CSC 171 – Module 06

Prioritizing Features

Prioritizing Features

- The responsibility for prioritizing is shared among the whole team, but the effort is led by the product owner
- Factors in prioritization
  - Value of having the features
    - How much money will the organization make or save?
    - Estimate the financial impact over time
    - An alternative method for estimating value is to estimate desirability
  - Cost of developing the features
    - The cost of development (and perhaps supporting) the new features
    - Rough conversion from story points (ideal days) to money
      - The team's total salary for the last 12 weeks is 150,000
      - The team finished 120 user story pints in the last 12 weeks
      - Each story point cost 150,000/120 = 1250
      - Should 30 user story points feature set be included in the next release?
        - » Is the value of feature set > 37,500 (= 30 x 1250)
  - New Knowledge acquired by developing the features
    - Knowledge about the product, about what will be developed
    - Knowledge about the project, about how the product will be created (e.g., technologies, skills of developers, how team functions together)
  - Risk removed by developing the features
    - "Risk is something that has not yet happened but might and that would jeopardize or limit the success of the project" [2]
    - Schedule risk, cost risk, functionality risk, ...

Combining Risk & Value

Risk

High risk Low value -> Avoid	High risk High value -> Do first
Low risk Low value -> Do last	Low risk High value -> Do second

Value

- Rank by value first, then risk
- Note that features' risk and value profile can change over time

Question: A feature on the project to which you have been assigned is of fairly low priority. Right now, it looks like it will make it into the current release, but it could be dropped if time runs out. The feature needs to be developed in a language no one on the team has nay familiarity with. What do you do?

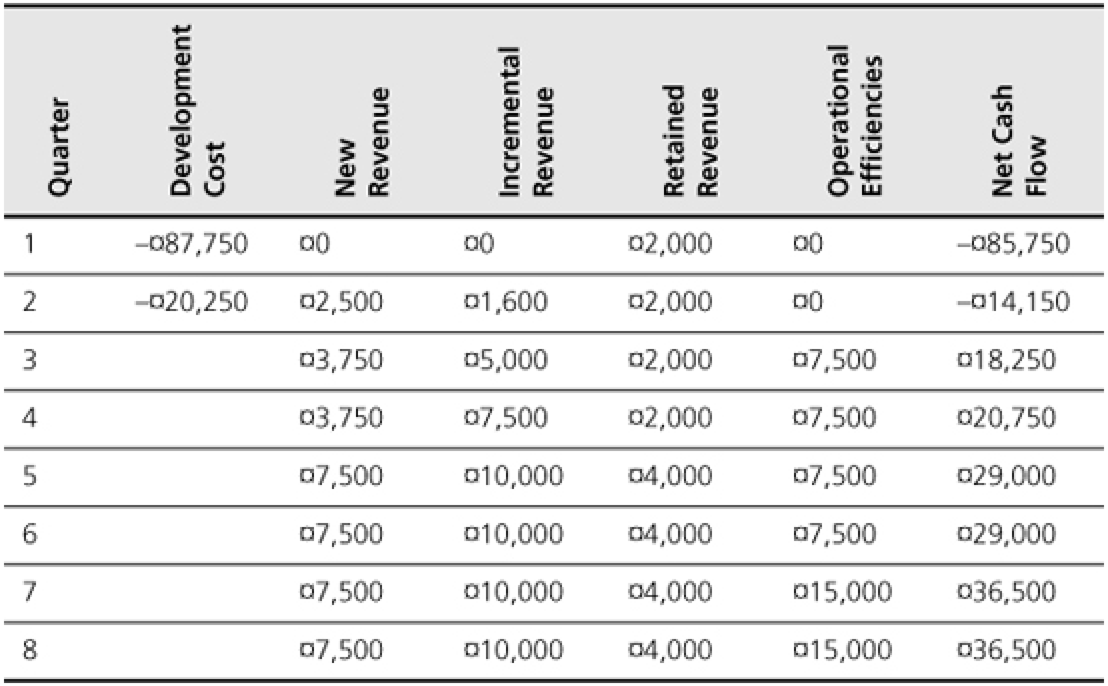
Combining the Four Factors

- Think first about value-to-cost ratio
- Use other factors to move feature sets forward or backward
- Examples

	Security Framework	User Interface
Value	Critical but not high	Ranges from high to low
Cost	Cost more if it is added later. However, if it is developed too early there might be associated change cost.	In most cases, developing UI earlier will not lower cost.
Knowledge	May generate new knowledge about project.	Often generates significant new knowledge about the product.
Risk	The failure of a framework is a significant risk to a project.	Reduces the risk of developing a wrong product.

Financial Prioritization – Sources of Return

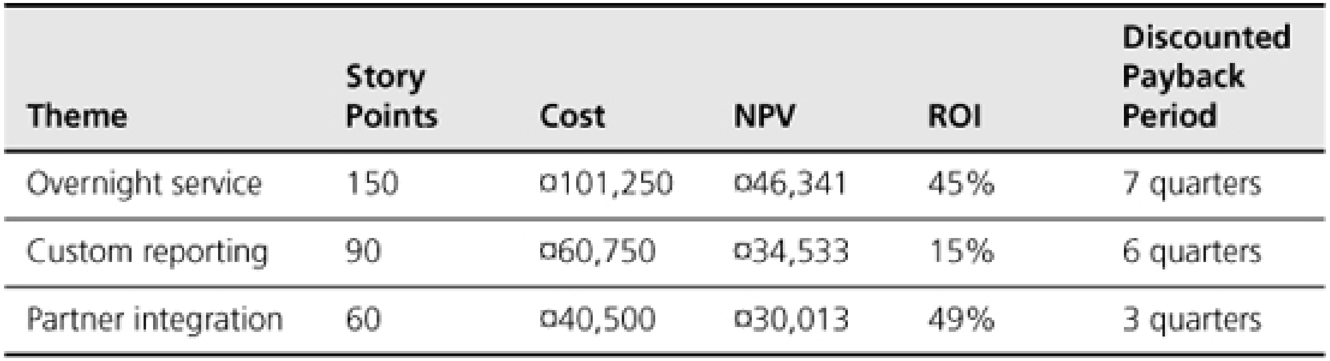
- Sources of return
  - New revenue
    - e.g., new customers
  - Incremental revenue
    - e.g., existing customers purchasing new licenses
  - Retained revenue
    - The revenue an organization will lose if the project or theme is not developed
  - Operational efficiencies
    - e.g., using automated system to reduce manual work
- Example [2]: web-payroll product, changing from 3-day delivery to overnight delivery



Quarter	Development Cost	New Revenue	Incremental Revenue	Retained Revenue	Operational Efficiencies	Net Cash Flow
1	–¤87,750	¤0	¤0	¤2,000	¤0	–¤85,750
2	–¤20,250	¤2,500	¤1,600	¤2,000	¤0	–¤14,150
3		¤3,750	¤5,000	¤2,000	¤7,500	¤18,250
4		¤3,750	¤7,500	¤2,000	¤7,500	¤20,750
5		¤7,500	¤10,000	¤4,000	¤7,500	¤29,000
6		¤7,500	¤10,000	¤4,000	¤7,500	¤29,000
7		¤7,500	¤10,000	¤4,000	¤15,000	¤36,500
8		¤7,500	¤10,000	¤4,000	¤15,000	¤36,500

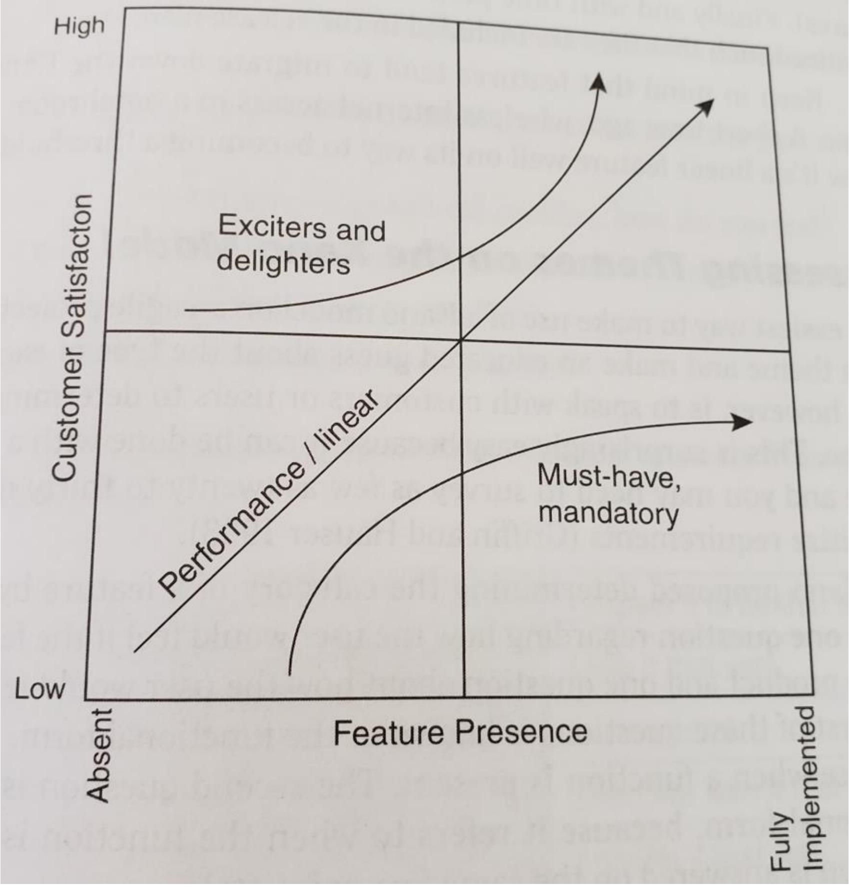
Financial Prioritization - Financial Measures

- Financial measures
  - Present value
    - The amount to invest today to have a known amount in the future
    - e.g., 0.91 is the present value of 1.00 in a year, with 10% interest rate
  - Net Present Value (NPV)
    - A measure of how much money a project can be expected to return (in today’s present value)
  - Return on Investment (ROI)
    - A measure of how quickly the money invested in a project will increase in value
  - Discounted Payback Period
    - A measure of how much time required to earn back the initial investment
- Comparing returns
  - Example [2]



Theme	Story Points	Cost	NPV	ROI	Discounted Payback Period
Overnight service	150	¤101,250	¤46,341	45%	7 quarters
Custom reporting	90	¤60,750	¤34,533	15%	6 quarters
Partner integration	60	¤40,500	¤30,013	49%	3 quarters

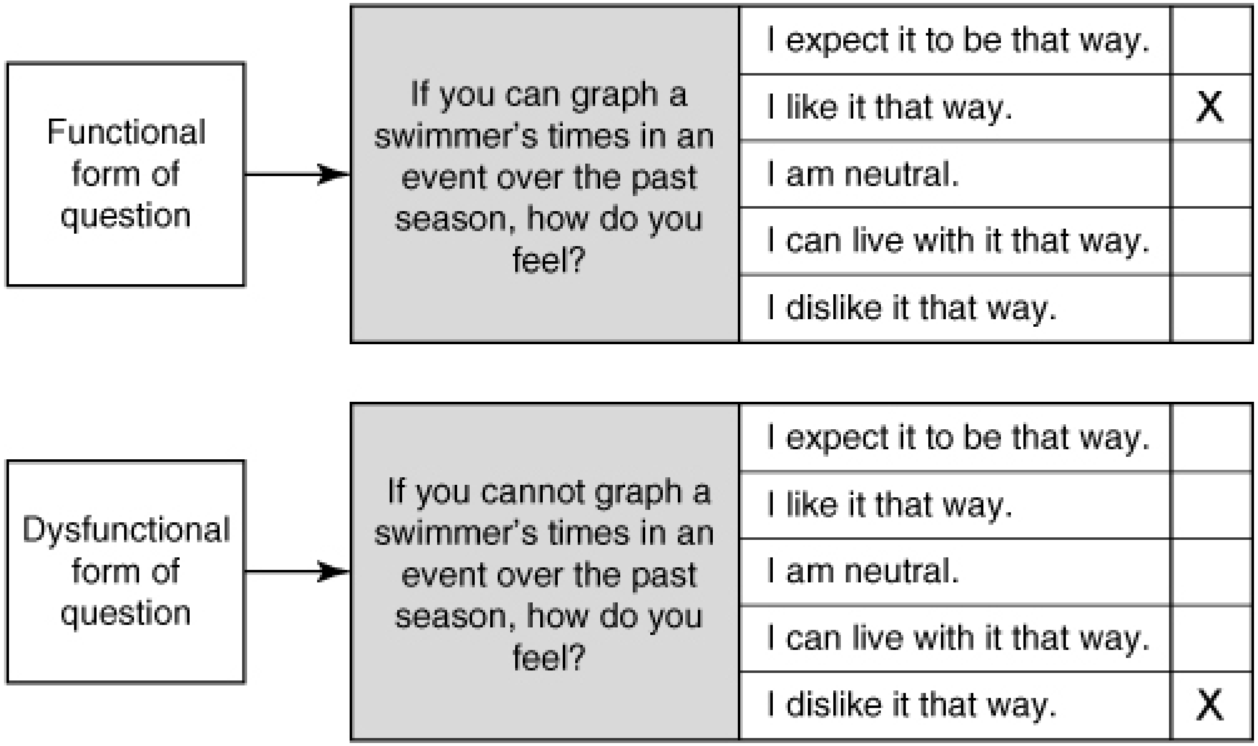
Prioritizing Desirability - Kano Model of Customer Satisfaction [2]



- Threshold/Must-have features
  - Must be present in the product.
  - Plan should include all the must-have features.
- Linear features
  - The more the better.
  - Plan should include as many linear features as possible.
- Exciters and delighters
  - Provide great satisfaction.
  - Plan should include a few of exciters if time permits.
- Indifferent features
  - Do not result in either customer satisfaction or dissatisfaction
- Reverse features
  - Result in customer dissatisfaction

Prioritizing Desirability – Accessing Themes on Kano Model- 1

- Ask prospective users to answer functional and dysfunctional questions for each feature set



Functional form of question

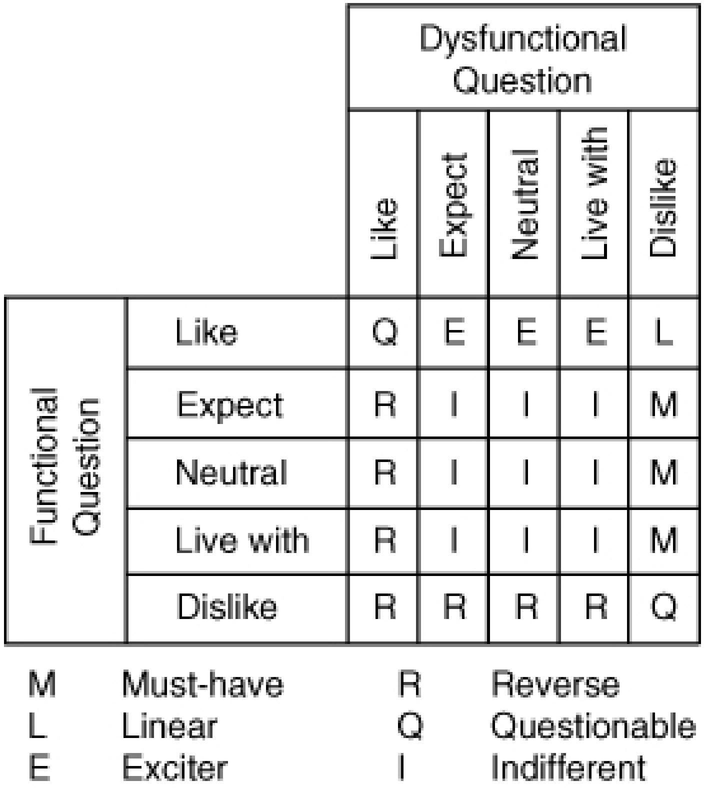
If you can graph a swimmer's times in an event over the past season, how do you feel?		
	I expect it to be that way.	
	I like it that way.	X
	I am neutral.	
	I can live with it that way.	
	I dislike it that way.	

Dysfunctional form of question

If you cannot graph a swimmer's times in an event over the past season, how do you feel?		
	I expect it to be that way.	
	I like it that way.	
	I am neutral.	
	I can live with it that way.	
	I dislike it that way.	X

Prioritizing Desirability – Accessing Themes on Kano Model- 2

- Categorize responses for each feature set



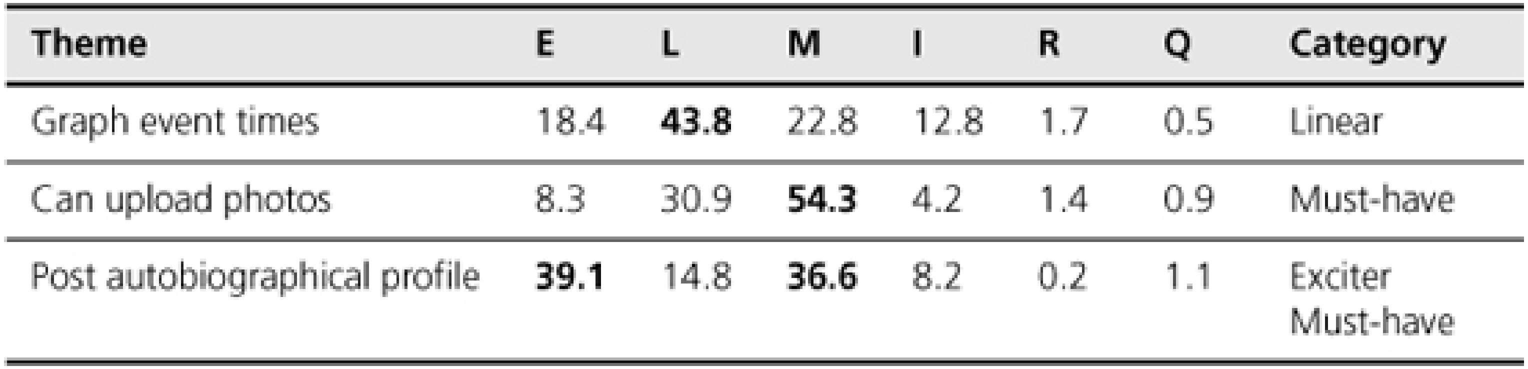
		Dysfunctional Question				
		Like	Expect	Neutral	Live with	Dislike
Functional Question	Like	Q	E	E	E	L
	Expect	R	I	I	I	M
	Neutral	R	I	I	I	M
	Live with	R	I	I	I	M
	Dislike	R	R	R	R	Q

M	Must-have	R	Reverse
L	Linear	Q	Questionable
E	Exciter	I	Indifferent

Prioritizing Desirability – Accessing Themes on Kano Model- 3

- Aggregate categorization results from all users
  - If a feature set has two high values, consider analyzing responses based on some factors that differentiates the customer or user population.

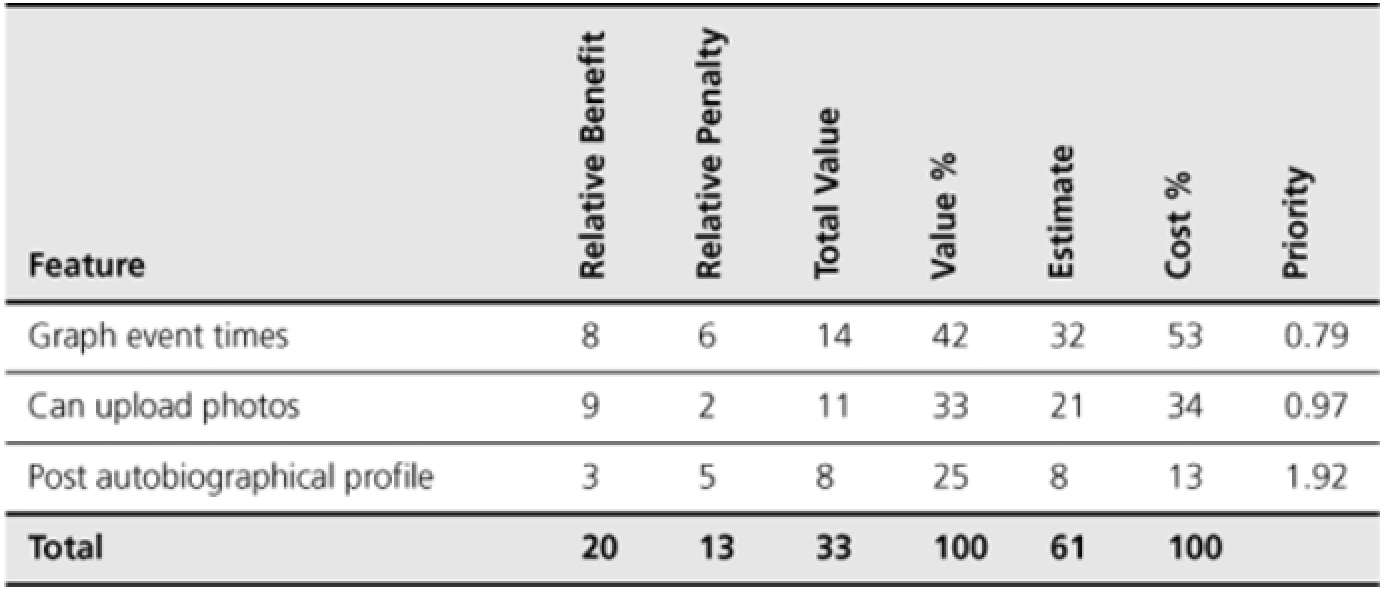
Distribution of Results from Surveying Users



Theme	E	L	M	I	R	Q	Category
Graph event times	18.4	**43.8**	22.8	12.8	1.7	0.5	Linear
Can upload photos	8.3	30.9	**54.3**	4.2	1.4	0.9	Must-have
Post autobiographical profile	**39.1**	14.8	**36.6**	8.2	0.2	1.1	Exciter Must-have

Prioritizing Desirability – Relative Weighting

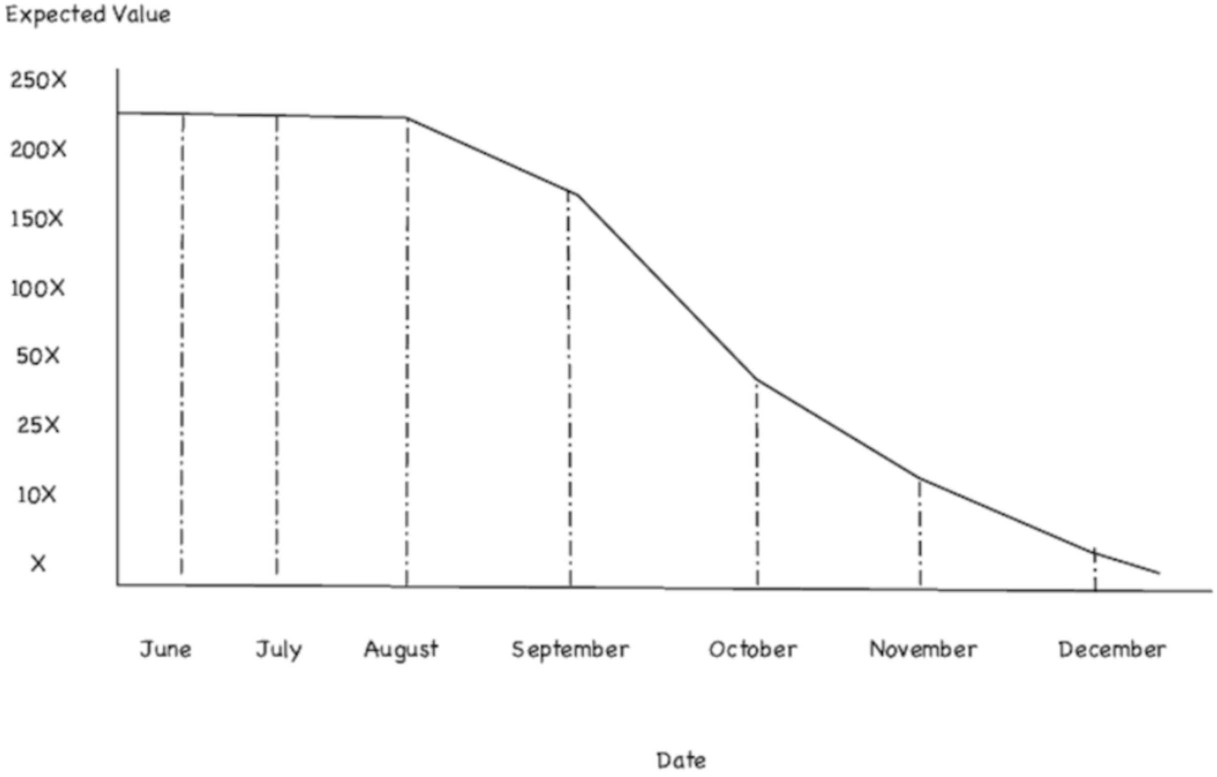
- Relies on expert judgment from development team
- Example [2]
  - For Relative benefit or penalty, a scale of 1 to 9 is used
    - Relative benefit: the benefit of presence of the feature
    - Relative penalty: the penalty of the feature's absence
  - Total Value = Relative Benefit + Relative Penalty
  - Value % = Total Value / Sum of Total Value
  - Estimate: story points or ideal days estimate
  - Cost % = Estimate / Sum of Estimate
  - Priority = Value % / Cost %



Feature	Relative Benefit	Relative Penalty	Total Value	Value %	Estimate	Cost %	Priority
Graph event times	8	6	14	42	32	53	0.79
Can upload photos	9	2	11	33	21	34	0.97
Post autobiographical profile	3	5	8	25	8	13	1.92
Total	**20**	**13**	**33**	**100**	**61**	**100**	

Other Prioritizing Strategies

- Shortest work first
  - Provides quick feedback
  - Works in some cases but not all cases
- Rank by cost of delay or value over time
  - Features do not have the same value over time



Rank by CD3

Feature	Estimated Duration	Estimated Cost of Delay	CD3
Feature 1	2 weeks	$5,000	$2,500/week
Feature 2	5 weeks	$10,000	$2,000/week
Feature 3	8 weeks	$100,000	$12,500/week

CD3: Cost of Delay Divide by Duration
CD3 = Estimated Cost of Delay / Estimated Duration

Development Order	Delay Cost ($)
Features 1, 2, 3	2,000x2 + 12,500x(2+5) = 91,500
Feature 3, 2, 1	2,000x8 + 2,500x(8+5) = 48,500
*Feature 3, 1, 2	2,500x8 + 2,000x(8+2) = 40,000

References

- [1] Create Your Successful Agile Project, Johanna Rothman, Pragmatic Programmers LLC, 2017. ISBN:9781680502602
- [2] Agile Estimating and Planning 1st Edition; Author: Mike Cohn; ISBN-13: 978-0131479418; ISBN-10: 9780131479418