Agenda – Strategic Business Planning for IT

11:30 – 12:10 **Delivering value whilst Balancing Cost, Time and Innovation**

- Experiences on an outsourced global online transformation programme

12:20 – 13:00 **Powering the PMO at the Bank of America**

- Top down approach to portfolio management

14:00 – 14:40 **Using crowdsourcing to make strategic planning decisions**

- Combining the wisdom of the crowds with Enterprise Architecture and Portfolio Management

14:50 – 15:30 **Competitive intelligence – a strategic business driver**

- A market-driven product management approach to drive profitable growth

15:50 – 16:30 **Risk-Aware Business Cases**

- Standard approach to developing business cases accounting for risk & makes assumptions more visible

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Risk Aware Business Cases for Software and Systems Development (SSD)

Murray Cantor, Ph.D.
IBM Distinguished Engineer

Perspectives on the business case

One View

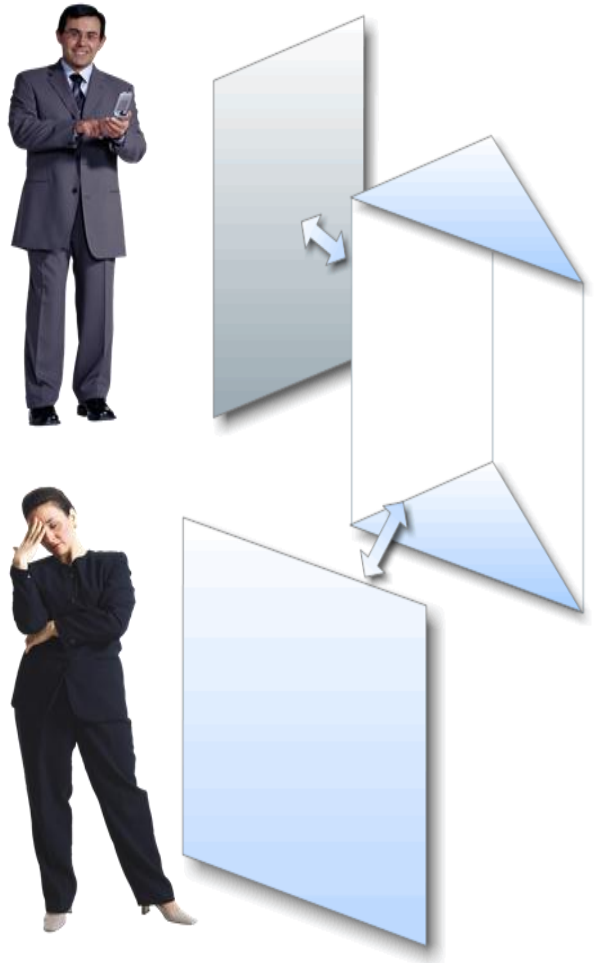
"A business case is a pack of lies designed to get the business to fund my project"

Our View

"A dishonest business case is a missed opportunity to align software and systems with the business"

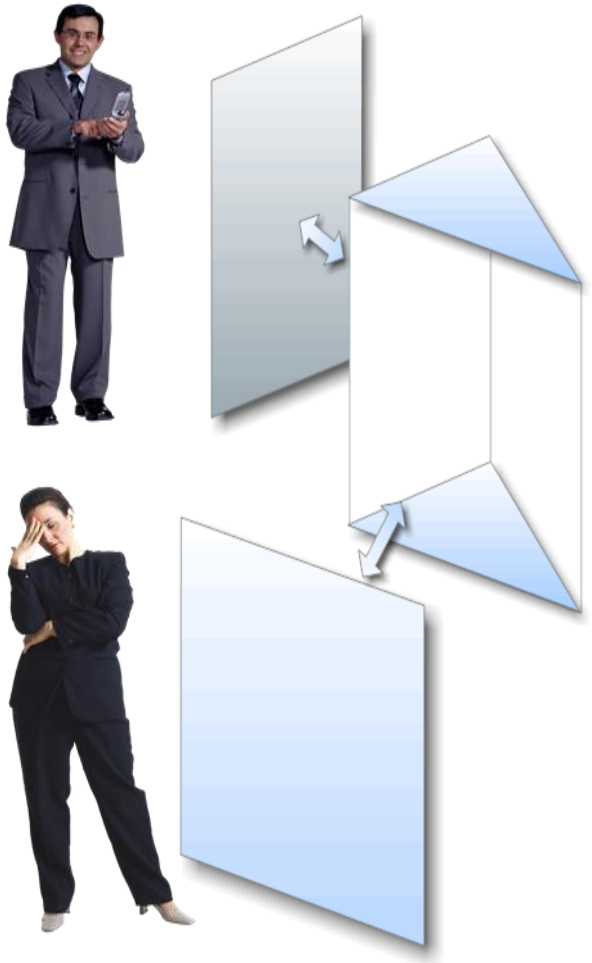
A business case surfaces very different perspectives

- Finance wants firm, precise commitments of costs and benefits
- Dev leadership needs to adopt efficient agile methods to deliver value, knowing there is no honest way to make firm commitments



…conversation is important, much to discuss

- Need to reason about where to assign constrained resources
- Balance quick wins against long term benefit
- Whether to Invest in innovative, high risk/high reward programs
- Need to collaborate to get best return on assets.



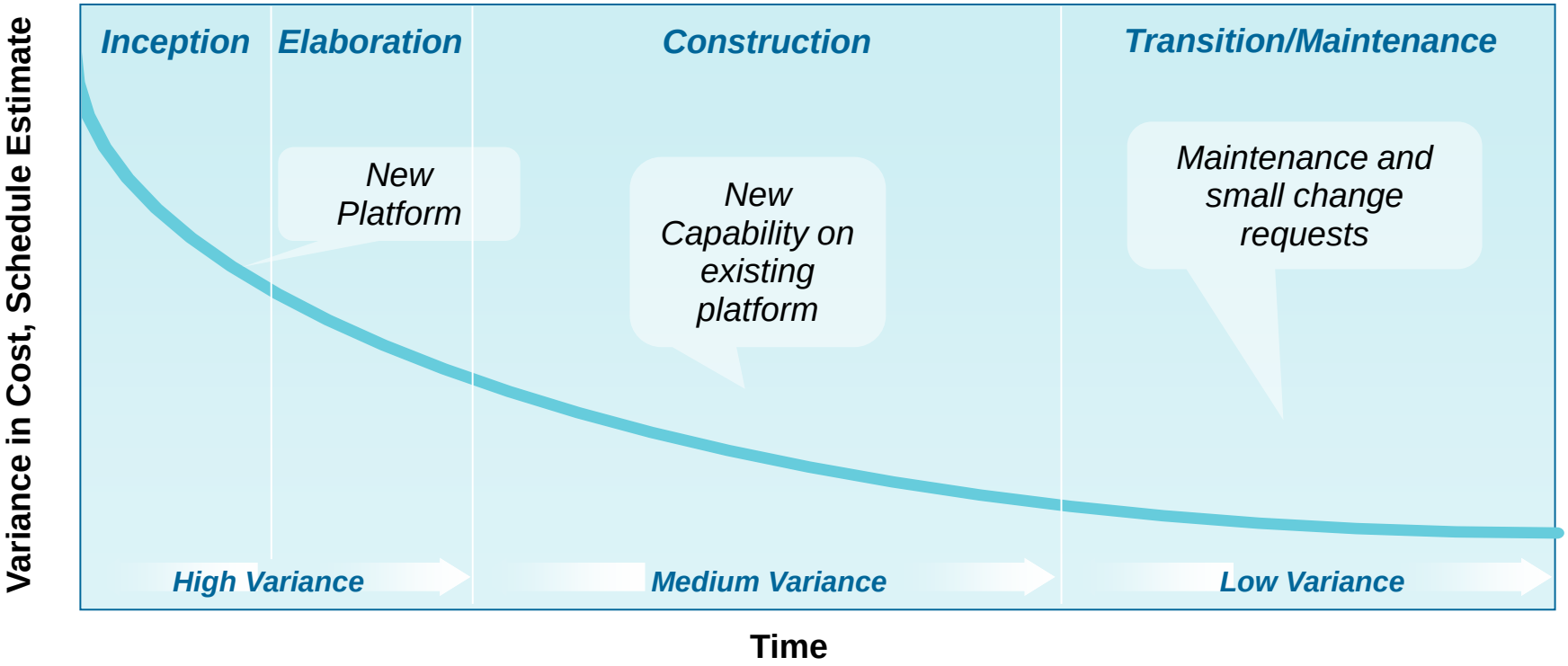
The Future of Software & Systems Development: Dealing with the uncertainties

Agile principles help improve efficiency

The business needs predictability

Building risk-aware business cases helps bridge the gap between agile practices and the need to meet investor commitments

Why the conversation is hard: it's the math….

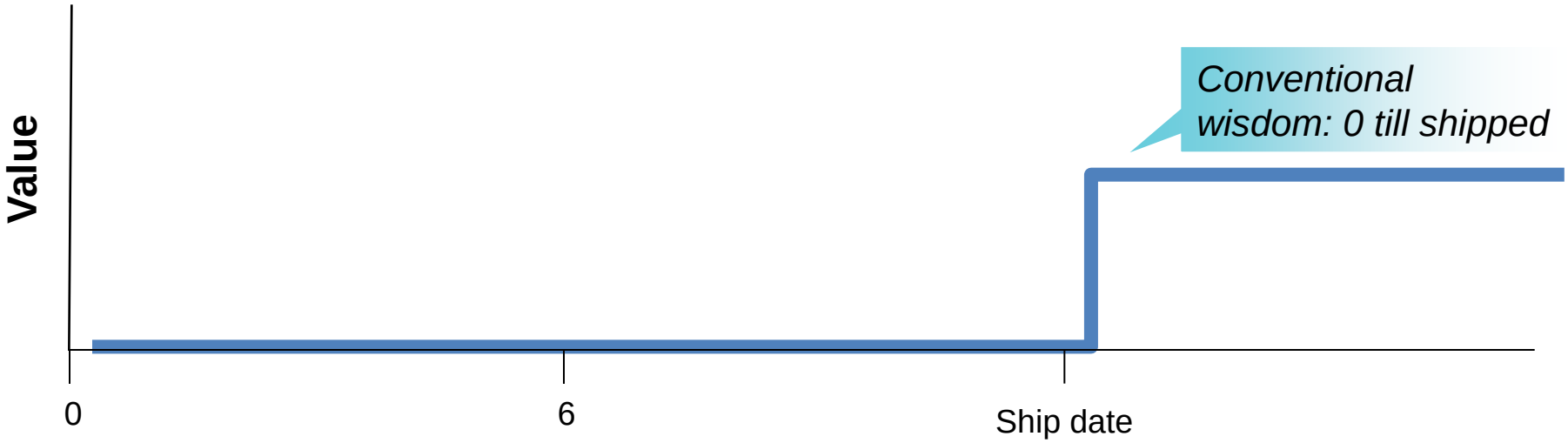


Customer Spend

Return on Investment

…Value is increased when the uncertainty is reduced!

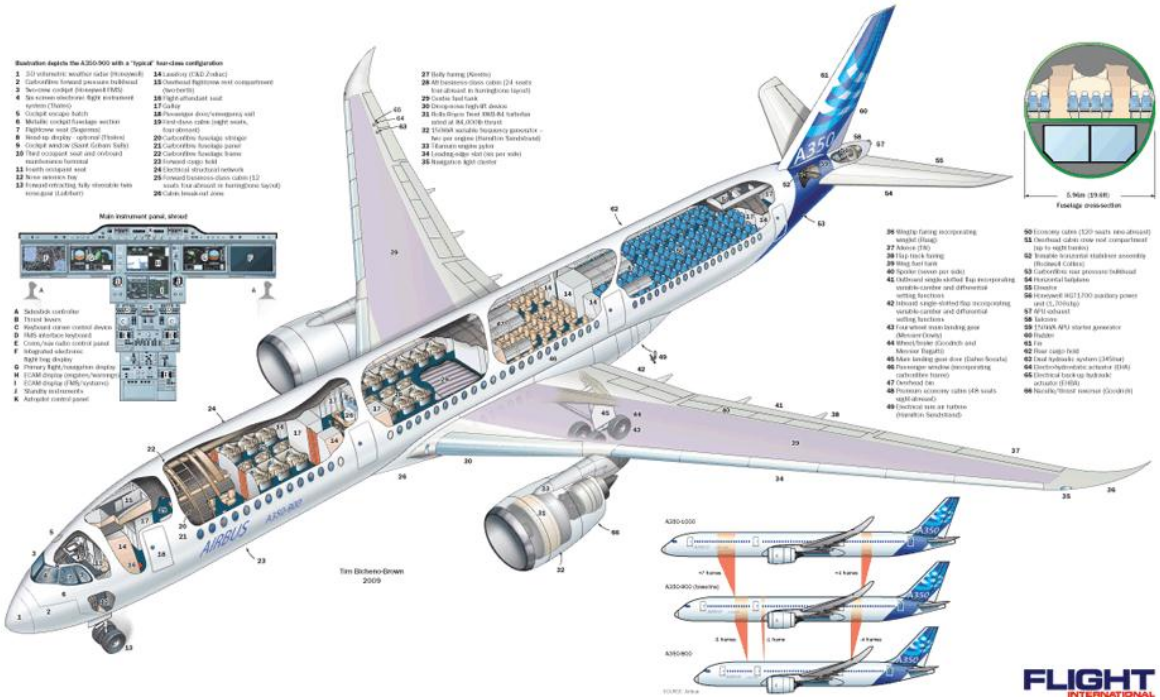
Conventional wisdom gets in the way.



- The conventional wisdom:
  - Permits only quantifying cost, scoring benefits
  - Fails to acknowledge value of work already done

If all unshipped efforts are worthless, there is no way to compare investments

For example…how much would Airbus sell the A350 program?



The buyer would get the right to spend the rest of the money to get the future benefits

How to proceed: Things are worth what someone might pay for them

- Imagine (if you will) you could sell your incomplete development program, what would be a fair price?
- The buyer would be spending money now to obtain the option to invest in completing the program to receive its benefits
- ***Reasoning like an investor***, to compute the value and set the price, one needs to capture the:

  Probabilities of the cost to complete

  Probabilities of the benefit to be received

The economists call this "*incomplete market reasoning*"

What concepts are needed?

For expected costs and value:

- Must deal with the time value of money – Net Present Value (NPV)

For the risk to be undertaken:

- Must deal with uncertainty in costs and benefits – Random variables from statistics

To compute the value of the program adopt standard financial measures:

$$NPV(SSD) = \sum_{i=t_D}^{t_E} \frac{B_i}{(1+r_B)^i} - \sum_{j=t_t}^{t_D} \frac{D_j}{(1+r_D)^j} - \sum_{k=t_D}^{t_E} \frac{M_k}{(1+r_M)^k}$$

With:

1. B_i = *Benefits future values*
2. D_j = *Development expenses future value*
3. M_k = *Maintenance, after delivery expenses future values*
4. t_t = *Today, the current period*
5. t_D = *Delivery period*
6. t_E = *End of life period*
7. *The* r_B, r_M, r_D *are discount rates accounting for the time value of money.*

See M. Cantor, Calculating and Improving the Return on Investment in Software and Systems". Online edition of the *Communications of the ACM*, V.54, N. 9. Sept. 2011, p.121ff

M Cantor, "Calculate your Return on Investment for software and systems" (http://www.ibm.com/developerworks/rational/library/return-investment-software-systems/index.html)

For the future values, enter your best belief as three values, not one:

L, the lowest monetary value you believe could occur (no chance of a lower value)

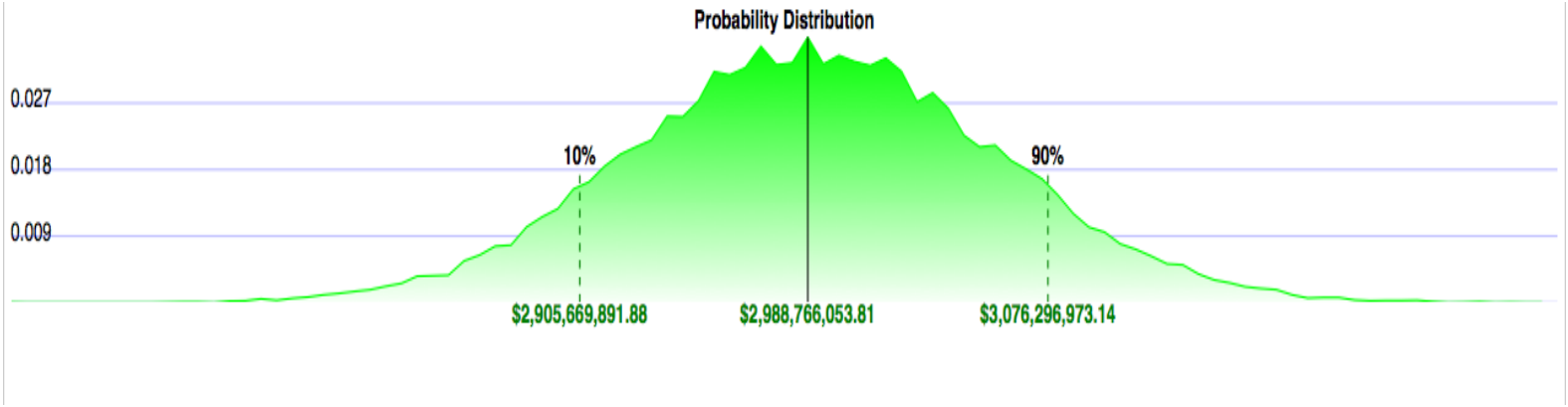
E, the most likely or expected monetary value

H, the highest monetary value you believe could occur (no chance of a higher value)

For more detail on this technique, see writings of Douglas Hubbard at http://www.hubbardresearch.com

The financials are calculated as probabilities found by applying Monte Carlo simulation to the calculations

The result provides the most likely value and the uncertainty based on the ranges of the inputs



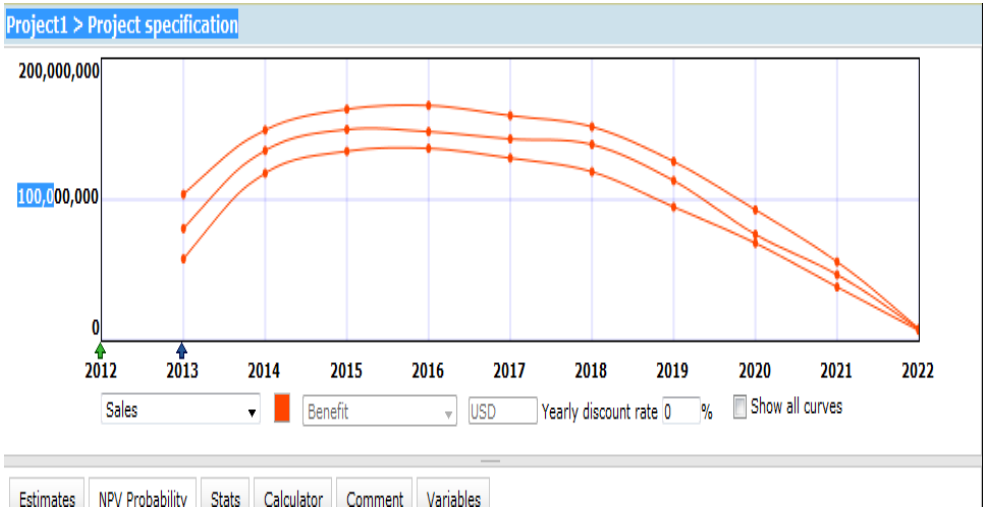
Lots of math...but Focal Point makes it manageable

1.Standard Financial Measures

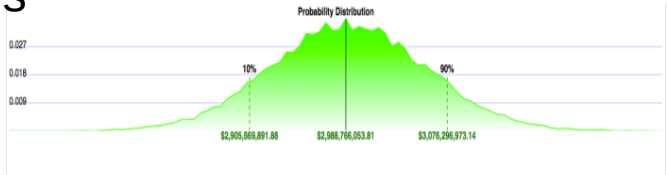
Estimates | NPV Probability | Stats | Calculator | Comment | Variables

Current NPV	72,180,796 / 78,760,982 / 87,013,162
Expected NPV at Delivery	72,649,198 / 79,227,373 / 87,478,419
Benefits to Date	0.000 / 0.000 / 0.000
Benefits to Go	127,426,729 / 134,389,509 / 141,345,267
Costs to Date	191,357 / 192,567 / 198,044
Costs to Go	52,161,121 / 55,116,314 / 57,407,371
ROI to Date	371 / 404 / 448
ROI to Go	1.285 / 1.452 / 1.631
Expected ROI at Delivery	154 / 173 / 190
Total Benefits	127,426,729 / 134,389,509 / 141,345,267
Total Costs	52,355,115 / 55,308,063 / 57,600,908
Payback Period	12 / 12 / 12

2. Triangular distributions as the future values



3. Find the probabilities of the outcomes



To build a business case in Focal Point

1. Capture Business Logic using a time grid which specifies key dates, period and cost and benefit streams

2. SMEs enter data into cost, benefit, variable sheets

   Enter high, expected, low values of costs

3. Read out financials as random variables.

4. Over time, update model with actuals, and better informed future values.

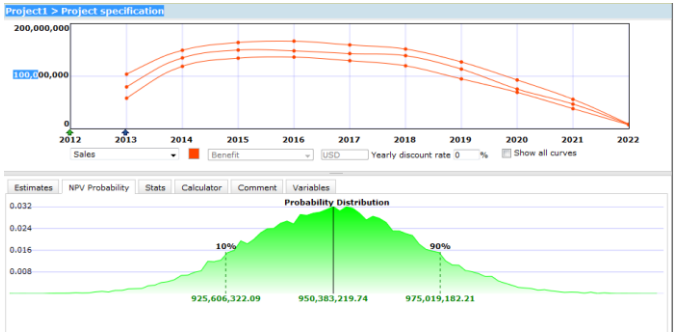
For a detailed description, see "Getting Started with Investment Analysis in Rational IBM Focal Point"

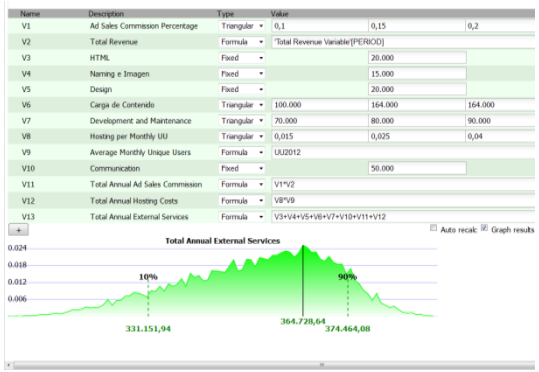
Focal Point returns a wide range of financial measures

- Net Present Value at key dates in the program
  - Today
  - At delivery
- Three Return-on-Investment calculations
  - To-date: RoI from past investments in the program
  - To-go: Expected RoI from the future investments
  - At delivery: Expected to-date RoI at delivery for compare existing and new programs
- Return for non-monetary benefits (e.g. lives-saved-per-dollar)
- Internal Rate of Return

Summary: By using IBM Rational Focal Point, you can

- Enable the honest conversations between Finance and Development, being aware and upfront of the risks
- Establish a standard template for expressing business cases (based on your business logic)
- Maintain and update business case trend by replacing estimates with actuals, updating estimates, and saving snapshots for trends
- Promote transparency for estimate accountability and improvement






QUESTIONS

www.ibm.com/software/rational