What is Risk Management?

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Office of Policy Analysis, Research, & Innovation (PARI)
Overview

- Strategic Vision, Innovation, and Risk
- What is a Risk: Characteristics
- Types of Risk
- Identifying Risk
- Assessing Risk
- Risk Management Process
Imagine the possibilities
No Risk Taking = No Innovation!
What is a Risk?

“A future phenomenon or event that may occur with a direct impact to the project or program’s benefit or detriment.”
Factors Affecting Risk Perception

- Control
- Information
- Time
- Risk Preferences
  - Risk avoider
  - Risk taker (gambler)
  - Average person
Characteristics of Risks

- Magnitude Dependent
  - Greater payoff, the more risk acceptable

- Value Based
  - Personal values affect risk taking
  - Mn/Dot values effect personal choices
  - Everyone sees risks differently
Characteristics of Risks

- Situational
  - They have no textbook answer

- Time Based
  - Future phenomenon
  - Time effects perceptions

- Interdependent
  - One risk can effect and cause another
What is a Risk Again?

Characteristics:
- A definable future event
- Probability of occurrence
- Impact when occurs
- Not a current problem
Facing Uncertainty and Increased Expectations

“Scrutiny is up, spending is down, expectations are rising and demands are increasing. The only constant is change, the only certainty is uncertainty.”

P. Waddell, Millennium Transition Group
Types of Risks

- Risks can come from internal or external sources and will either be:
  - Business Risks: normal risks of doing business
  - Pure (insurable) Risks: risks that present an opportunity for loss only
- And they can be either one:
  - Known Risks: Risks identified
  - Unknown Risks: not identified
Risks Beyond Cost

- Public Trust
- Customer
- Partners/Stakeholders
- Media
- Relationships
- Economic
- Budget
- Traffic Volume

- Environmental
- Conformity
- Safety
- Legal
- Other Agencies
- Confusion
- Political
- Expectations
- More?
Identifying Risk

- What’s keeping you up at night?
- How does one risk relate to another?
- Are you tracking risks on a project or decision from beginning to end?
“Whatever name they call it – business...holistic...strategic...enterprise... – leading organizations around the world are breaking out of the “silo” mentality and taking a comprehensive approach to dealing with all of the risks they face.”

Tillinghast-Towers Perrin
How “Not” to Assess Risks

CALVIN AND HOBBES

The more you know, the harder it is to take decisive action.

Once you become informed, you start seeing complexities and shades of gray.

You realize that nothing is as clear and simple as it first appears. Ultimately, knowledge is paralyzing.

Being a man of action, I can’t afford to take that risk.

You’re ignorant but at least you act on it.
Assessing Risks at Mn/DOT

- Transportation work is filled with uncertainty and difficult decisions.

- Risk Management can enhance your decision making.

- Balanced approach is most comprehensive.
Beyond Cost, Scope, and Schedule

- **Project Management**
  - Not only managing Scope, Schedule, and Budget….but also risks that threaten public trust and confidence. Safety.

- **Risk Management**
  - The process of management that deals with identifying, quantifying, and responding to, and controlling the risks in a program, project, decision, etc. (Sub-Part of Project Management)
Flexible Approach

- Risk Management is a strategic approach which adapts to specific circumstances
The Director had his argument ready for not conducting a risk assessment.

Ignorance is bliss.
Risk Management

- Step 1: Identify and Prioritize
- Step 2: Accept, Mitigate, Avoid, or Transfer Risk.
Risk Management Workshop Process
Step #1: Assessment

Identification and Documentation of Risk Statements
Step #2: Assessment

Analysis and Prioritization of Risk Statements
Step #3: Management

Development of Innovative Risk Response Strategies per Risk Statement
Step #4: Management

Assessment of Risk Response Strategy Effectiveness
Step #5: Management

Reprioritization of Risks by Risk Level and Strategy Effectiveness
Apply Resources
Risk Management Workshop Process
### Expected Value: Quantifying Risk

<table>
<thead>
<tr>
<th>Functional Perspective</th>
<th>Core Program Element</th>
<th>Risk Statement</th>
<th>O = 1, T=2</th>
<th>PROBABILITY</th>
<th>IMPACT (1-5)</th>
<th>Expected Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>Environmental Processes</td>
<td>Legislative micro management causes way too many earmarks that may cause inefficient allocation of resources and poor environmental decisions.</td>
<td>2</td>
<td>100%</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Environment</td>
<td>Environmental Processes</td>
<td>Understaffing of project development at the State and FHWA continues. Result in longer project durations and missteps, increased costs. Effects local and state-aid</td>
<td>2</td>
<td>90%</td>
<td>4</td>
<td>3.6</td>
</tr>
<tr>
<td>Environment</td>
<td>Interagency Coordination</td>
<td>The development and use of programmatic agreements, NEPA 404 and other mechanisms. To decrease delays.</td>
<td>1</td>
<td>100%</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Environment</td>
<td>Environmental Stewardship</td>
<td>Rapidly increasing cost of all project costs has negative effect on mitigation and program effectiveness.</td>
<td>2</td>
<td>75%</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>
Quantifying Risk

![Risk Matrix]

What is the chance it will happen?

Impact

Likelihood

- Very likely
- Likely
- Unlikely

Medium

High

Extremen

Low

Medium

High

Minor

Moderate

Major
"We've considered every potential risk except the risks of avoiding all risks."
Risk Management - 4 types

Identify Risk Response Strategies:

**Acceptance**
- Active = contingency plan, Market Research, Research, etc.
- Passive = do nothing

**Avoidance**
- Alternate approach to accomplish goal (Bridge in lieu of Signal)

**Transference**
- Insurance, Warranties, P3, Contracts, Guarantees

**Mitigation**
- Lower the Likelihood
- Lower the Impact
## Quantitative Risk Management

<table>
<thead>
<tr>
<th>Risk Statement</th>
<th>Score</th>
<th>Collaborative Strategies</th>
<th>Effectiveness</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changing external economics including inflation, oil prices, gas prices, fuel efficiency, demographics, etc.</td>
<td>4.65</td>
<td>Develop new forecasting model. Included in Cost Estimates, Revenues, traffic, land use, demographics and all components of program decision making. Tracking trends in all areas already (ongoing activity). Communication of where we are at, to districts and local levels. Get in closer touch with customers and partners who apply trends and communicate to locals. Communication of risks in forecasts for Revenues and Cost components for program. Investment in resources to better track data and communicate results. Increase staffing levels to accomplish tracking and analysis of trends. Develop better risk based models to better forecast performance.</td>
<td>80%</td>
<td>.93</td>
</tr>
<tr>
<td>Changing federal emphasis and priority areas changes funding categories and direction which causes unmet expectations of the existing program by the public, and federal government.</td>
<td>3.8</td>
<td>Promote Pilot for performance based federal funding. FHWA division works to create focus for flexible spending and share a vision with Minnesota's vision. Use flexibility of funding more aggressively to meet Minnesota's vision. FHWA has one consistent message.</td>
<td>100%</td>
<td>0</td>
</tr>
<tr>
<td>Improving Cost Estimates submitted throughout the STIP. Causing minimization of delays in projects and program impacts.</td>
<td>3.4</td>
<td>Agreement on gaps from environmental scan of cost estimating practices, utilize information to collectively develop strategic handbook to deal with cost estimating gaps. Training and implementation of steps in new guidance and policy necessary.</td>
<td>10%</td>
<td>3.06 (worth it?)</td>
</tr>
</tbody>
</table>
Assessing Decision Alternatives

- Risk – Response Strategy = Residual Risk
  - What resources are needed?
    - Tasks? Money?
- Risk Management is a Living process
How to Use Risk Management

- Validate Observations and Conclusions
- Decision Making
- Create Consensus
- Group Development
- Measuring the Importance of Qualitative Ideas
- Determine where resources can be applied to greatest risks
How to Use Risk Management

- Determine where resources could be lessened
- Implement changes
- Stimulate Innovation
- Consider level of risk we can tolerate (or accept)
- Open corporate dialogue
- Enhance Communication and Cooperation
- Project Management
What’s Risk Management Again?

- Risk Management
  - Development Risk Response Strategies
  - Incorporate Strategies into Work Plan
  - Monitor, Evaluate, Documentation, and Adjust Strategies
Risk Management Principles

- Should create value
- Should save time in long run
- Should be an integral part of organizational processes
- Should be part of decision making
- Should explicitly address uncertainty
- Should be systematic and structured
Risk Management Principles

- Should be based on the best available information
- Should be tailored
- Should take into account human factors
- Should be transparent and inclusive
- Should be dynamic, iterative and responsive to change
- Should be capable of continual improvement and enhancement
Benefits of Risk Management

- Informed decision making
- Time Savings
- Enhances ability to manage uncertainty
- Helps us think more strategically
- Reactive to Proactive
The Wisdom of Crowds -
by James Surowiecki
Risk Consultant Services Available

Services available *in-house* at Mn/DOT:
- Consultations
- Workshops
- Trainings
Risk Manager Integration
Creating a Knowledge Network

- Risk Management at Mn/DOT:
  - Tools
  - Ihub Web Site
  - Community of Practice (Online)
  - User Reference Guide
  - Glossary
Pathway to Innovation?
For more information

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