



## Société Canadienne de L'Analyse de la Valeur Canadian Society of Value Analysis



### ***Combining Risk Analysis, Value Engineering and Reasoned Consensus to Make Alternative Finance, Procurement and Delivery Work***

October 28, 2008

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**HDR | Decision Economics**

## ***The Problems: Risk Analysis and VE Part of the Solution***

- Ability to control the process and define the terms
- Accountability: public, legislative, regulatory
- Additional costs from using private sector
- Allocation of risk
- Excessive profits earned by private sector
- Developer quality vs. profit
- Foreign capital / investments

*Consensus is the objective*

## Using Risk Analysis and VE to Find The Public/Private Win-Win

	Public Partners				Private Partners		
	Expenditure/Investment	Return on Investment	Value in Savings and Benefits	Risk Adj. ROI	Expenditure / Investment	Return on Investment	Risk Adj. ROI
Option 1	0				\$300 M	20%	3%
Option 2	\$50 M	40%	\$600 M	35%	\$250 M	30%	10%
Option 3	\$100 M	30%	\$600 M	22%	\$200 M	50%	20%



**Basis for Financial Arrangement**

*Early analysis assures win-win*

## Using Risk Analysis and VE to Position for Reasoned Consent and Consensus

	MTO				Municipality			Private Partner		
	Expenditure/Investment	Return on Investment	Value in Savings and Benefits	Risk Adj. ROI	Expenditure/Investment	Return on Investment	Risk Adj. ROI	Expenditure/Investment	Return on Investment	Risk Adj. ROI
Option 1										
Option 2										
Option 3										

*Transparency and risk analysis assures stakeholder confidence and buy-in*

## Risk Analysis and VE Add Value to Each Aspect of Procurement

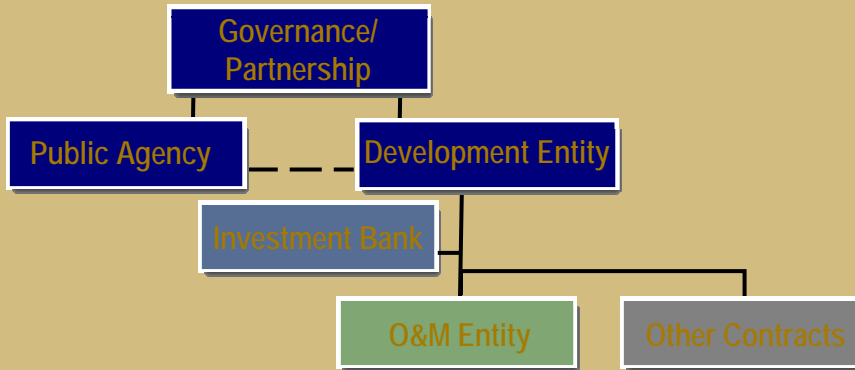
- Proposal
  - *Solicitation*
  - *Evaluation*
  - *Disclosure*
- Selection
- Negotiation
- Approval
- Selection
- Negotiation
- Approval

*Solicitation must clearly define expected outcome*

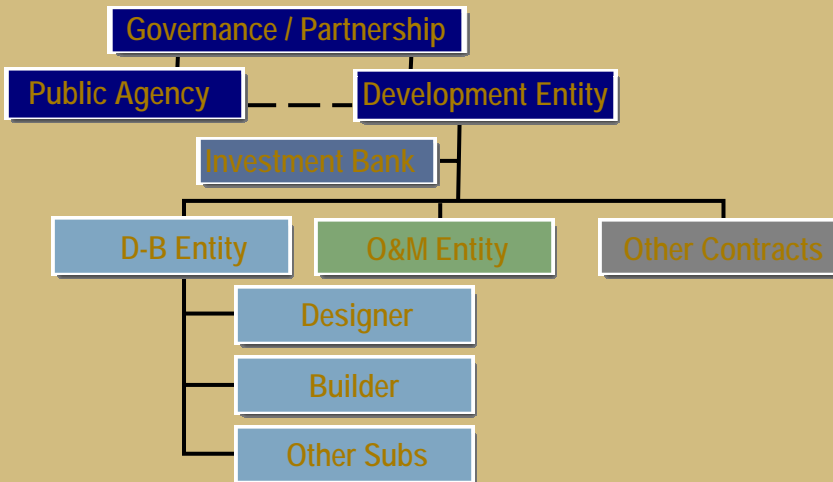
## Risk Analysis and VE Add Value to Organizing for Alternative Delivery

- How will the P3 entity be organized?
- How will the project implementation entity be organized?
  - *Potential of layered roles for the participants*
- How is the public partner's interest protected?

## Organizing for Operate & Maintain



## Organizing for Design-Build



## ***Risk Analysis and VE Add Value to Project Delivery Considerations***

- Protection of public investment
- Environmental clearance process
- Cost
- Schedule
- Quality / Reliability
- Community perception
- Community disruption
- Unique factors



*SEP-15 provides significant flexibility*

## ***Risk Analysis and VE Add Value to Risk Management***

- Allocate risk to the party best able to manage the risk
- Clearly define parties' responsibilities

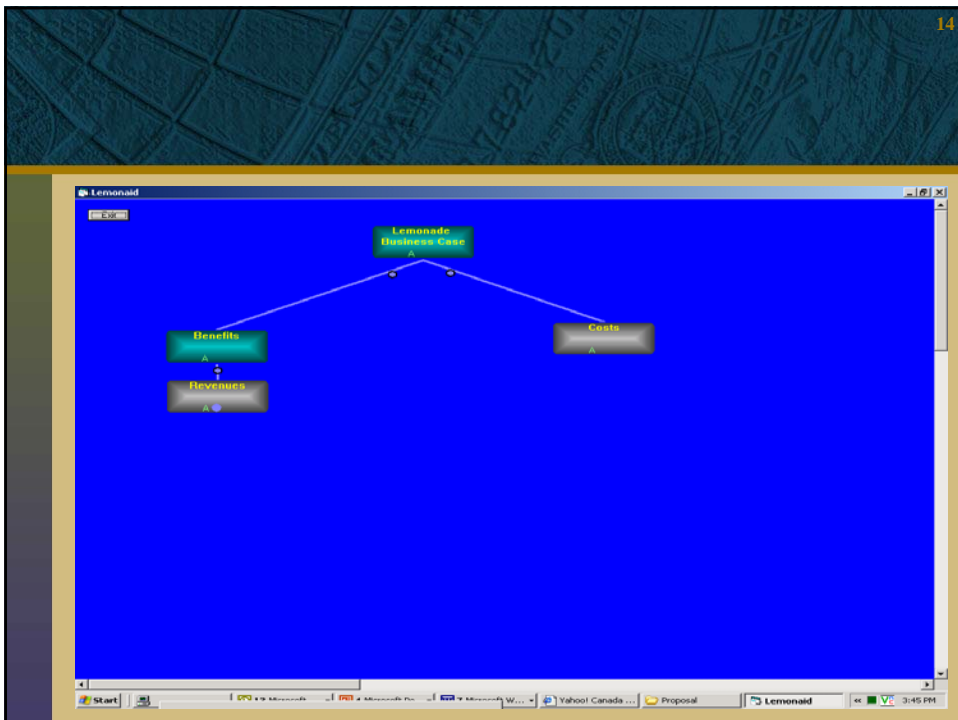
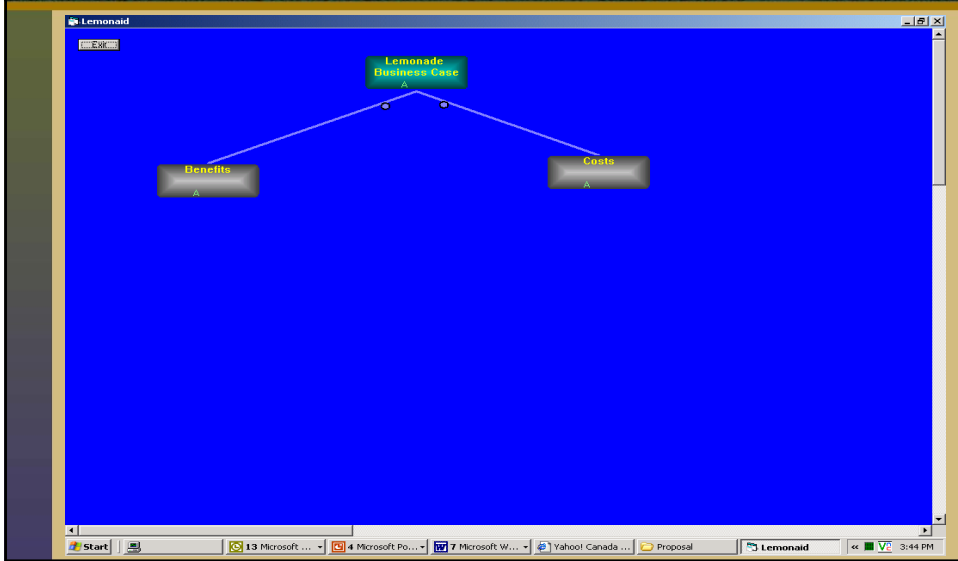
## Risk Matrix

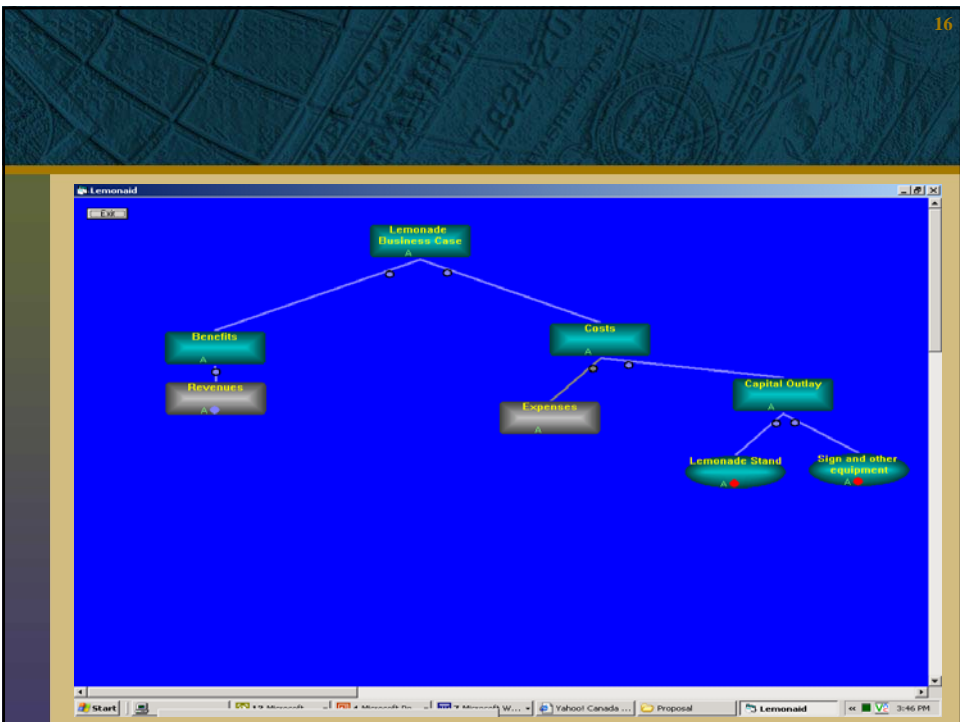
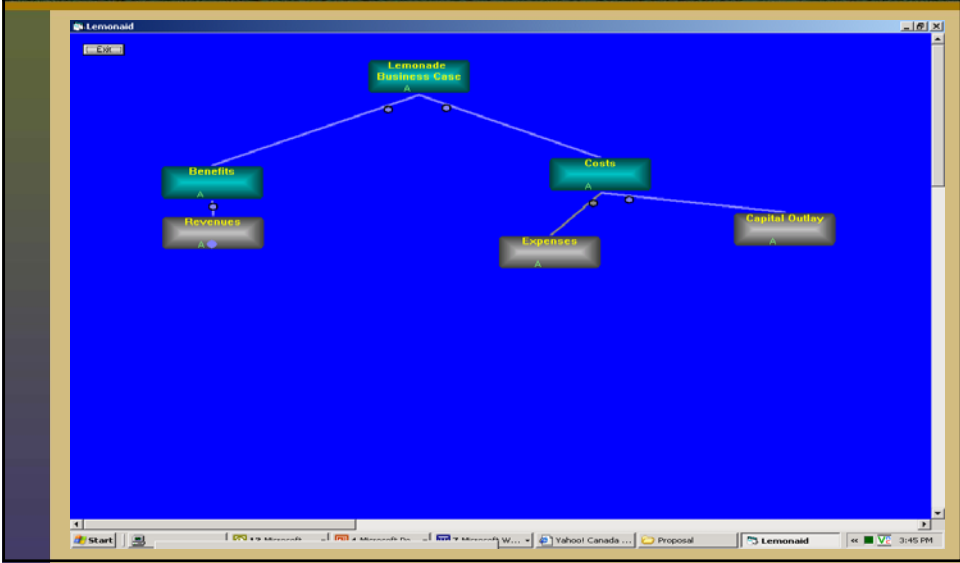
Risk Type	Describe	Mitigation
<b>Technology Performance</b> <i>Private (Vendors)</i>	<ul style="list-style-type: none"> <li>Existing technology unproven in terms of revenue service</li> </ul>	<ul style="list-style-type: none"> <li>Warranties</li> </ul>
<b>Environmental Faws or Delay</b> <i>Public</i>	<ul style="list-style-type: none"> <li>Lengthy studies</li> <li>Permitting delays</li> <li>Regulatory approval periods</li> </ul>	<ul style="list-style-type: none"> <li>Strong process management</li> <li>Private Partner assistance</li> </ul>
<b>Completion Costs</b> <i>Private Construction contractor and Public</i>	<ul style="list-style-type: none"> <li>Cost and schedule overruns</li> </ul>	<ul style="list-style-type: none"> <li>Use of fixed price/guaranteed maximum contract</li> <li>Adequate contingency funds</li> <li>Liquidated damages</li> <li>Force majeure insurance</li> <li>Design and construction management/over sight by Public Partners (which may be outsourced)</li> <li>Financially viable Private Partners</li> <li>Specialized surety products</li> <li>Allowing Private Partners to undertake majority of design</li> </ul>

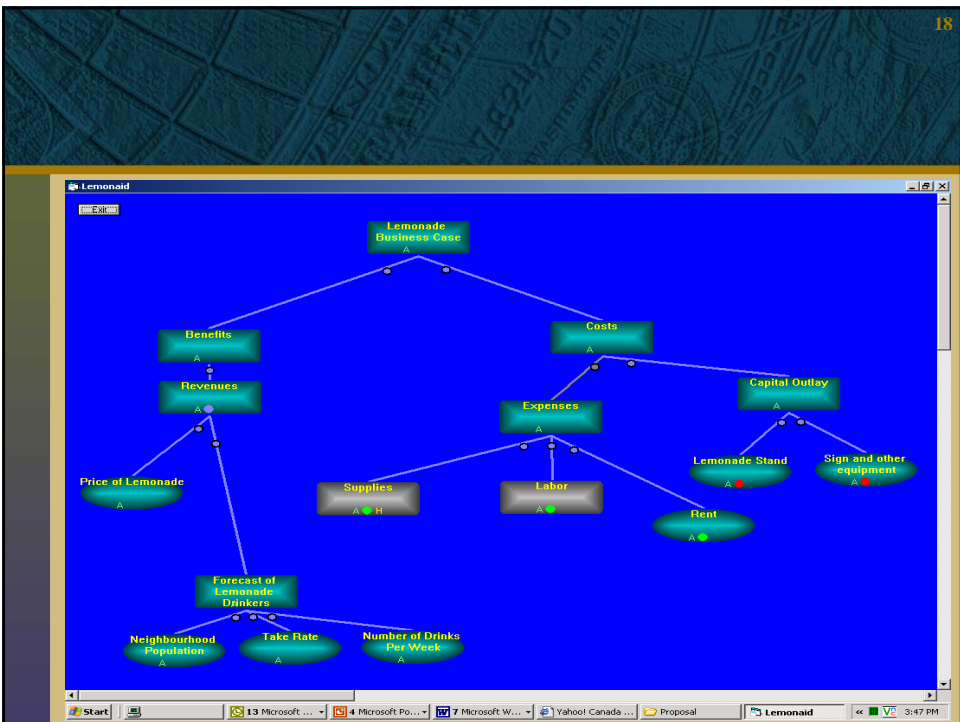
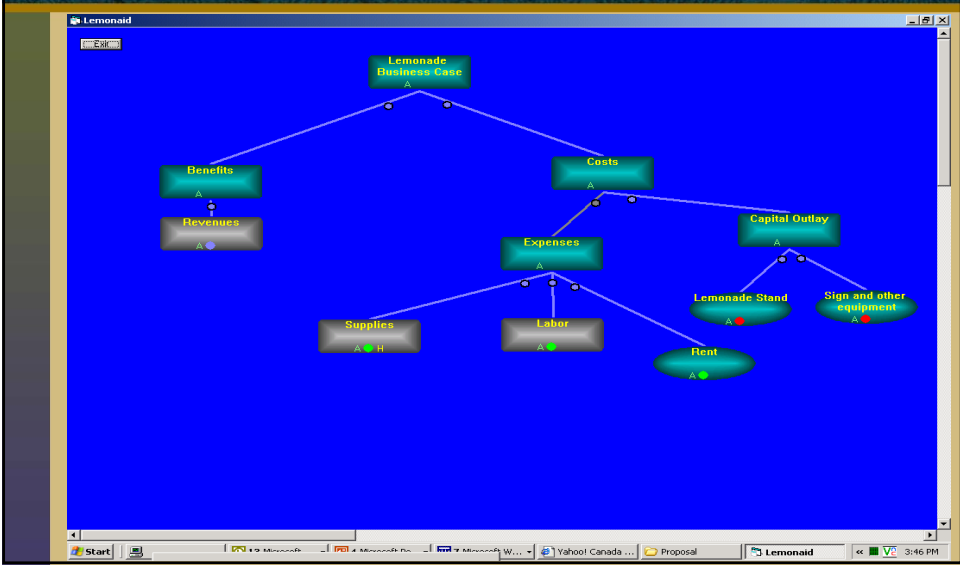
## Risk Matrix

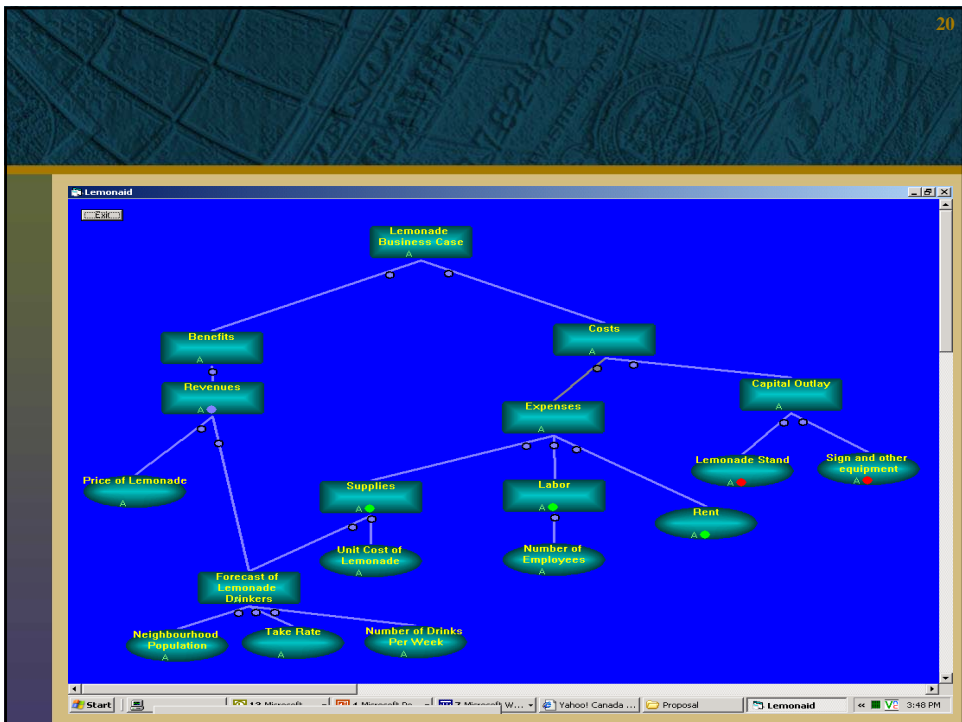
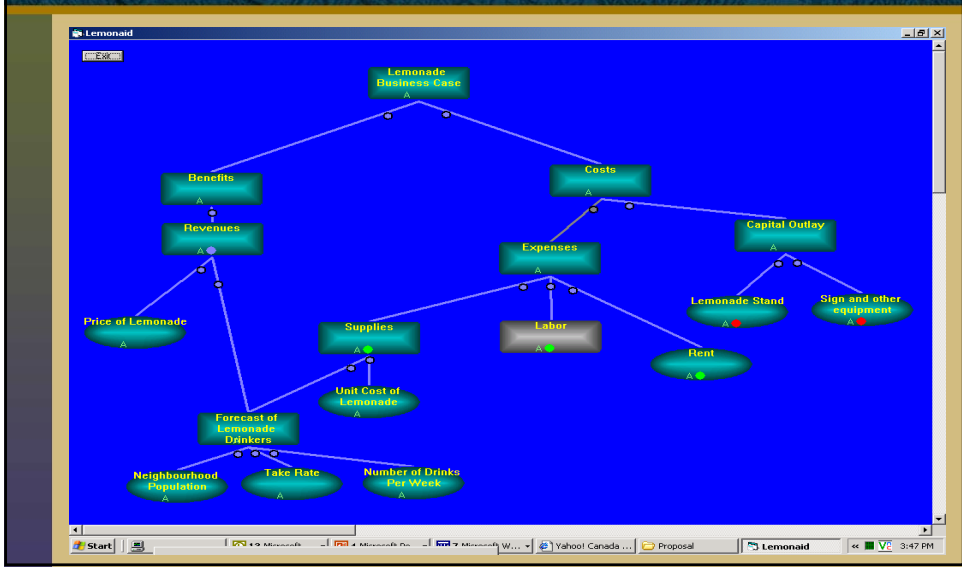
Risk Type	Describe	Mitigation
<b>O&amp;M Costs</b> <i>Private (O&amp;M contractor) and Public</i>	<ul style="list-style-type: none"> <li>Excessive costs of operations</li> <li>Excessive capital maintenance expenditures</li> <li>Unpredictability of Costs</li> </ul>	<ul style="list-style-type: none"> <li>Non-recourse financing</li> <li>Minimum guarantees</li> <li>Toll adjustment flexibility</li> <li>Credit enhancement, insurance</li> <li>Careful budgeting processes</li> <li>Capital asset replacement assurances</li> <li>Warranties, incentives, and penalties</li> <li>Financially viable Private Partners</li> <li>Use of private O&amp;M contract</li> <li>Use of fixed price/guaranteed maximum pricing, with escalations and adjustments over time</li> </ul>
<b>Liability</b> <i>Public and Private</i>	<ul style="list-style-type: none"> <li>Construction Defects</li> <li>Day-to-day operational</li> <li>Subcontractor claims</li> <li>Environmental</li> </ul>	<ul style="list-style-type: none"> <li>Warranties</li> <li>Insurance</li> <li>Well-thought out allocation of liability in contract based upon party best able to control and mitigate Innovative insurance products</li> </ul>

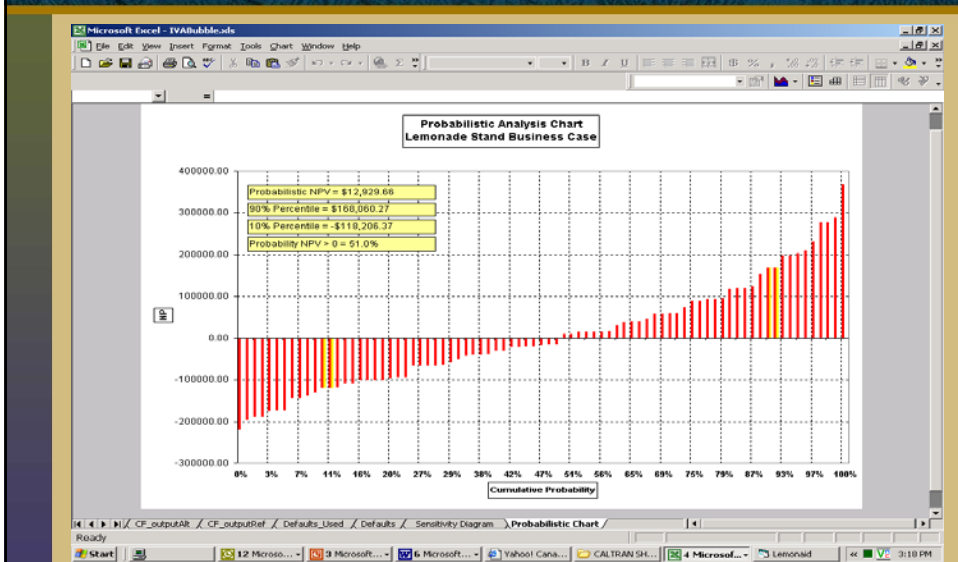
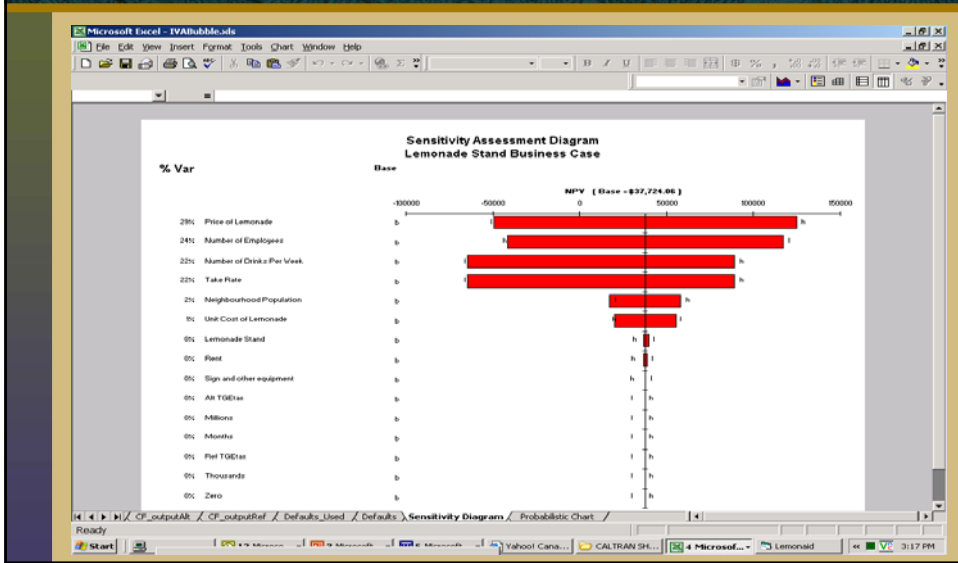
# An Illustration: The Interactive Assessment Tool











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3 **PROJECT VALUE BASED MANAGEMENT REPORTS**

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6 ECONOMIC INDICATORS

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Net present value (NPV)	\$ 37,724.06
Discounted payback period (DPP)	1.8 years
Internal rate of return (IRR)	114.32%
Rate of return on capital (RORC)	86.14%
Rate of return on equity (ROE)	92.57%
Profitability Index (PI) (NPV / PWCE)	6.86
Present worth of revenues (PWRev)	\$ 356,789.02
Monthly equivalent revenues (MER)	\$ 7,475.50
PW of annualized costs (PWAC)	\$ 299,341.34
Monthly equivalent costs (MEC)	\$ 6,271.85
PW of total end-of-study adjustment	\$ 280.47
Impact of EOS adjustment on PWAC	\$ 416.96
Contribution indicator (PWAC / PWRev)	0.84
% Net margin ((NPV / PWRev)	10.57%
% Contribution ((PWRev - PWAC) / PWRev)	16.10%
% Mark up ((PWRev - PWAC) / PWAC)	19.19%

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28 ANALYSIS OF NPV

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82 **PROJECT PRO FORMA FINANCIAL REPORTS**

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84 **INCOME STATEMENT**

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	2005	2006	2007	2008	2009
Operating revenues	\$ 65,000.00	\$ 97,500.00	\$ 97,500.00	\$ 97,500.00	\$ 97,500.00
Operating expenses					
Depreciation and amortization	1,100.00	1,100.00	1,100.00	1,100.00	1,100.00
Operating expenses (w/o depr. and amort)	73,252.05	74,492.28	74,486.30	74,480.33	74,474.35
Total operating expenses	74,352.05	75,592.28	75,586.30	75,580.33	75,574.35
Net operating revenues	(9,352.05)	21,907.72	21,913.70	21,919.67	21,925.65
Interest charges	75.27	60.45	45.02	30.44	16.54
Income before income taxes	(9,427.32)	21,847.27	21,868.68	21,889.23	21,909.11
Income tax expense	(3,002.60)	6,958.36	6,965.17	6,971.72	6,978.05
Net income	\$ (6,424.72)	\$ 14,888.92	\$ 14,903.50	\$ 14,917.51	\$ 14,931.06

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99 **REVENUE REQUIREMENT IMPACT**

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	2005	2006	2007	2008	2009
Net income	\$ (6,424.72)	\$ 14,888.92	\$ 14,903.50	\$ 14,917.51	\$ 14,931.06
Required return on equity	405.56	325.67	242.55	164.01	89.12
Net income after return	(6,830.28)	14,563.25	14,660.95	14,753.51	14,841.94
Estimated revenue requirement impact	\$ 10,154.43	\$ (21,650.86)	\$ (21,796.12)	\$ (21,933.72)	\$ (22,065.19)

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108 **BALANCE SHEET**

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	2005	2006	2007	2008	2009
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## *Successes with Risk Analysis and VE*

- Business Transformation at the Ontario Ministry of Community and Social Services
  - *Strong returns on investment realized by both partners*
  - *Financial arrangement linked explicitly to ROI realization*
  - *Constant measurement of outcomes and allocation of benefits and costs*
- Technology Transformation at the Ottawa School Board
  - *Transformation plan jointly developed by partners in business case and risk-based framework*
  - *Transparent basis for execution in place*
- The Canadian Gun Registry
  - *No business case; no risk analysis; ... no hope*