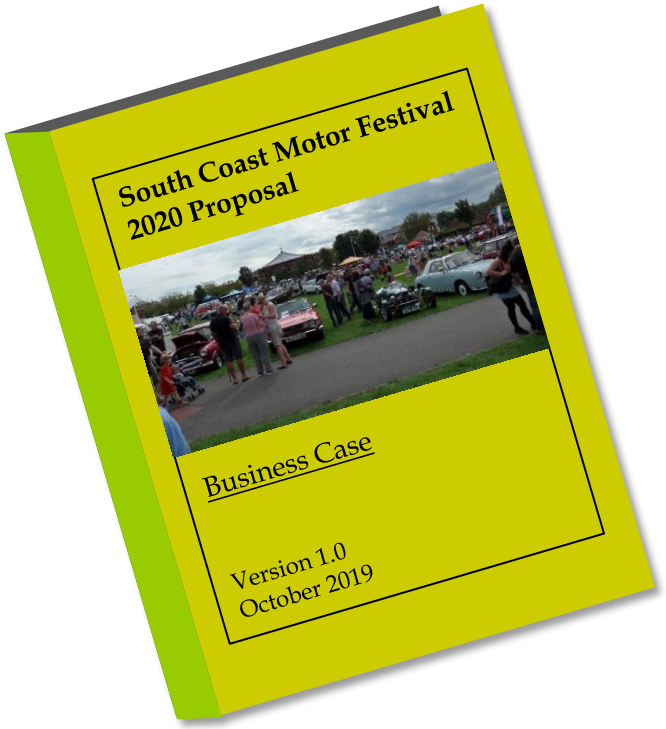
The business case is the basis of the project

The business case evaluates whether the forecast effort and time will be worth the expense; and whether the desired benefits are worth the risks to achieve them.



- Reasons for the project
- Stakeholder interests
- Options analysis – including do nothing
- Benefits expected – measurable
- Project outline
- Key risks
- Costs
- Time scale
- Investment appraisal
- Evaluation and recommendation

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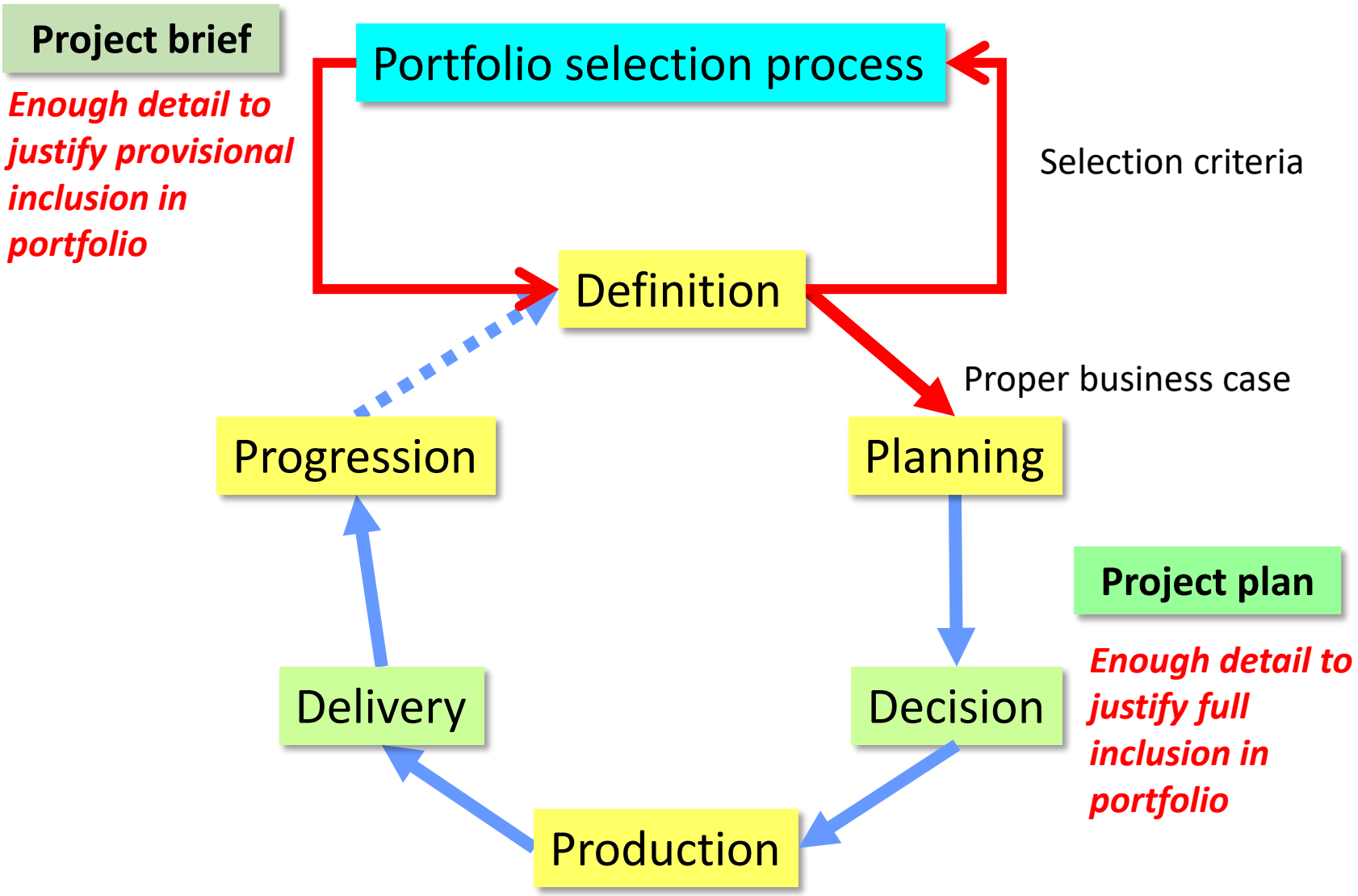
Two stage justification



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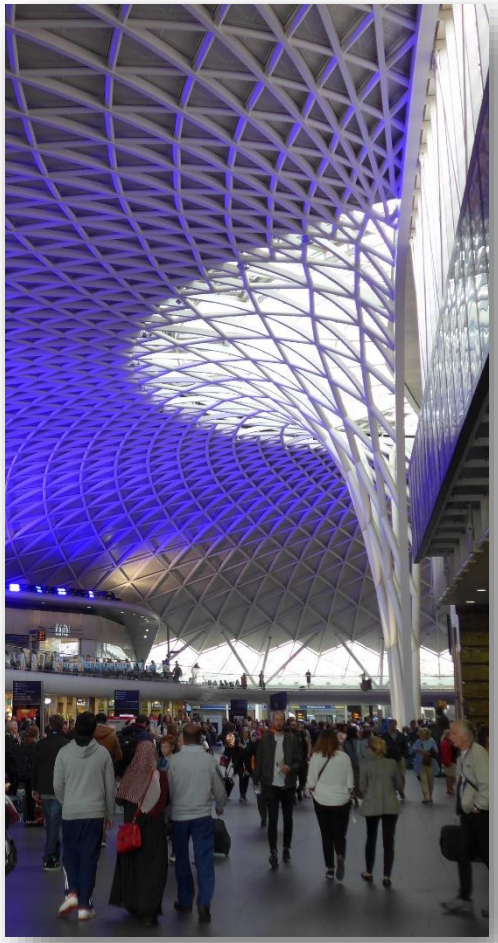
Project screening issues



- **How to take account of what is important?**
  Stakeholder concerns
  Brand values, etc.
- **How to make sure the input is as accurate as possible?**
- **How to factor in uncertainty and risk?**
- **How to avoid bias?**

Any forecast can only be:

- A prediction
- An estimate
- An assertion
- A guess

So it is <u>never certain</u>.

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Project screening processes

A screening process must be:

- Realistic and credible
- Able to make use of available data
- Flexible, to accommodate different sizes and shapes of project
- Easy to use and cost effective
- Able to allow different projects to be compared

Non-financial techniques

- Simple checklist
- Weighted scoring
- Analytical hierarchy process

Financial techniques

- Payback period
- Net present value
- Real options

Advocacy and argument

- Challenging vision
- Disruptive thinking

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The checklist

A simple way to screen out non-starters and spot promising ideas

	Project A	Project B	Project C
Must not need new factory equipment		Yes	Yes
Must be on the market within 6 months	Yes	Yes	
Must cost less than $10 to produce	$12	$11	$9
Must have potential for future spin-offs	Yes		Yes

- Criteria must be agreed, and must be considered to be equally important.
- Useful way to stimulate discussion.
- Easy to understand, easy to manipulate and not very scientific.

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Weighted scoring

Site for a new swimming pool and health centre

Factor	Weight	Site A	Site B	Site C
Close to town centre	4	2	4	2
Clear of flood plain	4	5	2	3
Flat site	3	3	5	1
Adequate car parking	2	2	2	5
Good road access	3	4	3	3
Next to bus route	4	5	4	2
TOTAL SCORE		**73**	**68**	**50**

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Payback period

How long does the extra income we get from the project output take to recoup the cost of the project?

Building and running a gym

	Year 0	*Year 1*	*Year 2*	*Year 3*	*Year 4*	*Year 5*
Revenue		£120,000	£130,000	£140,000	£150,000	£160,000
Investment	£400,000					
Expenses		£50,000	£55,000	£50,000	£50,000	£70,000
Yearly cashflow	**-£400,000**	**£70,000**	**£75,000**	**£90,000**	**£100,000**	**£90,000**
Cumulative net cashflow	**-£400,000**	**-£330,000**	**-£255,000**	**-£165,000**	**-£65,000**	**£25,000**

Payback period =

5 - (25/90) = 4.72 years

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Net present value

Building and running a gym

Year	*0*	*1*	*2*	*3*	*4*	*5*
Revenue		£120,000	£130,000	£140,000	£150,000	£160,000
Investment	£400,000					
Expenses		£50,000	£55,000	£50,000	£50,000	£70,000
Yearly cashflow	**-£400,000**	**£70,000**	**£75,000**	**£90,000**	**£100,000**	**£90,000**

Rate of return	10.0%
Inflation forecast	2.0%
Risk factor	5.0%
Discount rate	**17.0%**

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Net present value

Building and running a gym

Year	*0*	*1*	*2*	*3*	*4*	*5*
Revenue		£120,000	£130,000	£140,000	£150,000	£160,000
Investment	£400,000					
Expenses		£50,000	£55,000	£50,000	£50,000	£70,000
Yearly cashflow	**-£400,000**	**£70,000**	**£75,000**	**£90,000**	**£100,000**	**£90,000**
Discount factor	1.000	0.855	0.731	0.624	0.534	0.456
Discounted cashflow	**-£400,000**	**£59,829**	**£54,789**	**£56,193**	**£53,365**	**£41,050**
Net present value	**-£134,774**					

Rate of return	10.0%
Inflation forecast	2.0%
Risk factor	5.0%
Discount rate	**17.0%**

Year n DF = 1 / ((1+DR) ^{n})

Excel: year n DF = 1/POWER((1+DR),n)

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Net present value – simple formula

Building and running a gym

Year	*0*	*1*	*2*	*3*	*4*	*5*
Revenue		£120,000	£130,000	£140,000	£150,000	£160,000
Investment	£400,000					
Expenses		£50,000	£55,000	£50,000	£50,000	£70,000
Yearly cashflow	**-£400,000**	**£70,000**	**£75,000**	**£90,000**	**£100,000**	**£90,000**
Discount factor	1.000	0.830	0.689	0.572	0.475	0.394
Discounted cashflow	**-£400,000**	**£58,100**	**£51,668**	**£51,461**	**£47,458**	**£35,451**
Net present value	**-£155,862**					

Rate of return	10.0%
Inflation forecast	2.0%
Risk factor	5.0%
Discount rate	**17.0%**

Year 1 DF = Year 0 DF * (1-DR)

Year 2 DF = Year 1 DF * (1-DR)

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Putting a value on benefits

Bobbination **is a small mail order supplier for craft hobbyists.**

- It plans to replace its existing order fulfilment IT system with a new one.
- **The ambition is to make Bobbination much more attractive to customers with simpler ordering, more web-based facilities and faster fulfilment.**
- The new system should require less maintenance and save staff.
- **There will be additional operating costs due to licences etc.**

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Quantifying the benefits

	Year 0	*Year 1*	*Year 2*	*Year 3*	*Year 4*
Increased customer satisfaction		£5,000	£10,000	£10,000	£10,000
Competitor substitution			£20,000	£20,000	£20,000
Customers from new market			£30,000	£30,000	£40,000
Increased revenues	**£0**	**£5,000**	**£60,000**	**£60,000**	**£70,000**
Labour savings		£5,000	£5,000	£5,000	£5,000
Removal of redundant IT kit		£3,000	£5,000	£6,000	£6,000
Cost savings	**£0**	**£8,000**	**£10,000**	**£11,000**	**£11,000**
Total benefits	**£0**	**£13,000**	**£70,000**	**£71,000**	**£81,000**

All benefits and costs are at the margins. That is, they are entirely due to the project.

Extra sales to existing customers

Sales captured from rivals

Sales to new types of customer

Based on Roberts, P. (2007). *Economist Guide to Project Management.* London: Profile Books, p75.

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The real value of the benefits

	Year 0	*Year 1*	*Year 2*	*Year 3*	*Year 4*
Total benefits	**£0**	**£13,000**	**£70,000**	**£71,000**	**£81,000**
Investment	£40,000				
Additional costs		£20,000	£20,000	£20,000	£20,000
Net yearly cashflow	**-£40,000**	**-£7,000**	**£50,000**	**£51,000**	**£61,000**
Discount rate	12%				
Discount factor	1.00	0.89	0.80	0.71	0.64
Discounted yearly cashflow	**-£40,000**	**-£6,250**	**£39,860**	**£36,301**	**£38,767**
Net present value	£68,677				

Creating a discounted cash flow analysis allows the net present value of the project to be judged against other project candidates.

Based on Roberts, P. (2007), Economist Guide to Project Management, London, Profile Books, p75.

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Tracking the benefits: solar panels

- ***Forecast payback around 10 years***
- *Actual payback likely in 8 years*
- ***FIT is on 50% of generated energy***
- *So some electricity used is 'free'*
- ***Therefore a saving on electricity bill as well***

		Total	2011	2012	2013	2014	2015	2016	2017	2018
Initial capital cost		**£11,342**	£11,342							
Output efficiency loss/yr	1.00%			100.0%	99.0%	98.0%	97.0%	96.1%	95.1%	94.1%
System output kWh/yr	2,728			2,728	2,701	2,674	2,647	2,621	2,594	2,568
Feed in Tariff payments	£0.433	£8,025		£1,181	£1,169	£1,158	£1,146	£1,135	£1,123	£1,112
Discount factor	3.00%			97.0%	94.1%	91.3%	88.5%	85.9%	83.3%	80.8%
FIT at present value		**£7,126**		£1,146	£1,100	£1,057	£1,015	£974	£936	£899
Payback			-£11,342	-£10,196	-£9,096	-£8,039	-£7,025	-£6,050	-£5,115	-£4,216
Forecast NPV	**7 years**	**-£4,216**								
Actual FIT payments				£1,252	£1,476	£1,324	£1,069	£1,399	£1,770	£2,000
Inflation from 2011				3.2%	6.3%	8.9%	9.9%	11.8%	15.9%	19.0%
FIT at present value		**£9,249**		£1,214	£1,388	£1,215	£973	£1,252	£1,527	£1,681
Actual NPV		**-£2,093**								

Note: Feed In Tariff pays 43p for every kWh of electricity fed into national grid. FIT assumes 50% of all electricity generated is fed into the grid.

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Advocacy and argument

+

'I like to listen to music, but I don't want to disturb others. I can't sit by my stereo all day. This is my solution – I take the music with me but it's too heavy.'

Masaru Ibuku, co-founder of Sony, c. 1978

= 10 kg

Morita, A. (1987), *Made in Japan*, London: HarperCollins, p83. Photos: Joe Haupt, Creative Commons. https://creativecommons.org/licenses/by-sa/2.0/deed.en. Barkode Props.

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What the boss says, goes!

Akio Morita – Chairman of Sony

"I ordered our engineers to take a small cassette recorder, strip out the recording circuit and the speaker, and replace them with a stereo amplifier. I wanted very small lightweight headphones." – the developers struggled with the tiny headphones

"Everybody gave me a hard time." – the engineers wanted recording ability.

"I dictated the selling price to suit a young person's pocketbook." – the finance people said it would cost too much to make.

Sony Walkman

In production for 30 years.

220 million sold.

Took Sony into many new markets.

Morita, A. (1987), *Made in Japan*, London: HarperCollins, p83; Photos: Sony; Joe Haupt. Creative Commons. https://creativecommons.org/licenses/by-sa/2.0/deed.en.

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And sometimes they bet the company!

IBM 360 COMPUTER
Brand new technology
Two years late
100% over budget
Redefined the computer business

BOEING 747
A year late
Took Boeing to the brink of bankruptcy
1,500 sold
Redefined the airline industry

Irving, C. (1994). *Wide-body*. London: Coronet; Peters, T. and Waterman, R, (1982), *In search of excellence*. New York: Harper and Row, p 131. Photos: Eric Pitti, Aero Icarus. Both Creative Commons. Attribution 2.0 Generic (CC BY 2.0)

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Projects justification: core ideas

The project justification depends on a compelling business case.

The business case, project plan and contracts with suppliers are interdependent and must be maintained together throughout the project.

The project must be approved after the Definition phase and then be approved again after the Planning phase before it can enter the Production phase.

Any screening process is based on forecasts that cannot be certain predictions of what will actually happen.

Non-financial screening uses techniques like weighted scorecards to compare project candidates.

Financial techniques include Net Present Value which indicates whether the benefits will exceed the costs of the project over time.

A very important factor in selecting projects is advocacy and argument, especially by very senior organisation executives who use judgement rather than analysis.

See Zavanak pages *Definition* and *Selecting the right project*.

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