

Fundamentals of Portfolio Project Management

Presented for PMI Central
Massachusetts Chapter

by
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Planned Agenda

- ◆ Introduction
- ◆ PMI project portfolio standard and worked example
- ◆ Chartering projects for the portfolio
- ◆ The project's business model
- ◆ Portfolio construction
- ◆ The project's composite value
- ◆ Beware the value-ranked list!!

Number	Name	Business Strategic Category				NPV	Other \$	Cust.	Stakeholders	Start	Finish	Product	Budget	FTEs	Other Assets	Product's		Active
		Class	Unit	Main	Other											Risk	Impact	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1	Alpha	1	25	2	2,4,6	3.70	0.60	1	a,b,c,d	8/19	11/17	Alpha	0.40	3.9	0.01	1.1	1.5	1
2	Bravo	1	3	5	3,1,5	2.60	0.50	1	d,e,y	4/20	12/16	Bravo	0.80	6.6	0.14	1.0	3.7	1
3	Charlie	1	3	2	4,7	0.60	0.50	3	a,c,f	4/25	8/23	Charlie	0.10	0.9	0.01	0.2	4.6	1
4	Delta	2	10	7	2,4,6	7.30	0.20	5	a,b,c,d	2/15	11/11	Delta	0.70	6.9	0.01	1.8	2.0	1
5	Echo	1	8	3	3,1,5	5.90	0.40	6	d,e,y	7/21	11/18	Echo	0.70	6.5	0.05	1.7	0.3	1
6	Foxtrot	2	12	6	4,7	9.80	0.50	1	a,c,f	5/25	12/31	Foxtrot	0.50	4.5	0.05	0.5	0.7	1
7	Golf	1	17	4	2,4,6	9.10	1.00	3	a,b,c,d	1/8	12/3	Golf	0.30	2.8	0.02	0.2	0.8	1
8	Hotel	2	15	3	3,1,5	7.80	0.30	4	d,e,y	4/2	7/31	Hotel	0.50	3.8	0.12	1.0	2.9	1
9	India	1	5	5	4,7	4.30	0.30	3	a,c,f	5/23	12/19	India	0.30	2.9	0.01	1.8	4.6	1
10	Juliet	2	25	2	2,4,6	8.20	0.30	4	a,b,c,d	2/13	7/12	Juliet	0.90	7.6	0.14	0.9	4.2	1
11	Kilo	2	23	4	3,1,5	8.70	0.20	5	d,e,y	3/4	12/31	Kilo	0.80	7.9	0.01	0.9	0.7	1
12	Lima	1	23	5	4,7	8.30	0.70	3	a,c,f	1/28	10/24	Lima	0.10	0.9	0.01	0.6	2.1	1
13	Mike	1	23	5	2,4,6	3.10	0.80	6	a,b,c,d	7/19	10/17	Mike	1.00	8.6	0.14	0.1	0.9	1
14	November	1	25	1	3,1,5	3.00	1.00	3	d,e,y	1/16	8/13	November	0.30	2.4	0.06	0.2	1.7	1
15	Oscar	1	9	5	4,7	8.50	0.50	3	a,c,f	5/26	12/22	Oscar	0.20	1.6	0.04	0.9	0.3	1
16	Papa	1	4	5	2,4,6	10.00	0.60	3	a,b,c,d	6/12	12/31	Papa	0.20	1.7	0.03	1.6	0.7	1
17	Quebec	1	14	7	3,1,5	7.40	0.10	2	d,e,y	2/4	7/3	Quebec	0.40	4.0	0.00	1.8	4.4	1
18	Romeo	1	15	5	4,7	0.20	0.40	1	a,c,f	1/9	12/4	Romeo	0.50	4.2	0.08	1.2	3.9	1
19	Sierra	2	5	2	2,4,6	4.40	0.90	3	a,b,c,d	5/23	6/22	Sierra	0.70	5.3	0.17	2.0	0.1	1
20	Tango	2	24	2	3,1,5	9.90	0.80	3	d,e,y	4/18	9/15	Tango	0.30	2.9	0.01	1.4	2.8	1
21	Uniform	1	2	1	4,7	4.60	0.60	4	a,c,f	3/21	9/17	Uniform	0.60	5.0	0.10	1.7	5.0	1
22	Victor	3	1	4	2,4,6	4.90	0.90	6	a,b,c,d	4/1	5/1	Victor	0.30	2.5	0.05	1.7	4.4	1
23	Whiskey	1	2	6	3,1,5	9.70	0.80	2	d,e,y	6/3	10/1	Whiskey	1.00	8.4	0.16	2.0	2.8	1
24	Xray	2	13	2	4,7	9.90	1.00	4	a,c,f	3/5	8/2	Xray	1.00	8.4	0.16	0.8	0.1	1
25	Yankee	3	4	5	2,4,6	9.80	0.20	2	a,b,c,d	6/7	8/6	Yankee	0.10	0.8	0.02	1.1	1.8	1
26	Zebra	2	21	4	3,1,5	2.40	0.30	1	d,e,y	7/23	12/31	Zebra	1.00	8.7	0.13	1.1	4.6	1
27	alpha	1	13	3	4,7	9.00	0.60	3	a,c,f	6/25	7/25	alpha	0.10	0.9	0.01	1.9	3.4	1
28	bravo	2	17	3	2,4,6	7.70	0.60	2	a,b,c,d	1/23	12/18	bravo	0.20	1.6	0.04	1.2	3.9	1
29	charlie	2	12	3	3,1,5	8.70	0.30	5	d,e,y	4/12	12/31	charlie	0.50	4.2	0.08	1.6	1.2	1
30	delta	1	3	5	4,7	0.40	0.60	4	a,c,f	7/17	12/31	delta	1.00	8.6	0.14	1.4	1.6	1
31	echo	3	20	5	2,4,6	9.30	0.40	5	a,b,c,d	2/6	7/5	echo	0.50	4.1	0.09	0.9	2.5	1
32	foxtrot	3	15	5	3,1,5	9.30	0.30	5	d,e,y	4/19	12/31	foxtrot	0.70	7.0	0.00	0.5	4.9	1
33	golf	3	24	6	4,7	8.10	0.40	3	a,c,f	8/17	11/15	golf	0.20	2.0	0.00	1.8	2.7	1
34	hotel	1	19	5	2,4,6	9.10	0.10	3	a,b,c,d	8/9	12/31	hotel	0.10	0.8	0.02	1.7	3.0	1
35	india	1	23	3	3,1,5	5.00	0.10	5	d,e,y	3/21	9/17	india	0.60	5.8	0.02	1.9	2.9	1
36	juliet	1	14	4	4,7	4.00	0.70	1	a,c,f	5/29	12/31	juliet	0.90	8.5	0.05	1.7	0.9	1

PMI PORTFOLIO PROCESSES

Every project needs an ending,
but not every project
needs to be started.

J. M. Nevison

PMI Portfolio Terms

- ◆ **Portfolios are composed of “components.”**
- ◆ **A component can be:**
 - A single project
 - A program, (a collection of related projects)
 - A sub-portfolio, (a small combination of projects and programs)
- ◆ **Components have “key descriptors.”**
- ◆ **When a portfolio is depicted as a table:**
 - The rows are *components*
 - The columns are *key descriptors*
- ◆ **A portfolio’s purpose is to further the organization’s strategic objectives.**

Portfolio Management: Aligning Process Group

- ◆ **Identify Components:** “What are all the possible components for the portfolio?”
- ◆ **Categorize Components:** “To what strategic category does each component belong?”
- ◆ **Evaluate Components:** “What is each component’s composite value?”
- ◆ **Select Components:** “Which components are fully qualified candidates for the portfolio?”
- ◆ **Identify Portfolio Risks:** “Which risks could affect the portfolio?”
- ◆ **Analyze Portfolio Risks:** “Which portfolio risks require further action?”
- ◆ **Prioritize Components:** “Within each strategic category, how do the candidate components rank?”
- ◆ **Develop Portfolio Risk Responses:** “How do we respond to the high-priority portfolio risks?”
- ◆ **Balance Portfolio:** “Which components are chosen to best balance the portfolio?”
- ◆ **Communicate Portfolio Adjustment:** “What changes to the portfolio have occurred?”
- ◆ **Authorize Components:** “Which components are authorized to receive allocated resources?”

Portfolio Management: Monitoring and Controlling Process Group

- ◆ **Monitor and Control Portfolio Risks:**
“How have our portfolio’s risks changed over time?”
- ◆ **Review and Report Portfolio Performance:**
“How has our portfolio changed over time?”
- ◆ **Monitor Business Strategy Changes:**
“How has our business strategy changed over time?”

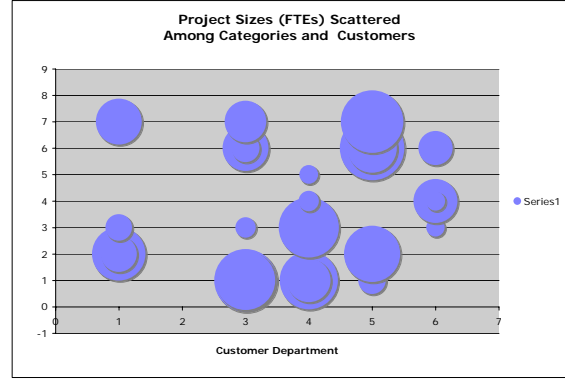
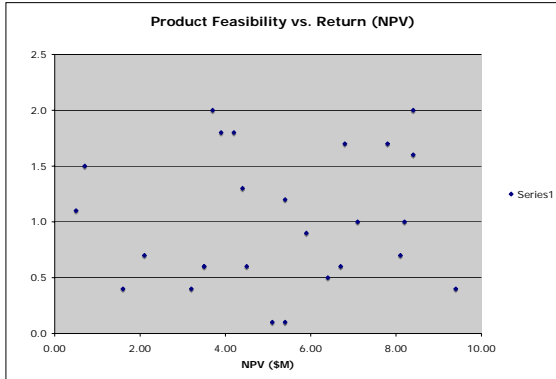
PMI PORTFOLIO EXAMPLE

Few things are harder to put up with
than the annoyance
of a good example.

Mark Twain

Component Key Descriptors

- 1 Number
- 2 Name (description)
- 3 Class: 1 Project, 2 program, 3 sub portfolio, 4 other (operations work, business case)
- 4 Primary business unit responsible--sponsor (could include hierarchy address--dept., division, count)
- 5 Primary strategic category (one only):
 1. Meet business imperative (mandatory)
 2. Meet legal requirement (mandatory)
 3. Reduce a business risk
 4. Improve efficiency (lowers cost--includes process improvement)
 5. Increase market share (raises revenue)
 6. Exploit a business opportunity (raises revenue)
 7. Increase profit (combination that raises revenue and lowers cost)
- 6 Other strategic categories supported (all that are appropriate): among the 1-7
- 7 Business financial results in net present value (NPV) (includes all other financial metrics)
- 8 Other quantitative benefits (such as reduced cycle time or improved quality)
- 9 Main customer
- 10 Key stakeholders: list
 - High-level plan: (for this year)
- 11 Start Date
- 12 Finish Date
- 13 Product
- 14 Budget
 - Required resources: (for this year)
- 15 People (FTEs)
- 16 Assets (Equip., materials, other)
- 17 Product market risk (special circumstances not covered in NPV)
- 18 Product market impact (special circumstances not covered in NPV)



Business Strategic Category													Other			Product's		Active			
Number	Name	Class	Unit	Start	Finish	NPV	Other	Cust.	Stakeholders	Start	Finish	Product	Budget	FTEs	Assets	Risk	Impact	Active	Time		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
20	Zebra	1	10	1	3.15	5.10	1100	1	day	126 111	Zebra	0.80	6.6	0.11	3.5	1					
18	Malin	1	10	1	3.15	6.70	1030	3	day	150 754	Malin	0.50	4.2	0.08	1.5	1					
20	Tango	1	2	1	2.46	2.50	1000	4	day	156 1231	Tango	0.20	0.8	0.01	0.4	1					
10	Jules	1	2	1	2.46	2.50	1000	3	day	83 994	Jules	0.10	0.9	0.01	0.4	1					
1	Alpha	2	4	1	2.46	4.40	1330	5	day	38 1231	Alpha	0.20	1.7	0.03	1.3	1					
19	Sigma	2	18	1	2.46	9.40	1000	3	day	713 1231	Sigma	1.80	7.8	0.22	0.4	1					
8	Head	1	24	1	3.15	4.20	1030	5	day	250 1026	Head	0.90	7.0	0.20	1.8	1					
28	Bravo	1	22	1	2.46	3.80	1030	1	day	327 927	Bravo	0.70	4.8	0.07	1.8	1					
9	India	1	23	2	4.3	2.10	1.00	1	day	60 927	India	0.30	3.9	0.01	0.7	1					
Sum of mandatory components													39.80	6.10	0.00	52.97	0.70				
Business Strategic Category													Other			Product's		Active			
Number	Name	Class	Unit	Start	Finish	NPV	Other	Cust.	Stakeholders	Start	Finish	Product	Budget	FTEs	Assets	Risk	Impact	Active	Time		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
15	Papa	1	9	1	2.46	8.40	1070	4	day	211 411	Papa	0.70	8.9	0.10	1.6	1					
27	Alpha	3	12	3	4.3	6.90	1.00	1	day	315 711	alpha	0.70	6.3	0.07	1.0	3					
31	Echo	2	2	3	2.46	5.90	1000	1	day	320 1231	echo	0.20	1.6	0.04	0.9	1					
25	Yankee	1	23	3	2.46	5.40	1.00	6	day	927 1126	Yankee	0.10	0.8	0.02	1.2	2					
18	Bravo	1	5	3	4.3	1.80	1010	5	day	159 938	Bravo	0.60	4.6	0.14	1.5	1					
5	Echo	1	24	3	3.15	0.50	1030	3	day	818 1116	Echo	0.10	0.9	0.01	1.1	4					
3	Charlie	1	16	4	4.3	7.10	0.70	6	day	310 608	Charlie	0.50	4.3	0.07	1.0	3					
21	Uniform	2	22	4	4.3	3.50	1040	4	day	199 806	Uniform	0.10	0.9	0.01	0.6	2					
12	Lima	1	11	4	4.3	2.00	0.70	2	day	725 1122	Lima	1.00	9.7	0.03	1.4	2					
30	Delta	1	15	4	4.3	1.60	1030	6	day	75 1231	delta	0.10	0.9	0.01	0.4	1					
34	Hotel	1	1	5	2.46	8.40	1060	4	day	218 915	hotel	0.70	6.07	0.09	2.0	1					
23	Whiskey	1	14	5	3.15	4.70	0.50	3	day	927 1231	Whiskey	0.90	8.9	0.01	1.3	4					
6	Foxtrot	2	13	5	4.3	2.70	1040	6	day	715 1231	Foxtrot	0.40	3.1	0.07	0.6	4					
15	Oscar	1	2	5	4.3	0.40	1040	3	day	415 1231	Oscar	0.50	3.9	0.11	1.2	2					
2	Bravo	2	16	6	3.15	8.20	0.10	3	day	46 58	Bravo	0.20	1.8	0.02	1.0	1					
29	Charlie	2	12	6	3.15	7.80	1060	5	day	511 938	charlie	1.00	9.2	0.08	1.7	2					
22	Victor	1	24	6	2.46	5.50	1030	6	day	920 1231	Victor	0.80	6.3	0.17	0.4	2					
4	Delta	3	12	6	2.46	4.50	1040	5	day	67 757	Delta	0.60	5.4	0.06	0.6	1					
13	Mike	1	25	6	2.46	3.70	0.70	3	day	227 726	Mike	0.60	4.7	0.13	2.0	1					
17	Quebec	1	1	6	3.15	3.50	1030	6	day	621 1021	Quebec	0.30	2.4	0.04	0.6	1					
24	Xray	1	18	6	4.3	2.60	1030	6	day	81 1231	Xray	0.30	2.7	0.03	0.3	3					
36	Jules	3	19	7	4.3	8.10	0.40	5	day	425 1231	jules	1.00	8.6	0.14	0.7	1					
11	Kilo	2	5	7	3.15	6.70	1020	3	day	870 1231	Kilo	0.80	7.8	0.02	0.5	1					
32	Ironair	2	5	7	3.15	6.40	1.00	5	day	92 121	Ironair	0.80	7.8	0.02	0.5	1					
33	Guif	1	15	7	4.3	5.40	1030	1	day	21 1231	Guif	0.60	4.7	0.11	0.6	1					
14	November	1	11	7	3.15	2.50	1030	4	day	520 1231	November	0.80	7.6	0.04	0.8	0.5	0				
7	Guif	2	22	7	2.46	1.90	1030	4	day	84 1231	Guif	0.90	8.8	0.02	2.0	2					
Total of optional components													38.90	22.10	0.00	24.96	0.40				
Total of all components													134.90	16.80	0.00	137.50	1.10				
Constraints													134.90	16.80	0.00	137.50	1.10				
Total of all components													134.90	16.80	0.00	137.50	1.10				

PROJECT IS CHOSEN BY:					BEST OVERALL	
Strategy Category	Active	Number	Name	Active	Time	Active
1	1	20	Zebra	1		
1	1	18	Malin	1		
1	1	20	Tango	1		
1	1	10	Jules	1		
1	1	1	Alpha	1		
1	1	19	Sigma	1		
2	1	8	Head	1		
2	1	28	Bravo	1		
2	1	9	India	1		
1	1	16	Papa	1		
3	1	11	alpha	1		
3	1	25	Yankee	1		
3	0	18	Bravo	0		
3	1	5	Echo	0		
4	1	3	Charlie	1		
4	1	21	Uniform	1		
4	0	12	Lima	0		
4	1	30	Delta	1		
5	1	34	Hotel	1		
5	0	23	Whiskey	0		
5	0	6	Foxtrot	1		
5	1	15	Oscar	0		
6	1	2	Bravo	1		
6	1	29	Charlie	1		
6	0	22	Victor	0		
6	1	4	Delta	1		
6	1	13	Mike	1		
6	1	17	Quebec	1		
6	0	24	Xray	1		
6	1	36	Jules	1		
7	1	11	Kilo	1		
7	1	32	Ironair	1		
7	1	33	Guif	1		
7	0	7	November	0		
7	0	7	Guif	0		
TOTAL NET PRESENT VALUE					134.90	137.50

PROJECT CHARTERING

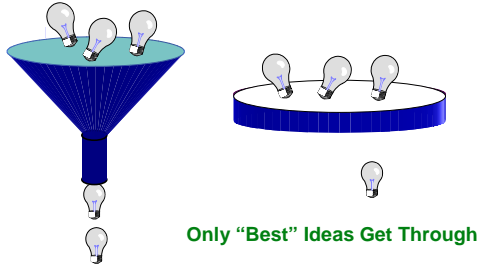
It's always easier to beg for forgiveness than to ask for permission.

Anonymous

Project Charter

- ◆ A document issued by senior management that provides the project manager with the authority to apply organizational resources to project activities.
- ◆ *Implies:* A process that formally recognizes the existence of a project.

Charter: Funnel or Filter?



Chartering Process Questions

- ◆ Project urgency – mandatory?
- ◆ Business value of project?
- ◆ Composite value of project?
 - Strategic fit?
 - Organizational fit?
 - Fit with other active projects?

New Leaf Chartering Process

1. Decide on mandatory projects.
2. For all other projects:
 - Develop economic framework.
 - Do business model with NPV.
3. Using a composite value table, establish the value of every positive NPV project.
4. Choose best combination within constraints.
5. Periodically review current portfolio (re-chartering):
 - Survey mandatory projects.
 - Re-evaluate NPV and composite value for optional projects.
 - Add high-value new projects and cancel low-value projects.

Chartering, Step 1: Project Urgency

1. Is the project mandatory?
 - Comply with the law
 - Prevent injury or death
 - Ensure the functioning of equipment
 - Prevent corporate bankruptcy
2. You *must* do the "mandatory items."
3. All other projects must be chosen.

CONSTRUCTING A PROJECT'S BUSINESS MODEL

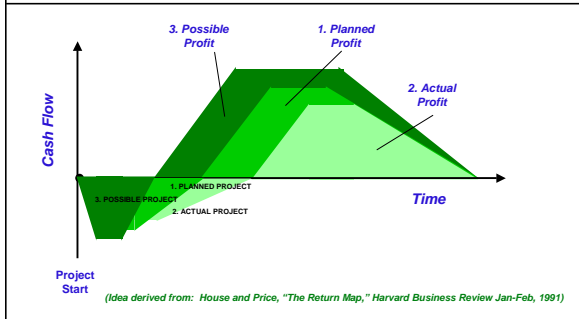
Nevison's Nugget

All projects have
an implicit business model;
smart projects have
an explicit business model.

Chartering, Step 2: Business Model

	Years				
	0	1	2	3	4
Benefit: Sales		143	463	375	168
Cost: Costs		105	369	339	165
Project Cost	70				
Net: Profit	(70)	38	93	36	3
Cumulative Net: Profit	(70)	(32)	61	97	100

Example of a Business Model: Cash Flow versus Time



PORTFOLIO SELECTION

Point of view is worth
80 IQ points.

Alan Kay

When Does the Portfolio Problem Occur?

- ◆ Any time you must choose among outcomes that all have positive value but *have constrained resources*.
- ◆ The portfolio problem asks, “How can you choose the set of outcomes with the *highest possible combined value* within the *constrained resources*?”
- ◆ The portfolio problem is a dual version of the familiar diet problem. “How can you fill a shopping cart with groceries that for the *lowest possible price* meets the *minimum adult daily nutritional requirements*?”
- ◆ Both problems can be solved with the same technique:
 - > Try each possible combination.
 - > Discard those that violate any constraint.
 - > Select the best choice from the ones that remain.

Portfolio Constraints and Project Choice

Possible Projects	Current Resources	Profit	Required People
Able	200	30	20
Baker	125	16	23
Charlie	175	19	8
Delta	150	12	15
Echo	150	17	15
Constraints	300	--	34

Which project(s) do you pick?

Exercise: Choosing the Portfolio

1. Examine the 5 projects on the list.
2. Through trial and error, determine the highest possible profit and the best portfolio.

PROJECT COMPOSITE VALUE – BEYOND NPV

“I like the Walrus best,” said Alice: “because he was a little sorry for the poor oysters.”

“He ate more than the Carpenter, though,” said Tweedledee...

“Then I like the Carpenter best – if he didn’t eat so many as the Walrus.”

“But he ate as many as he could get,” said Tweedledum.

Lewis Carroll

Chartering, Step 3: Project Composite Value Table

- ◆ **Definition:** A table of consisting of rows of projects (portfolio components) and columns of the projects' "value" criteria.
- ◆ **When can you use a Project Value Table?**
 - You have a set of clearly defined projects (portfolio components).
 - You can measure the value- (or benefit-) criteria of each project.
 - You want to *value the project using more than just NPV.*

Translate Incommensurate Values into *Relative Percentages*

- ◆ The value table's raw numbers often need to be converted to *relative percentages* within each criterion because the raw numbers (columns) are different in scale and in range and impossible to compare.
- ◆ To get a relative percentage, within each specific criteria, assign a value of 100% to the largest value and a proportional % to each of the other values.
- ◆ Relative percentages can be confidently compared.

Project Value Table: Changing Weights Changes Composite Value

Initial data				
Reverse scale?	no	no	no	yes
Value Weights:	3.00	1.00	1.00	0.50
	Advance the Strategic Maintenance			
Project/Program	NPV	Technology	Importance	Costs
Project 1	18.00	9	1.7	23.5
Project 2	15.00	12	1.7	17.8
Project 3	14.00	5	3.7	13.0
Project 4	12.00	3	1.9	11.2
Model				
The value of each component's criteria in units of relative percentage (with best criteria = 100%)				
Reverse scale?	no	no	no	yes
Value Weights:	3.00	1.00	1.00	0.50
	Advance the Strategic Maintenance			
Project/Program	NPV	Technology	Importance	Costs
Project 1	100%	75%	46%	48%
Project 2	83%	100%	46%	72%
Project 3	78%	42%	100%	92%
Project 4	67%	25%	51%	100%
				Composite Value
				81%
				79%
				77%
				59%
Tricky formulas:				
If (reverse the scale) then <new score> = <old min> + <old max> - <old score>				
Criteria percent value = < score> / <max score>				

An Example of Adding Incommensurate Values

Can you give a better ranking than the one shown below?

Initial data (calculated data in bold)						
Project/Program	Criteria A	Criteria B	Criteria C	Criteria D	Average	Row Rank
Project	16.00	2	8.80	2	5.2	1
Program	14.00	4	18.90	1	4.0	2
Project	15.50	3	8.45	3	2.0	4
Program	19.00	1	5.95	4	0.8	6
Project	10.00	6	5.40	5	3.0	3
Program	12.00	5	2.10	6	1.5	5
						2.25
						3.25
						3.75
						5.00
						5.25

(Source: PMI, (2009), "Figure 4-11. Multiple Criteria Weighted Ranking," *The Standard for Portfolio Management*, 2nd ed., p. 65.)

BEWARE THE VALUE-RANKED LIST

All models are lies;
Some models are useful.

After a remark of George Box

The Siren Call: Tables Sorted on Value

- ◆ Large tables of data are frequently sorted into some kind of order.
- ◆ A table of project-rows ordered from greatest to least value is a tempting structure.
- ◆ Do **NOT** let the ordering prevent you from trying all possible combinations in search of the best portfolio.
- ◆ Only after you have tried every possible combination can you be sure you have selected the best portfolio.

Beware the Value-Ranked List!

Project	Current Resources	Profit	Required People
Red	125	21	20
Chartreuse	175	19	8
Yellow	75	17	5
Blue	125	16	12
Green	100	12	9
Constraints	300	--	34

Which project(s) do you pick?

Total Profit: 40
Use Current Resources: 300 of 300
Use Available People: 28 of 34

With Total Profit = 40,
Are we done?

Planned Agenda (Review)

- ◆ Introduction
- ◆ PMI project portfolio standard and worked example
- ◆ Chartering projects for the portfolio
- ◆ The project's business model
- ◆ Portfolio construction
- ◆ The project's composite value
- ◆ Beware the value-ranked list!!

New Leaf Chartering Process

1. Decide on mandatory projects.
2. For all other projects:
 - > Develop economic framework.
 - > Do business model with NPV.
3. Using a composite value table, establish the value of every positive NPV project.
4. Choose best combination within constraints.
5. Periodically review current portfolio (re-chartering):
 - > Survey mandatory projects.
 - > Re-evaluate NPV and composite value for optional projects.
 - > Add high-value new projects and cancel low-value projects.

Further Reading to Earn PDUs

- ◆ White papers about project management, including *Managing Multiple People on Multiple Projects*, are available on our web site, www.newleafpm.com
- ◆ Details on how to earn over 40 "PDUs by mail" can be found at the end of any white paper.
- ◆ For more information, please contact us at 978-369-9009 or info@newleafpm.com