

# Project Management

## Project Initiation

by

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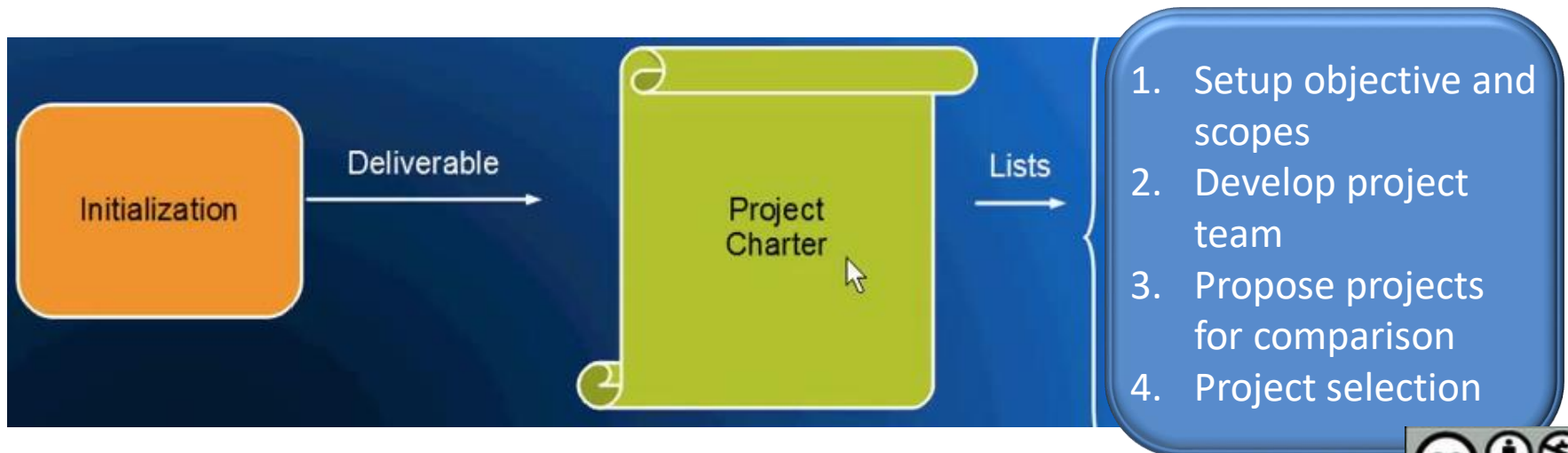
# Project Initiation

- Aims
  - To organize project initiation by developing strategies to support project's goal.
- Expected Outcomes
  - Students are able to set the objectives, scopes, develop team members, propose project comparison and select final project.
- References
  - William, R.T. 2013. Project Management. Random Exports
  - Heagney, J. 2012. Fundamentals of Project Management. American Management Association.
  - Richardson and Gary, L. 2010. Project Management theory and practice. Taylor and Francis.

# Content

- Objective of project initiation
- Setup objective and scopes
- Develop project team
- Propose projects for comparison
- Project selection

# Objective of project initiation



# Setup objective and scopes

The scope should be their boundary to achieve the objective



Good project management

The objective must:

- Consists of verb
- Expose the main features of product



# Develop project team



# Propose projects for comparison

## **To develop a sophisticated study lamp**

1. Multi-function
2. Apply LED lighting
3. Able to clamp
4. Colorful
5. Focus lighting
6. Hidden wire

## Scale of Evaluation

	Very poor	Poor	Fair	Average	Good	Excellent	
	0	1	2	3	4	5	
Low	Attractiveness						High
High	Cost						Low
Difficult	Feasibility						Easy
Long	Time						Short

## Scoring of Alternative Projects

No.	Alternative Project	A	B	C	D	Total Score
1	Multi-function	5	2	2	2	11
2	Apply LED lighting	5	5	3	4	17
3	Able to clamp	4	4	2	3	13
4	Colorful	4	3	3	2	12
5	Focus lighting	5	4	3	3	15
6	Hidden wire	5	2	3	2	12

**A:** Attractiveness **B:** Cost **C:** Feasibility **D:** Time



# Results of Screening

<b>Project # 2</b>	Apply LED lighting	17 points
<b>Project # 5</b>	Focus lighting	15 points
<b>Project # 3</b>	Able to clamp	13 points

# Project selection

Organizations usually use selection models and choose potential projects by relying on both qualitative and quantitative means. The selection is based on following criteria:

## Net present value (NPV)

The difference between the present value of cash inflows and the present value of cash outflows. NPV is to analyze the profitability of a projected investment.

## Payback period (PP)

The length of time required to recover the cost of an investment. Longer payback periods are typically not desirable for investment positions.

## Internal rate return (IRR)

A metric used in capital budgeting measuring the profitability of potential investments.

# Sample Project

Suppose a project has the following data:

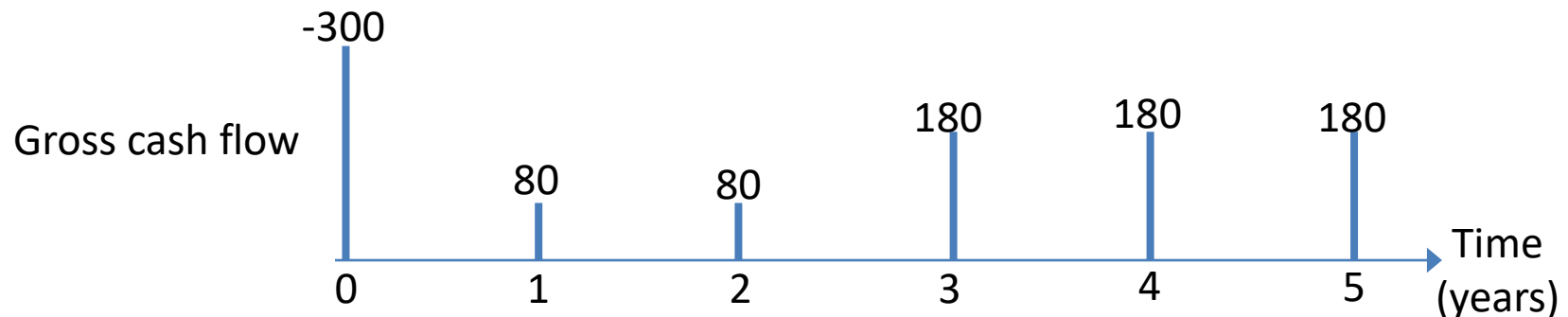
- Initial investment (I) = RM 300,000
- Annual cost of operation = RM 20,000
- Planning horizon of 5 years

Expected annual revenues

- RM 100,000 for the first two years
- RM 200,000 for the next three years

Year	0	1	2	3	4	5
Costs	-300	-20	-20	-20	-20	-20
Revenues		100	100	200	200	200

*(All revenues and costs are in thousand of RM)*



## Undiscounted Cash Flows Before Tax

Year	0	1	2	3	4	5
Cash Flow	-300	80	80	180	180	180
Cumulative Cash Flow	-300	-220	-140	40	220	400

- Net present value (NPV) = 400 (in thousands)
- Payback Period = 2.78 years

## Discounted Cash Flows for Interest Rate = 10%

Year	0	1	2	3	4	5
Cash Flow	-300	80	80	180	180	180
Discount Factor	1	0.909	0.826	0.751	0.683	0.621
Discounted Cash Flow (DCF)	-300	72.72	66.08	135.18	122.94	111.78
Cumulative Discounted Cash Flow	-300	-227.28	-161.2	-26.02	96.92	208.70

- Net present value (NPV) = 208.7 (in thousands)
- Payback Period = 3.21 years

## Discounted Cash Flows for Interest Rate = 20%

Year	0	1	2	3	4	5
Cash Flow	-300	80	80	180	180	180
Discount Factor	1	0.833	0.694	0.579	0.482	0.402
Discounted Cash Flow (DCF)	-300	66.64	55.52	104.22	86.76	72.36
Cumulative Discounted Cash Flow	-300	-233.36	-177.84	-73.6	12.14	85.50

- Net present value (NPV) = 85.5 (in thousands)
- Payback Period = 3.85 years



## Discounted Cash Flows for Interest Rate = 25%

Year	0	1	2	3	4	5
Cash Flow	-300	80	80	180	180	180
Discount Factor	1	0.800	0.640	0.512	0.410	0.328
Discounted Cash Flow (DCF)	-300	64.00	51.20	92.16	73.80	59.04
Cumulative Discounted Cash Flow	-300	-236.00	-184.60	-92.44	-18.64	40.40

- Net present value (NPV) = 40.4 (in thousands)
- Payback Period = 4.32 years

## Discounted Cash Flows for Interest Rate = 30%

Year	0	1	2	3	4	5
Cash Flow	-300	80	80	180	180	180
Discount Factor	1	0.769	0.592	0.445	0.350	0.269
Discounted Cash Flow (DCF)	-300	61.52	47.36	81.90	63.00	48.42
Cumulative Discounted Cash Flow	-300	-238.42	-191.12	-109.22	-46.22	2.20

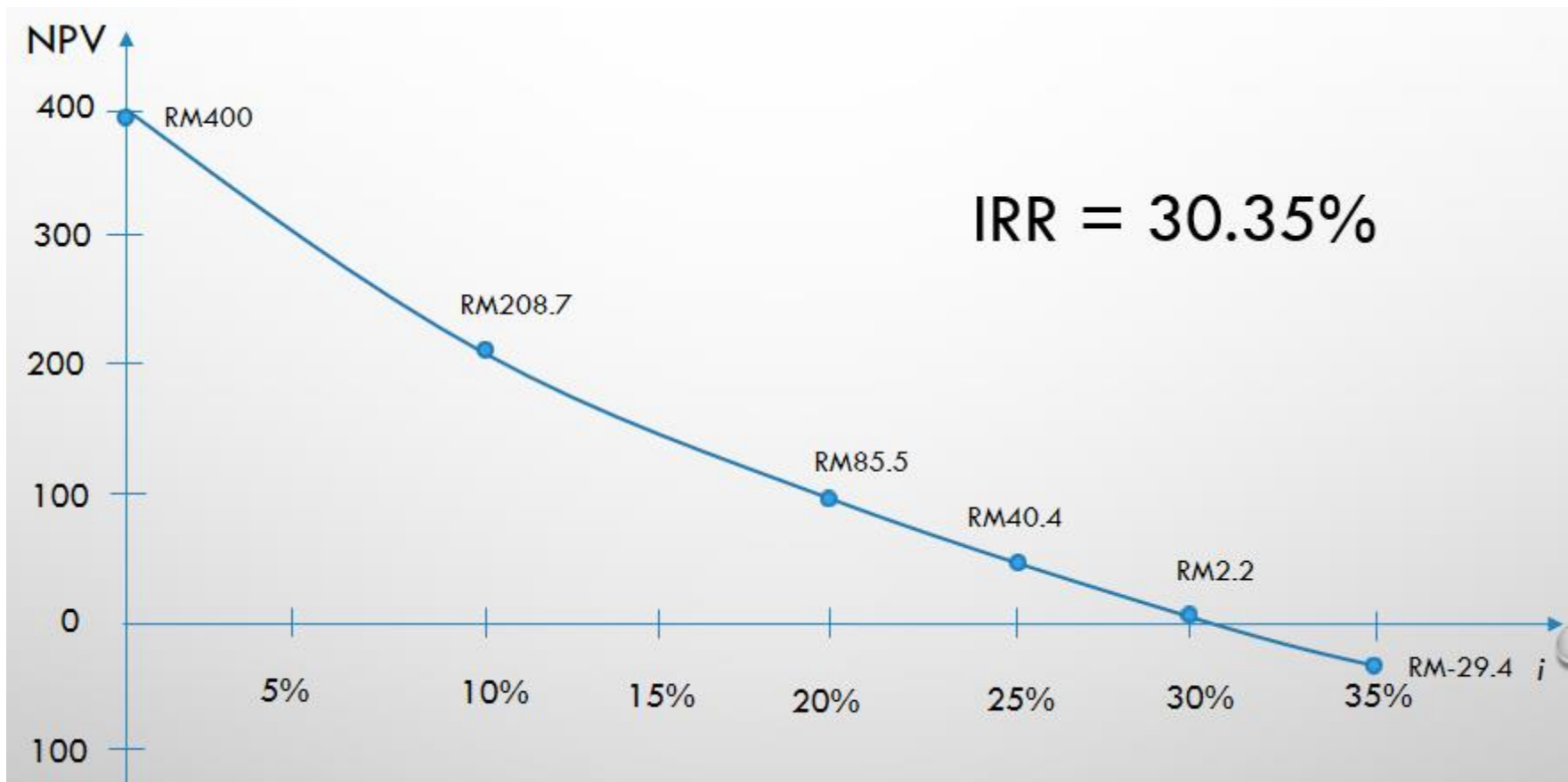
- Net present value (NPV) = 2.2 (in thousands)
- Payback Period = 4.95 years

## Discounted Cash Flows for Interest Rate = 35%

Year	0	1	2	3	4	5
Cash Flow	-300	80	80	180	180	180
Discount Factor	1	0.741	0.549	0.406	0.301	0.223
Discounted Cash Flow (DCF)						
Cumulative Discounted Cash Flow						

- Net present value (NPV) =
- Payback Period =

# Internal Rate of Return (IRR)

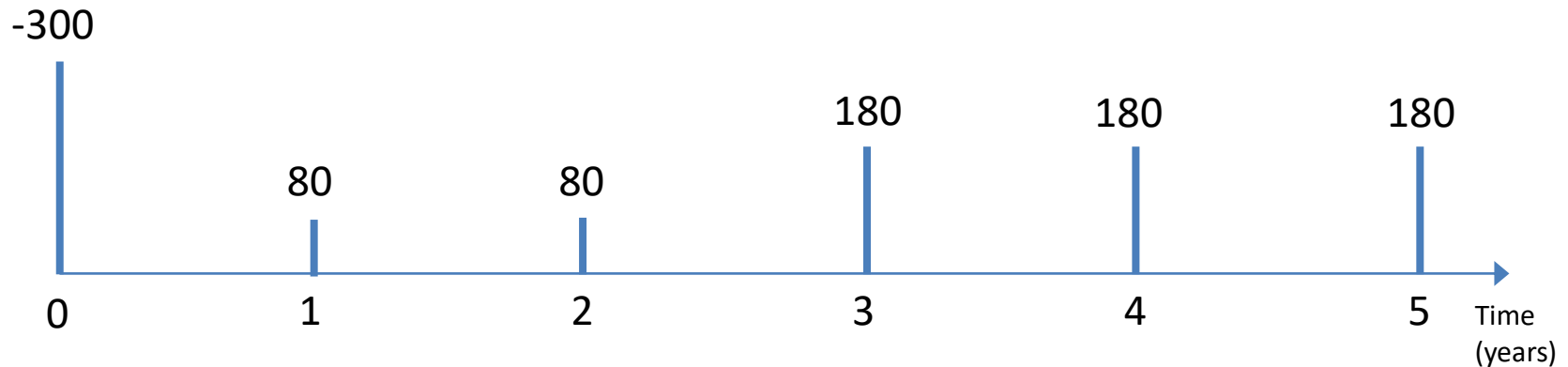


# Tax Consideration

Notion of **depreciation** used in computing after tax cash flows

1. Straight line method (here the amount to be depreciated is  $I/n$  in each period)
2. Sum of digits
3. Declining balance method

# Cash Flow



# Depreciation

<b>Straight Line</b>	:	<b>60</b>	<b>60</b>	<b>60</b>	<b>60</b>	<b>60</b>
Sum of digit	:	$300(5/15)$ = <b>100</b>	$300(4/15)$ = <b>80</b>	$300(3/15)$ = <b>60</b>	$300(2/15)$ = <b>40</b>	$300(1/15)$ = <b>20</b>
Declining balance	:	$300(0.3)$ = <b>90</b>	$300(0.09)$ = <b>27</b>	$300(0.027)$ = <b>8.1</b>	$300(0.0081)$ = <b>2.43</b>	$300(0.000243)$ = <b>0.729</b>



## Computation of After Tax Cash Flows

Year			1	2	3	4	5
Cash Flow	a		80	80	180	180	180
Depreciation	b		60	60	60	60	60
Taxable Income	c	$a - b$	20	20	120	120	120
Tax (30%)	d	tax * c	6	6	36	36	36
After Tax Cash Flow	e	$a - d$	74	74	144	144	144

## Undiscounted After Tax Cash Flows

Year	0	1	2	3	4	5
After Tax Cash Flow	-300	74	74	144	144	144
Cumulative Cash Flow	-300	-226	-152	-8	136	280

- Net present value (NPV) = 280 (in thousands)
- Payback Period = 3.06 years

# After Tax Discounted Cash Flows for Interest Rate = 10%

Year	0	1	2	3	4	5
After Tax Cash Flow	-300	74	74	144	144	144
Discount Factor	1	0.909	0.826	0.751	0.683	0.621
Discounted Cash Flow (DCF)	-300	67.27	61.12	108.14	98.33	89.42
Cumulative Discounted Cash Flow	-300	-232.73	-171.61	-63.47	34.88	124.31

- Net present value (NPV) = 124.31 (in thousands)
- Payback Period = 3.65 years

# After Tax Discounted Cash Flows for Interest Rate = 20%

Year	0	1	2	3	4	5
After Tax Cash Flow	-300	74	74	144	144	144
Discount Factor	1	0.833	0.694	0.579	0.482	0.402
Discounted Cash Flow (DCF)	-300	61.64	51.36	83.38	69.41	57.89
Cumulative Discounted Cash Flow	-300	-238.36	-187.00	-103.62	-34.21	23.68

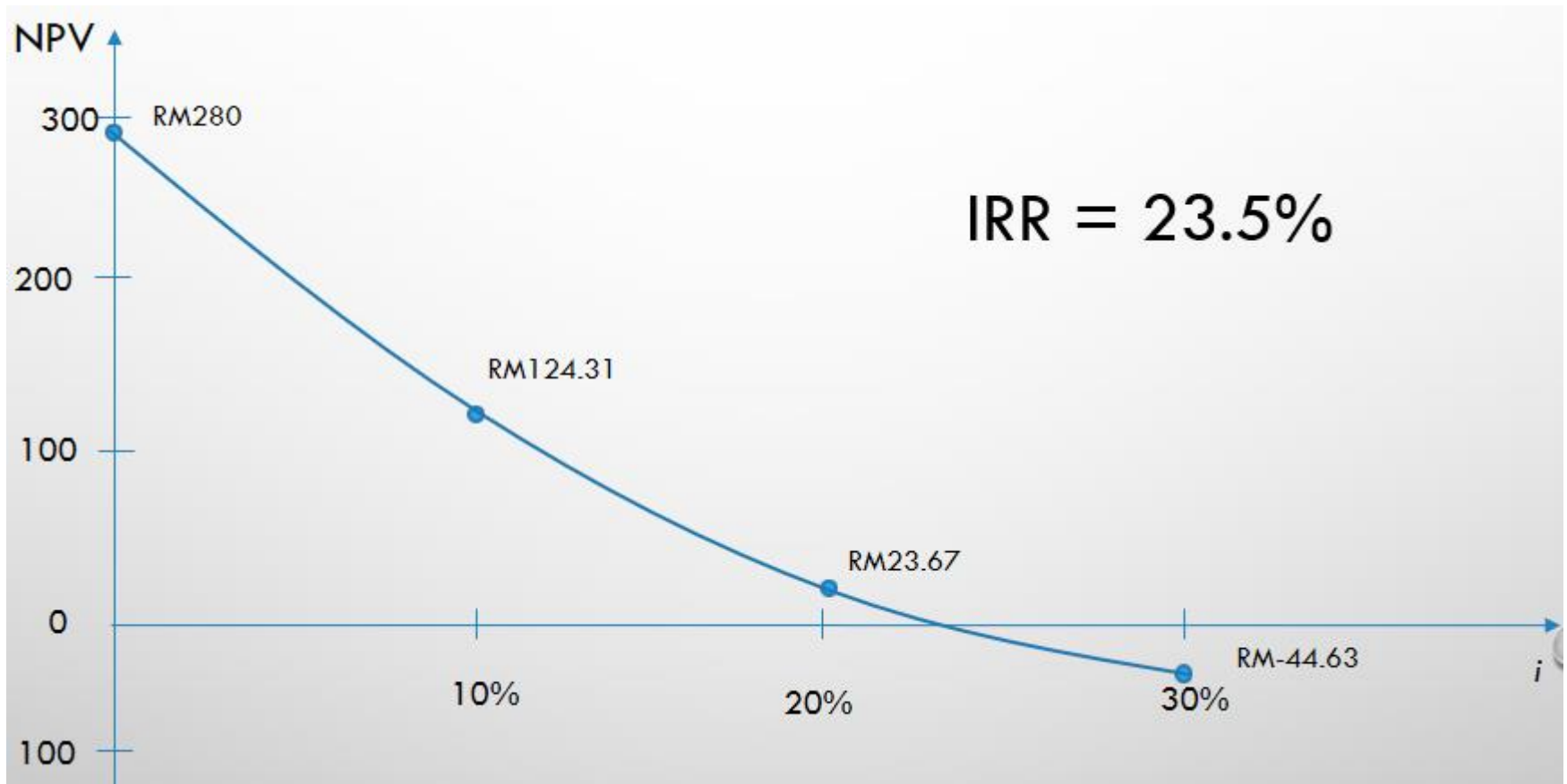
- Net present value (NPV) = 23.68(in thousands)
- Payback Period = 4.6 years

# After Tax Discounted Cash Flows for Interest Rate = 30%

Year	0	1	2	3	4	5
After Tax Cash Flow	-300	74	74	144	144	144
Discount Factor	1	0.769	0.592	0.445	0.350	0.269
Discounted Cash Flow (DCF)	-300	56.91	43.81	65.52	50.40	38.74
Cumulative Discounted Cash Flow	-300	-243.09	-199.28	-133.76	-83.36	-44.62

- Net present value (NPV) = -44.62 (in thousands)
- Payback Period > 5 years

# Internal Rate of Return





# What is the best decision?

<b>LOWER</b>	<b>NPV</b>	<b>HIGHER</b>
<b>SHORTER</b>	<b>PP</b>	<b>LONGER</b>
<b>LOWER</b>	<b>IRR</b>	<b>HIGHER</b>

# Conclusion

- **Conclusion #1**
  - Students are able to organize project initiation by setting the objectives, scopes, develop team members, proposing project comparison and selecting final project.

# Project Management

## Lecture 3

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