

**IBEC**  
"International Tour"

**PROJECT EVALUATION METHODOLOGY FRAMEWORK  
FOR  
CANADIAN INTELLIGENT TRANSPORTATION SYSTEMS**

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with  
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TRANSPORT CANADA  
October 8, 2006

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*BACKGROUND*

- ITS PLAN FOR CANADA:
  - *"En Route to Intelligent Mobility"*
    - Launched at 1999 ITS World Congress in Toronto
    - Five Pillars
      - Partnerships
      - National ITS Architecture
      - Research & Development
      - Deployment & Integration
      - Promotion of Canadian Expertise

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## BACKGROUND

➤ ITS PLAN FOR CANADA:  
➤ "En Route to Intelligent Mobility"

- Funding through Strategic Highway Infrastructure Program (SHIP)
  - Various funding arrangements & partners
- More than 100 projects funded
  - Deployments, R&D, National Initiatives
- Over \$ 25 million contributed
- Over \$ 50 million invested

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## BACKGROUND

➤ ITS PLAN FOR CANADA:  
➤ "En Route to Intelligent Mobility"

- Wide range of User Services
- Most common bundles:
  - Traveller Information
  - Traffic Management
  - Public Transport

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## BACKGROUND

➤ ITS PLAN FOR CANADA:  
➤ "En Route to Intelligent Mobility"

- Examples:
  - CVO Deployment Plan (New Brunswick)
  - ITS Strategic Plan (Yukon)
  - Integrated Regional Traffic Signal System (British Columbia)
  - Transit Signal Priority Algorithm (Ontario)
  - National RWIS Program (Provinces & Territories)

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## BACKGROUND

- ITS PLAN FOR CANADA:
  - "En Route to Intelligent Mobility"

The future of ITS in Canada:

- A new strategy
- A new funding program

Future directions will clearly be driven by successes of previous strategy

But how to measure?

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## Background

THERE IS A NEED FOR A FORMAL  
EVALUATION OR PERFORMANCE  
ASSESSMENT OF INVESTMENTS

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## FRAMEWORK

- Objectives:
  - Support evaluations of ITS projects
  - Better assess benefits of ITS investments in Canada
  - Provide input to help structure future programs

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## FRAMEWORK

### ➤ Challenges:

- Limited data availability
- ITS is a small portion of many projects
  - Hard to isolate benefits – costs are easier
  - What is base case?
- Lack of evaluation planning
- Need for more effective communication to decision makers

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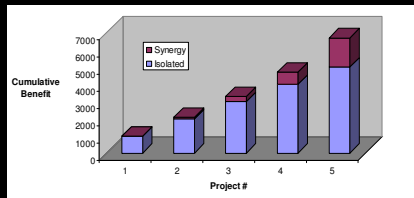
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## Framework

### ➤ Limitations:

- Individual projects (no synergy effects)



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## FRAMEWORK

### ➤ Methodology:

- Step 1: Evaluation Planning
- Step 2: Data Collection
- Step 3: Data Analysis
- Step 4: Recommendations and Report

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## FRAMEWORK

### ➤ Methodology – Step 1: Evaluation Planning – Project Classification and Objectives

- Arterial Management
- Incident Management
- Traveller Information
- Freeway Management
- Emergency Management
- Information Management
- Roadway Operations & Maintenance
- Transit Management
- Electronic Payment
- Crash Prevention/Safety
- Road Weather Management
- Commercial Vehicle Operations
- Inter-modal Freight

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## FRAMEWORK

### ➤ Methodology – Step 1: Evaluation Planning – Focus on five primary benefit categories

Objective / Goal Area	Measure
Safety	<ul style="list-style-type: none"> <li>•Reduction in the overall rate of crashes</li> <li>•Reduction in the rate of crashes resulting in fatalities</li> <li>•Reduction in the rate of crashes resulting in injuries</li> <li>•Reduction in secondary crashes</li> </ul>
Mobility	<ul style="list-style-type: none"> <li>•Reduction in travel time delay</li> <li>•Reduction in travel time variability</li> </ul>
Efficiency and Productivity	<ul style="list-style-type: none"> <li>•Increase in freeway and arterial throughput</li> <li>•Cost savings for users</li> <li>•Cost savings for agency</li> </ul>
Energy and the Environment	<ul style="list-style-type: none"> <li>•Decrease in vehicle emissions</li> <li>•Decrease in vehicle energy consumption</li> </ul>
Customer Satisfaction	<ul style="list-style-type: none"> <li>•Increase in customer satisfaction</li> <li>•Link with mobility measures</li> </ul>

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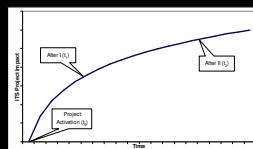
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## FRAMEWORK

### ➤ Methodology – Step 2: Data Collection

- Methods
  - Field Observations
  - Automated Devices
  - Simulation
  - Surveys
- Unavailable Data
  - Similar Projects
  - Similar Regions
- Timeline
  - Before/After/Stability



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## FRAMEWORK

- Methodology – Step 3: Data Analysis
  - Focus on most important categories
  - Monetary Value of Benefits
    - Travel Time
    - Resource Consumption of Vehicle Operations
    - Crashes
  - Time Value of Money (Discounting)
  - Comparing Costs & Benefits
    - B/C, NPV, IRR, Pay-back Period, First-year Return
  - Report includes sample values and formulas

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## FRAMEWORK

- Methodology – Step 4: Recommendations & Reporting
  - Project objectives and base case
  - What benefits are most important
  - Who gets them
  - Interactions between projects (ITS & non-ITS)
  - Methods, assumptions, limitations
  - Lessons learned

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## Examples

- 🕒 Apply framework to projects
  - CVO and transit (in process)
  - New Brunswick CVO example
    - Use of motor carrier profile system to reduce number of inspections and focus on likely problem carriers and vehicles
    - \$1.6 million investment over ten years
    - Benefit-cost ratio = 1.5 for public sector only; NPV = \$725,000

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## SUMMARY

- Need to Plan Ahead
- Need to Balance Amount of Investment and Evaluation Effort
- Need to Concentrate on a Limited Number of Key Measures / Benefits
- Need to Keep the Big Picture and Avoid Unnecessary Details

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## SUMMARY

IT IS BETTER TO BE APPROXIMATELY  
CORRECT THAN EXACTLY WRONG !

*Alain Enthoven, Stanford University*

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## THANK YOU !

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