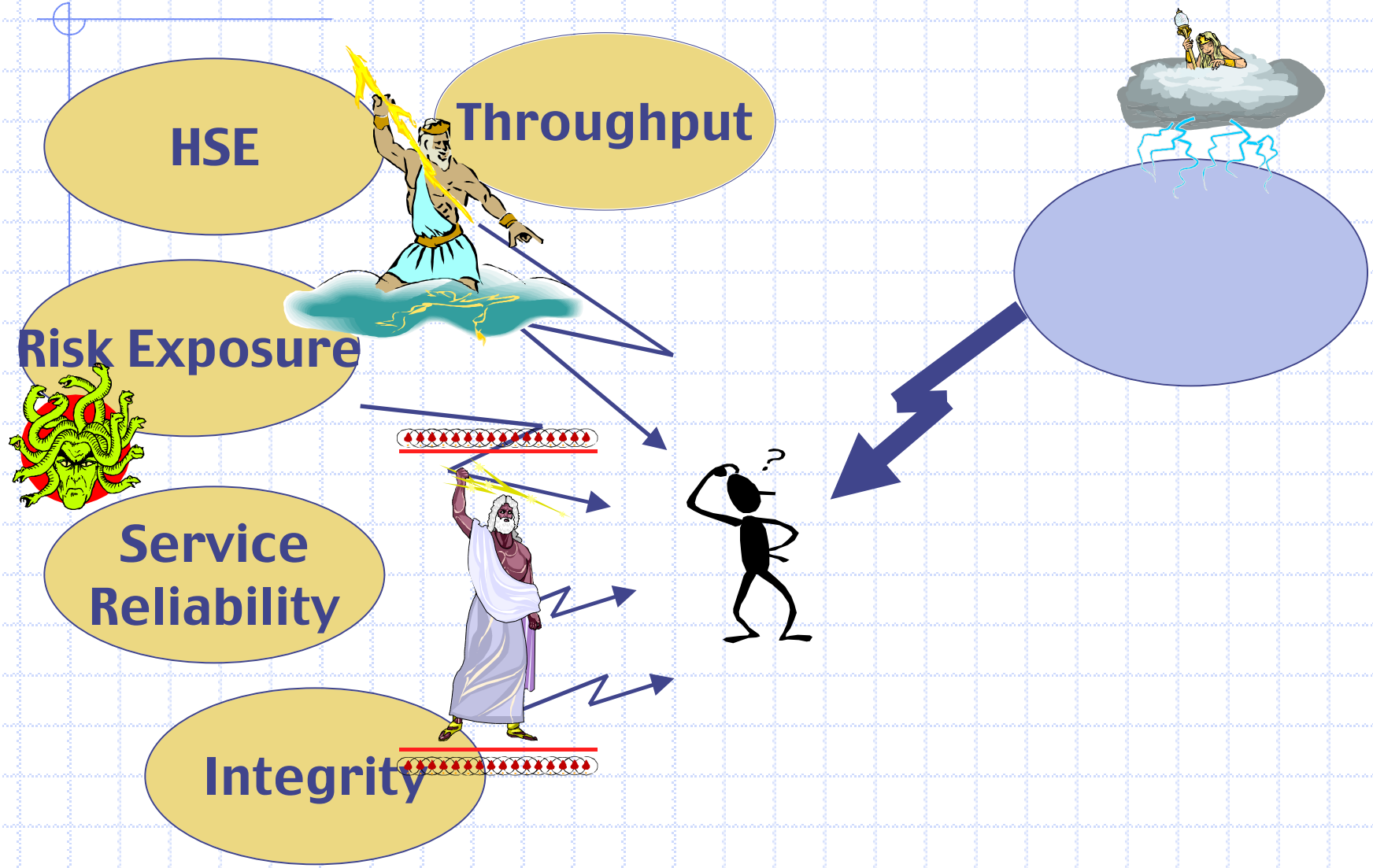


Budgets Are Portfolios Too!

James Mitchell
Decision Strategies Inc.



How Do You Budget for This?



The Two Key Questions..

- ◆ **How to achieve cost savings while maintaining an acceptable level of risk to throughput, reliability, safety, health and environment?**
- ◆ **How to prioritize spending to get the most value for money?**

Backgrounder: TransCanada Capital Maintenance Budget

- ◆ Starting budget ~\$500 million/yr
- ◆ Projects range from 10's K to 10's millions
- ◆ >250 projects (line items in budget)
- ◆ 4 separate departments
- ◆ New management not comfortable with lack of rigor
- ◆ Immediate need to reduce spending
- ◆ System integrity very critical

Results

- ◆ **Immediate wild success!!**
- ◆ **Final budget of \$300 million (continued use of process has brought spending to ~150 million on an ongoing basis)**
- ◆ **Process established; Evaluation engine on-line**
- ◆ **Consistent approach for assessments**
- ◆ **All involved immediately promoted**

Many Key Success Elements Were in Existence*

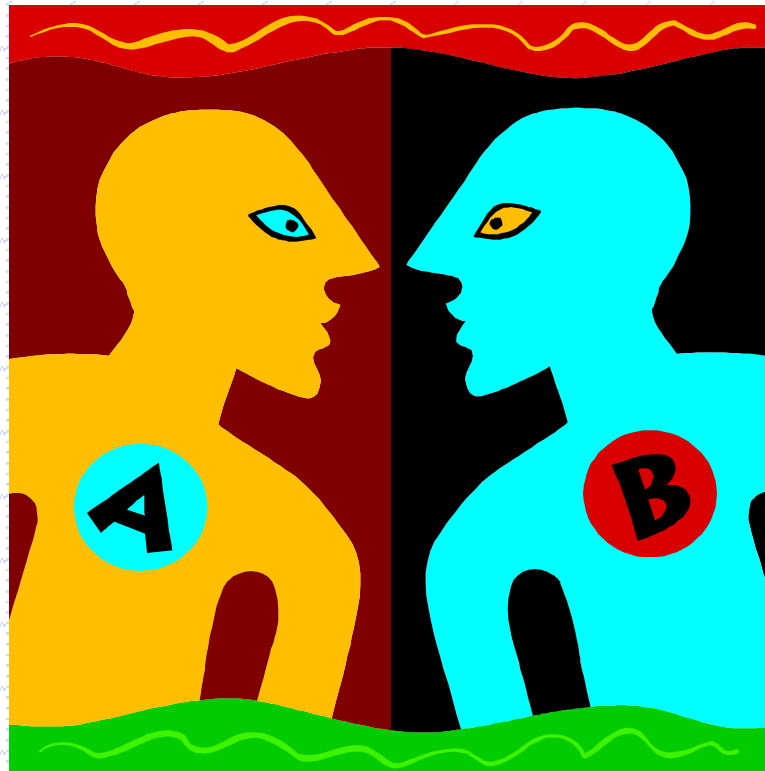
- ◆ Formal budget/project review process
- ◆ Risk based project planning
- ◆ Accepted risk calculation equations
- ◆ Consequence matrix
- ◆ Value metrics

✱

Issues and Challenges

- ◆
- ◆ **-defining value, quantifying soft issues**
- ◆ **volume of data, consistency**
- ◆ **confidence in product, review and interpretation**

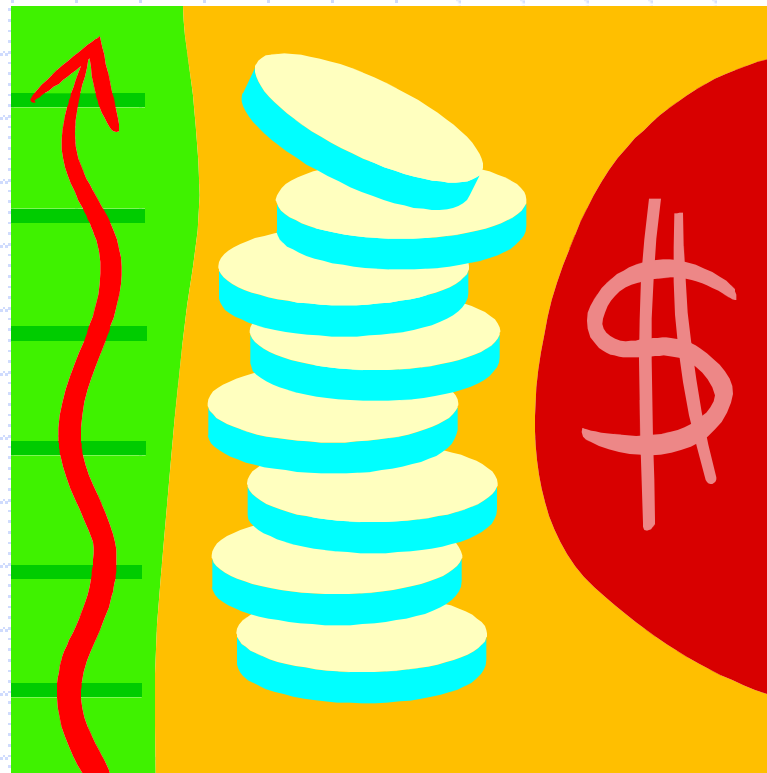
Getting Buy-in To the Process





Process and Metric Development

Metrics and Calculations



Defining Value = Efficient Use of Cash

$$\text{Value Ratio} = \frac{\text{Original Risk \$} - \text{Future Risk \$}}{\text{Cost to Change}}$$

- ◆ Value ratio over a 5 year period
- ◆ Cost to change includes development, implementation, and O&M

Consequence Equivalents to Quantify Soft Issues

Safety	Environment	Customer Impact	Worker Health	Financial Range	
				\$ 1,000,000,000	
Consequence A	Consequence C	Consequence G		\$ 100,000,000	\$ 1,000,000,000
				\$ 90,000,000	\$ 100,000,000
				\$ 80,000,000	\$ 90,000,000
				\$ 70,000,000	\$ 80,000,000
				\$ 60,000,000	\$ 70,000,000
				\$ 50,000,000	\$ 60,000,000
				\$ 40,000,000	\$ 50,000,000
				\$ 30,000,000	\$ 40,000,000
				\$ 20,000,000	\$ 30,000,000
				\$ 10,000,000	\$ 20,000,000
Consequence B	Consequence F	Consequence H		\$ 9,000,000	\$ 10,000,000
				\$ 8,000,000	\$ 9,000,000
				\$ 7,000,000	\$ 8,000,000
				\$ 6,000,000	\$ 7,000,000
				\$ 5,000,000	\$ 6,000,000
				\$ 4,000,000	\$ 5,000,000
				\$ 3,000,000	\$ 4,000,000
				\$ 2,000,000	\$ 3,000,000
\$ 1,000,000	\$ 2,000,000				
				\$ 900,000	\$ 1,000,000

Key Assumptions About Equivalents

- ◆ **The consequence matrix assigns a dollar value in a consistent way to the important non-quantifiable issues**
- ◆ **The equivalents in the matrix are approximately right**

Calculating the Avoided Risk

$$\text{Risk} = \text{frequency} \times \sum (\text{probability} \times \text{consequence})$$

- ◆
 - Determine expected frequency per year
- ◆ :
- ◆
 - Determine severity points and severity \$
 - Determine probability of occurrence

Components of the Risk Equation

Hazards & Threats

Event or Scenario

Consequence 1

Consequence 2

Probability: likelihood (%) that each consequence could occur

: is the qualitative description of what might happen or what you are concerned about

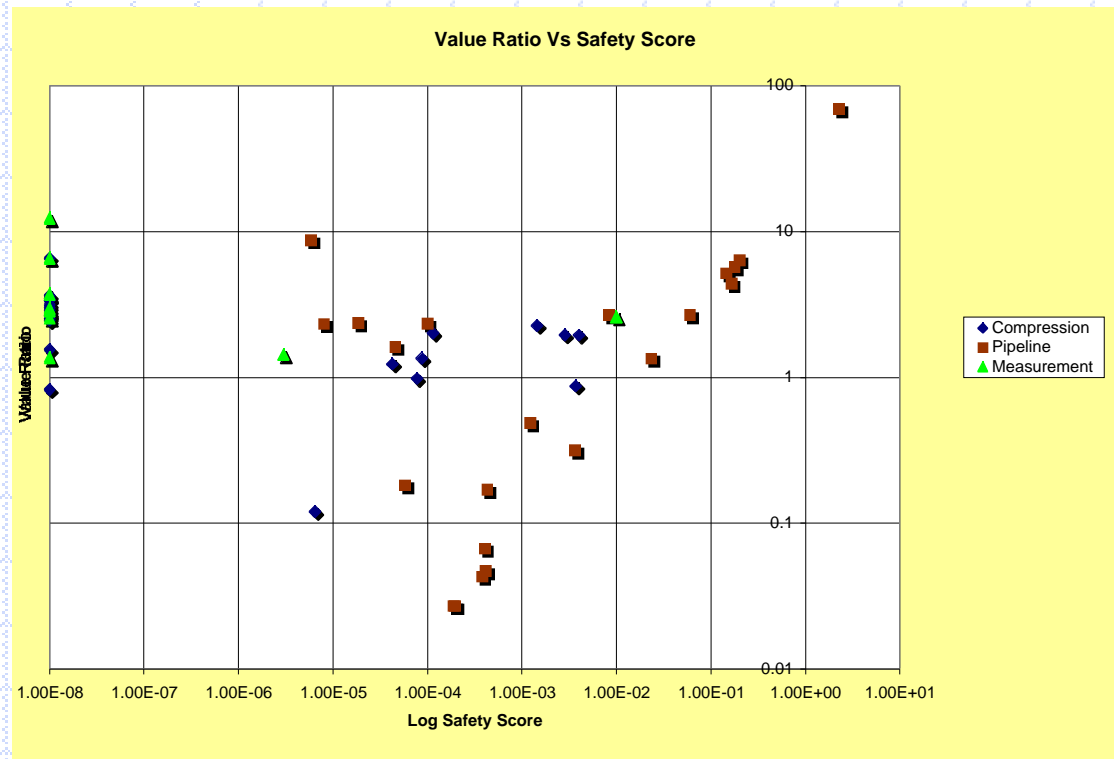
is where something goes wrong that leads to a consequence"

The potential outcome of an event. A consequence could be very large, like the loss of millions of dollars, or very small like incurring some repair costs.

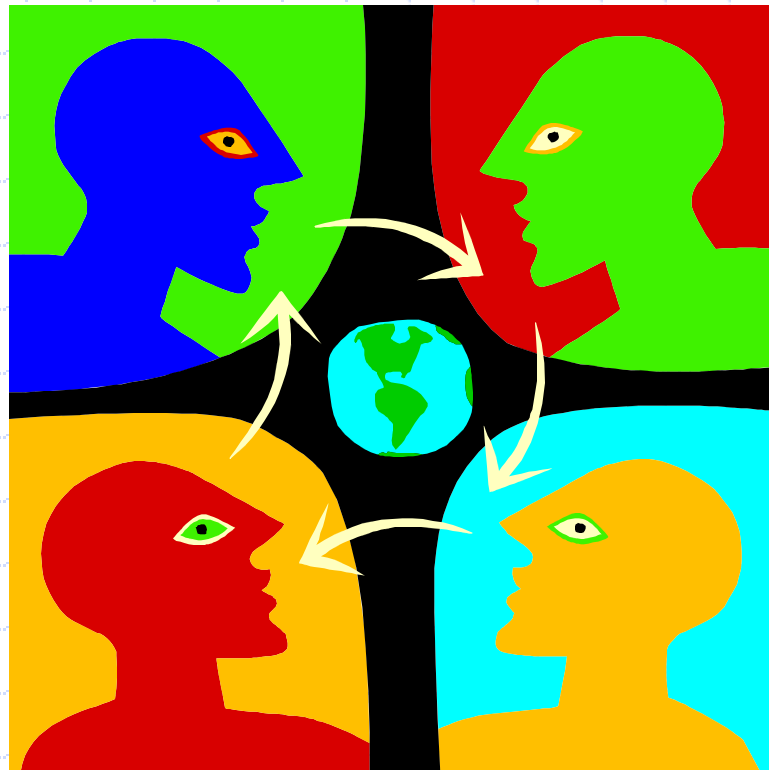
Safety Was Scored Separately

Life and Safety Issues

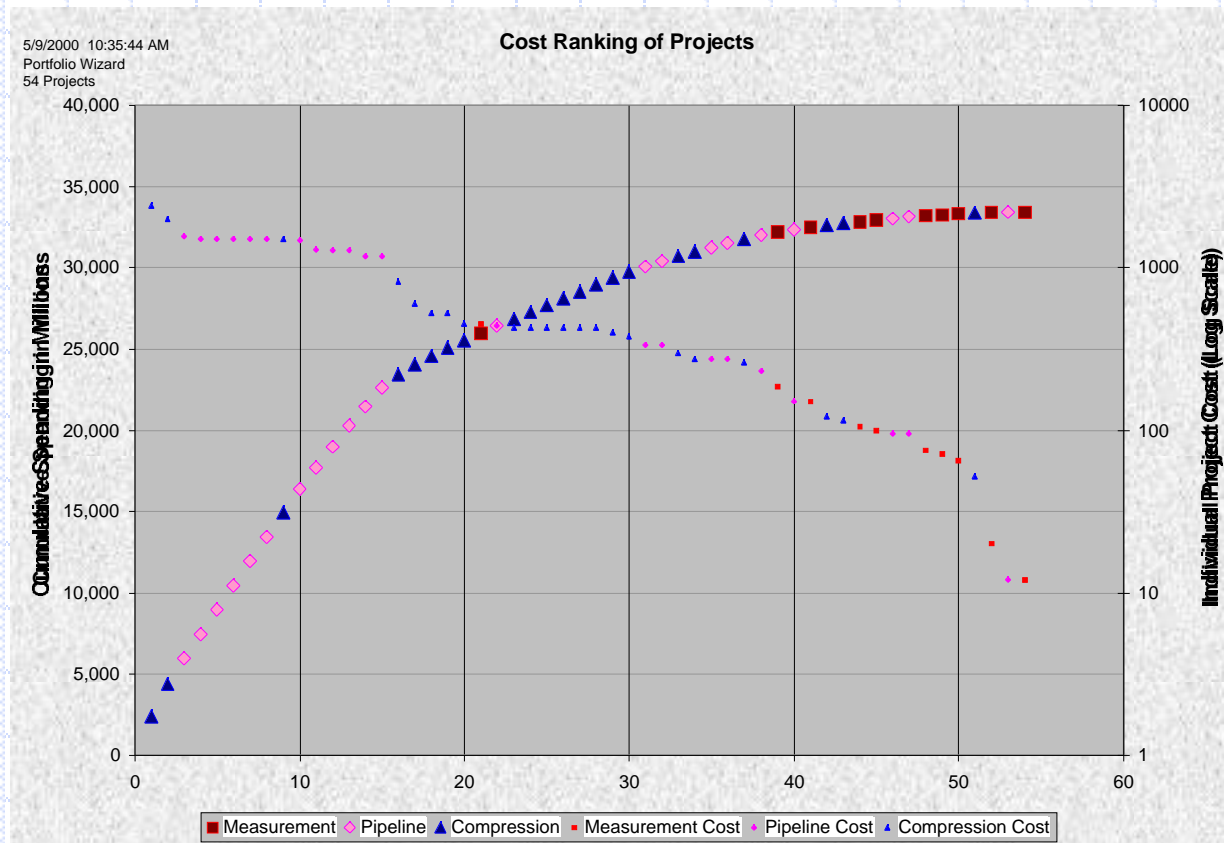
A key concern was that projects that have significant safety issues will be identified and funded. Safety scores for each project are identified and charted. The decision makers can now identify which projects fall above or below determined safety limits.



Data Handling



Ensuring Enough Projects Are Assessed

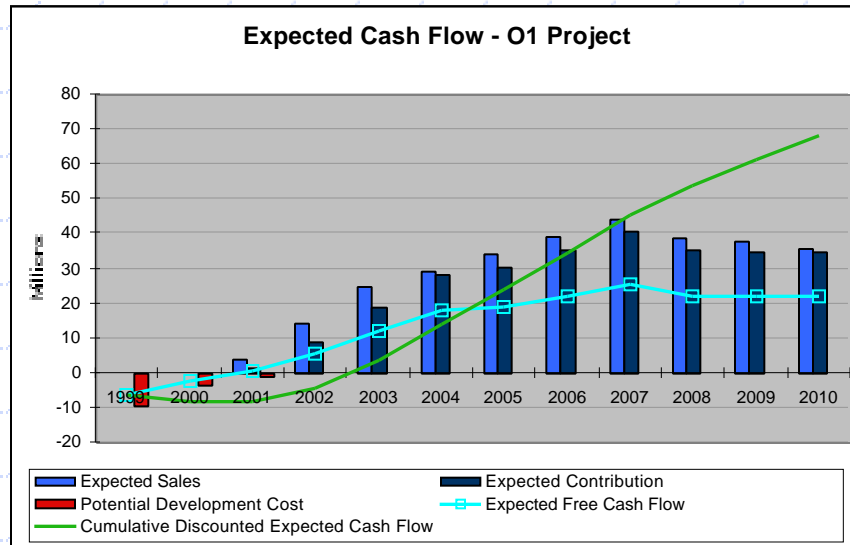


With over 250 projects there was a need to focus

Templates for Project Risks, Costs and Benefits

- ◆ Use input templates to ensure consistency, to enable review and to ensure consistent output format for portfolio application.
- ◆ Excel spreadsheet calculates expected values and cash and benefits flows and output metrics such as PV and value ratio.
- ◆ Output table created to export data to portfolio wizard.

Summary Risk Assessment			H2S Analysers		Risk Assessment Input Sheet			
Hazard/Threat	Event	Frequency per year	Risk Consequence Category	Description	Consequence in Equivalent Dollars	Probability of the Consequence	Expected Risk Dollars	Safety Score
Impact to reliability ssssss ssssss ssssss sssss	Failure of component	x	Safety	xxxxxxxx	\$ xxxxxx	x	\$ xxxxx	xxxx
		x	Customer Service	xxxxxxxx	\$ xxxxxx	x	\$ xxxxxx	0
		x	Customer Service	xxxxxxxx	\$ xxxxxx	x	\$ xxxxx	0
		x	Public Perception	xxxxxxxx	\$ xxxxxx	x	\$ xxxxxx	0
		x	Environmental Impact	xxxxxxxx	\$ xxxxxx	x	\$ xxxxxx	0
							\$ -	0
Totals							\$ xxxxx	xx



Templates Facilitate Data Transfer to Portfolio Roll-up

Inputs for Each Project

- Required: NPV, Value Ratio, Business Unit, project type, Safety Score
- Optional: current investment, data for cumulative distribution and sensitivity graphs
- Optional: other project information

Global Inputs

Discount rate, this year, start year, end year, currency

Summaries (totals and annual)

- | | | | |
|------------|---|---|---|
| • Benefits | ▲ | ▲ | ▲ |
| • Costs | ▲ | ▲ | ▲ |
| • Scores | ▲ | ▲ | ▲ |

Graphs and Charts

- | | | | |
|--------------------------|---|---|--|
| • Value vs Safety | ▲ | | |
| • Expected Cash Flow | ▲ | | |
| • Benefits by Segment. | | ▲ | |
| • Efficiency | ▲ | ▲ | |
| • Tornado (Sensitivity). | | ▲ | |

Outputs



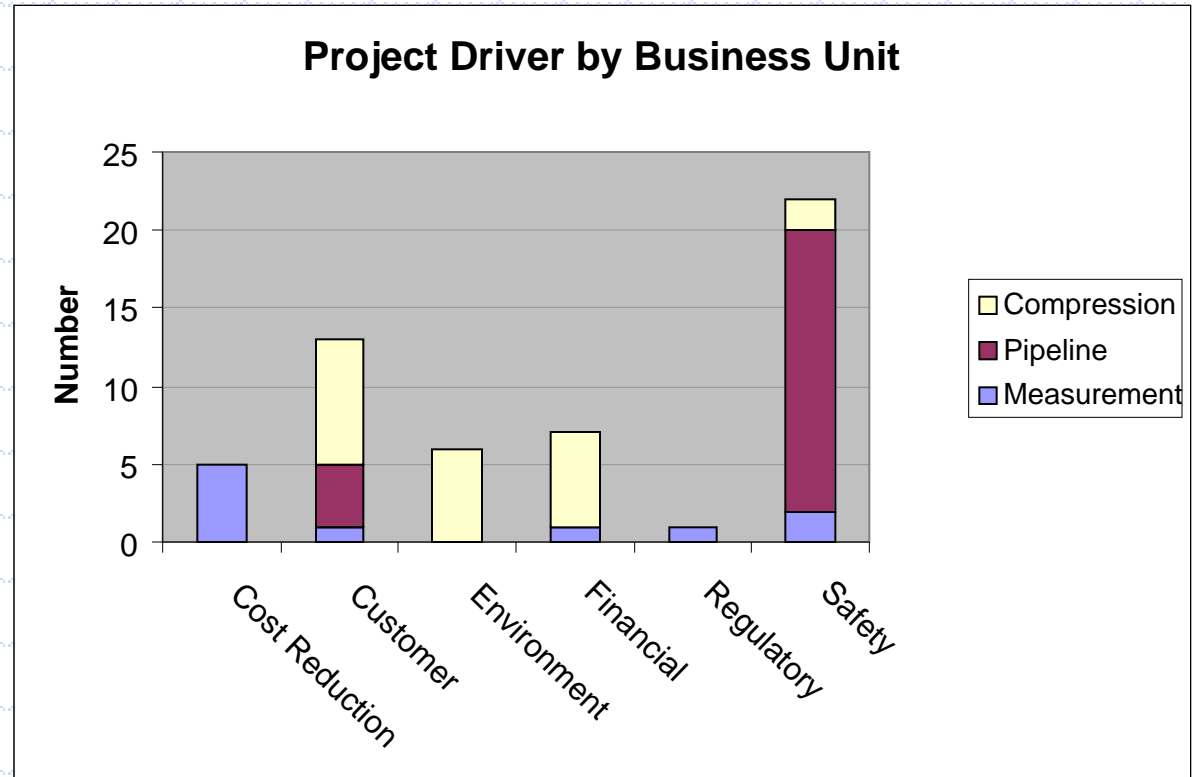
Creating Belief in the Outputs

- ◆ **Peer review process - review of inputs and outputs before finalizing budget presentations**
- ◆ **Sensitivity Analysis used for what-if?
Eg. What projects would drop out if customer service had less value.**

Portfolio Analysis: Drivers

Drivers

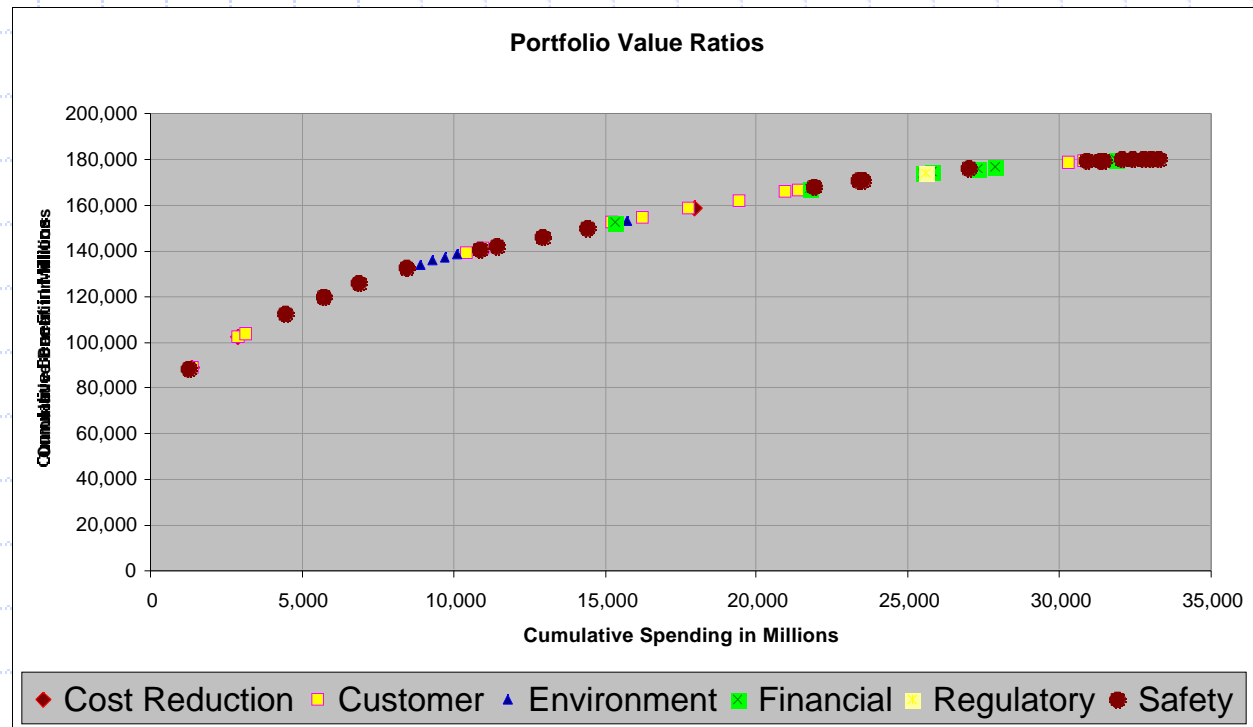
This chart portrays the most important driver for each project. The decision makers can now see what is most important for each of the business areas.



Portfolio Analysis: Efficiency

Portfolio Efficiency

Plot the cumulative spending against cumulative benefits rank ordered by the value ratio. Gives a visual picture of the efficiency of the entire set of projects. Color coded by driver.



Results Created Agreement

- ◆ Executive review was quick and focused
- ◆ Review at corporate level resulted in no change to proposed spending

