



What is Risk Management?

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Overview

- Strategic Vision, Innovation, and Risk
- What is a Risk: Characteristics
- Types of Risk
- Identifying Risk
- Assessing Risk
- Risk Management Process

Imagine the possibilities



-viktor-

Photo by Vincent Laforet / The New York Times

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



TODAY!



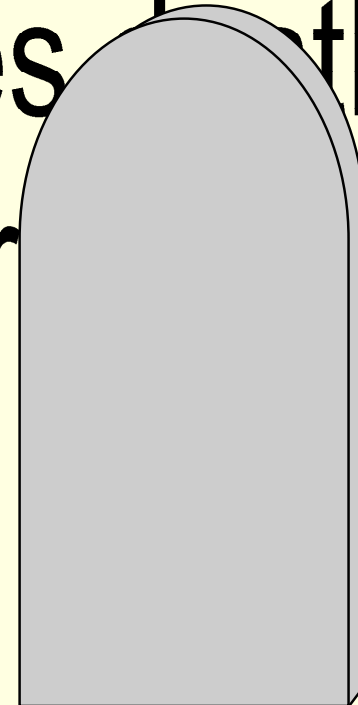
Something quite low, maybe below 1%

Risk of Airplane Crash,

that causes death and

Over 100 deaths

Years



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

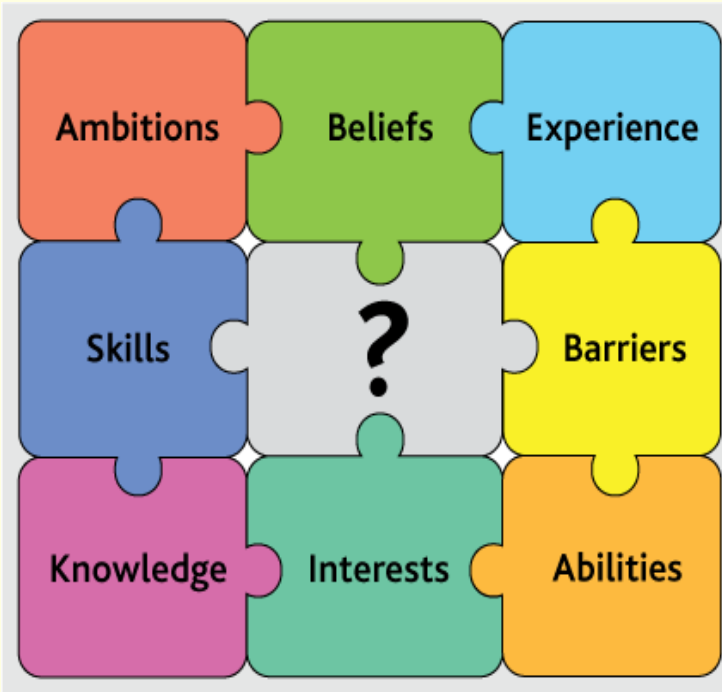
- Public Trust
- Customer
- Partners/Stakeholders
- Media
- Relationships
- Economic
- Budget
- Traffic Volume
- Environmental
- Conformity
- Safety
- Legal
- Other Agencies
- Confusion
- Political
- Expectations
- More?

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?**

Thinking Beyond Silos

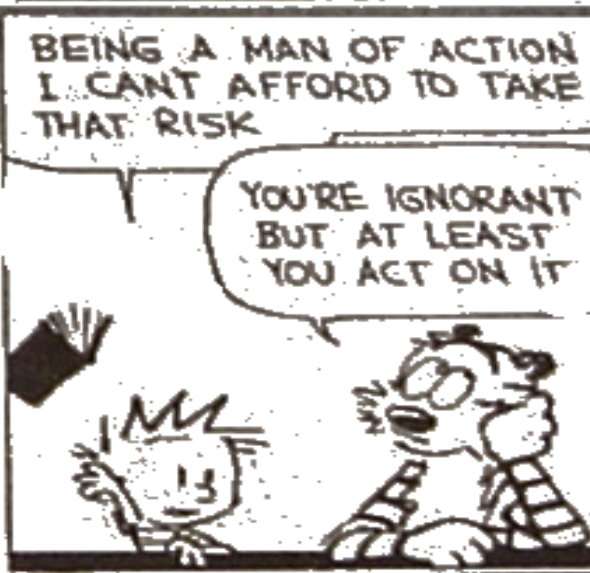
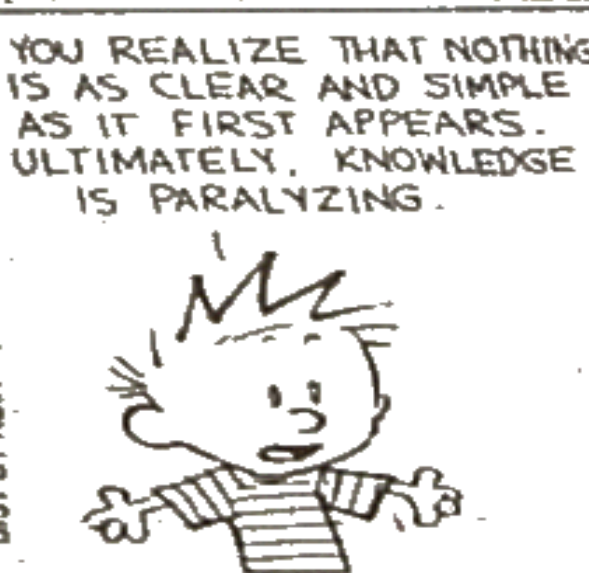


*“Whatever name they call it
– business...holistic...
strategic...enterprise...
– leading organizations
around the world are
breaking out of the “silo”
mentality and taking a
comprehensive approach
to dealing with all of the
risks they face.”*

Tillinghast-Towers Perrin

How “Not” to Assess Risks

CALVIN AND HOBBS



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



Cartoon produced during the 'Recording Risks' Conference on 20 October 2008 in Amsterdam, the Netherlands. European Campaign for Safety and Health at work. © Djanko

Risk Management

- Step 1: **Identify and Prioritize**
- Step 2: **Accept, Mitigate, Avoid, or Transfer Risk.**





Risk Management
Workshop Process

... by Risk Level
... tiveness

Step #1: Assessment



Identification and Documentation
of Risk Statements

Step #2: Assessment



Analysis and Prioritization
of Risk Statements

Step #3: Management



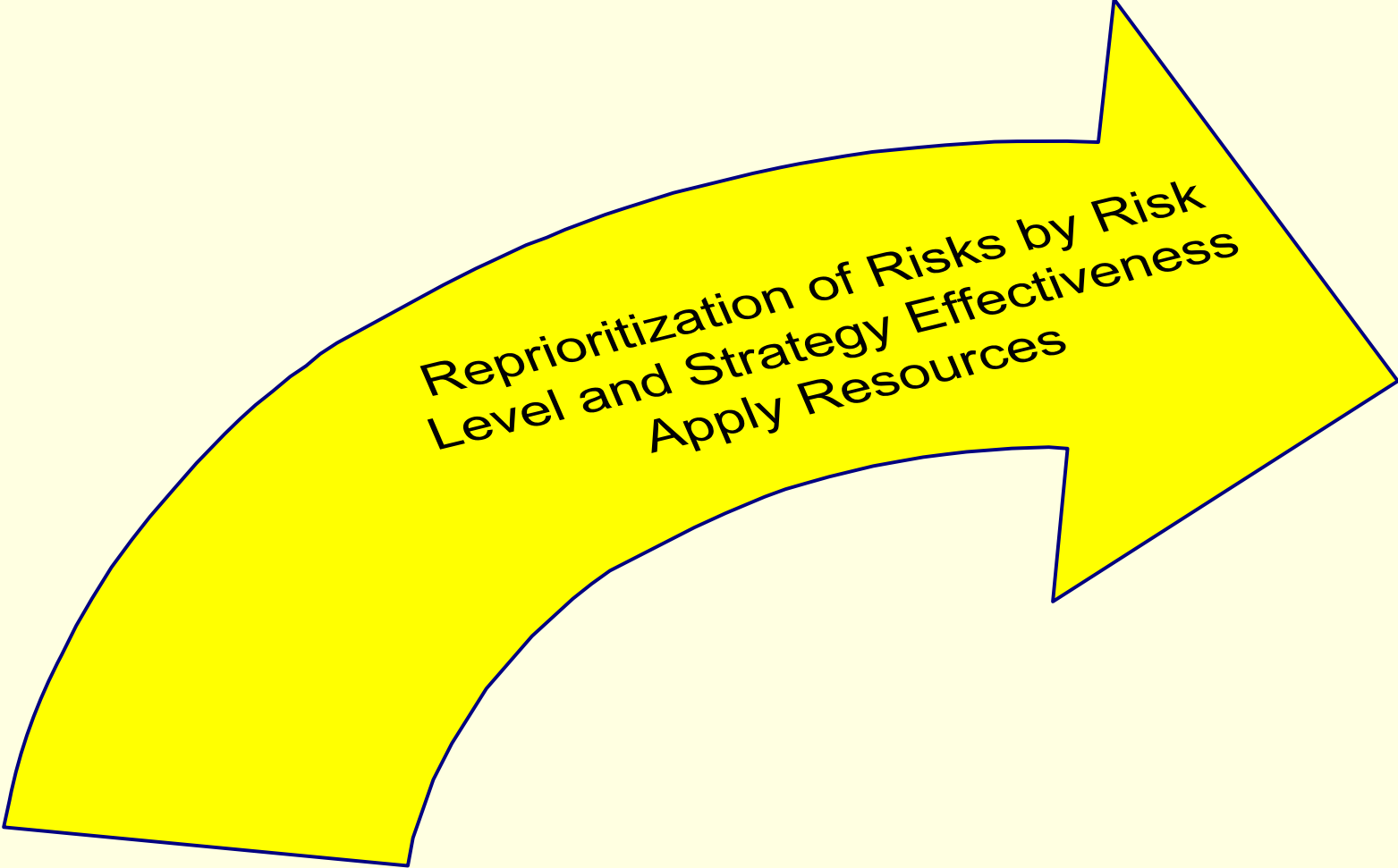
Development of Innovative
Risk Response Strategies per
Risk Statement

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

... by Risk Level
... tiveness

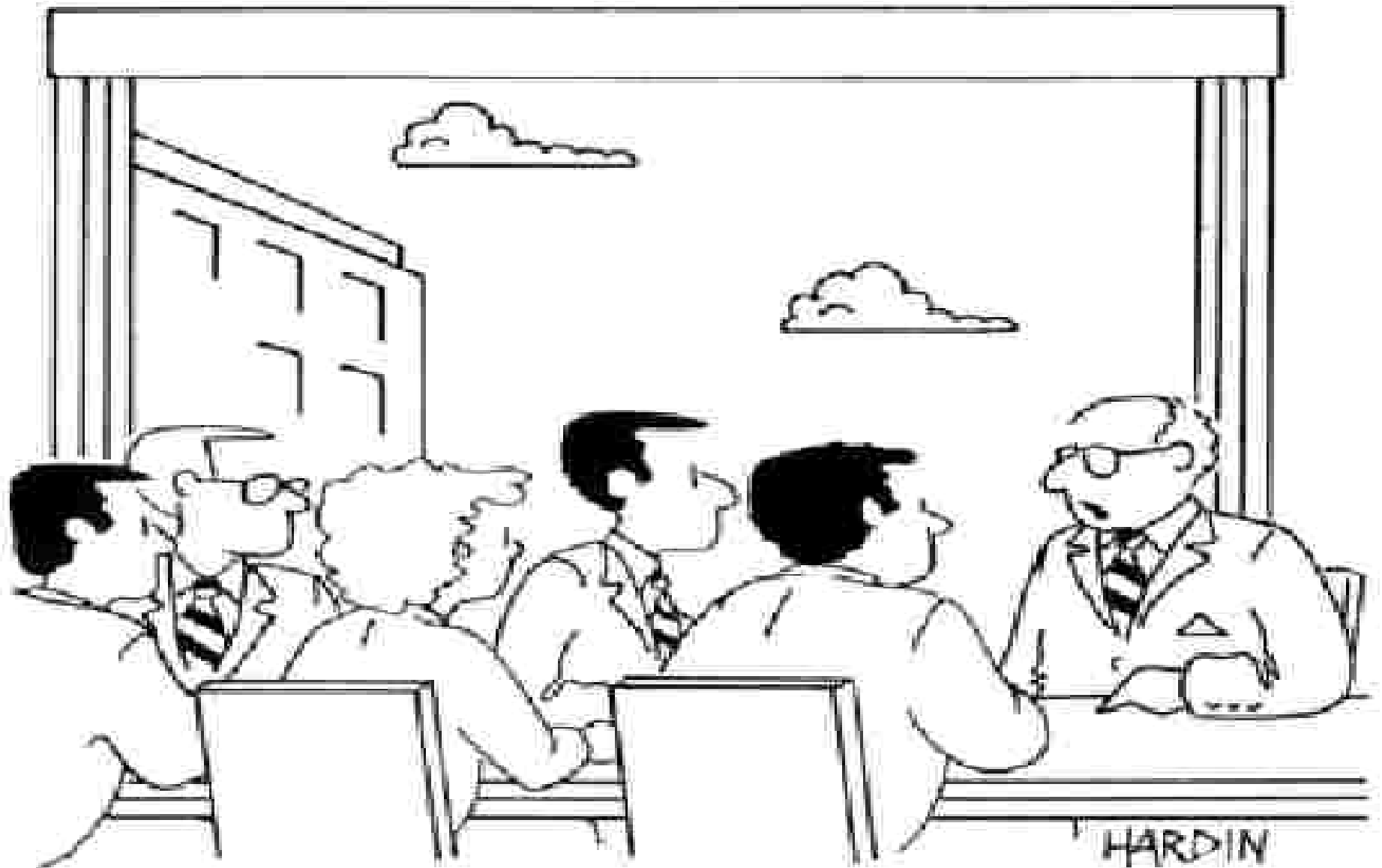
Expected Value: Quantifying Risk

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

Quantifying Risk

A risk matrix diagram with 'Likelihood' on the vertical axis and 'Impact' on the horizontal axis. The vertical axis is labeled 'Likelihood' and has an upward-pointing arrow. The horizontal axis is labeled 'Impact' and has a rightward-pointing arrow. The matrix is a 3x3 grid of colored cells. The top row is labeled 'Very likely', the middle row 'Likely', and the bottom row 'Unlikely'. The left column is labeled 'Minor', the middle column 'Moderate', and the right column 'Major'. The cells contain numerical risk scores: (Very likely, Minor) is 2 (yellow), (Very likely, Moderate) is 3 (orange), (Very likely, Major) is 5 (red), (Likely, Minor) is 1 (green), (Likely, Moderate) is 2 (yellow), (Likely, Major) is 3 (orange), (Unlikely, Minor) is 1 (green), (Unlikely, Moderate) is 1 (green), and (Unlikely, Major) is 2 (yellow). Below the grid, the text 'What is the chance it will happen?' is positioned to the left of the 'Likelihood' axis.

| | | | |
|------------------------------------|-------------|-------------|--------------|
| Very likely | Medium 2 | High 3 | Extreme 5 |
| Likely | Low 1 | Medium 2 | High 3 |
| Unlikely | Low 1 | Low 1 | Medium 2 |
| What is the chance it will happen? | 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

| <u>Risk Statement</u> | <u>Score</u> | Collaborative Strategies | Effectiveness | Residual Risk |
|--|--------------|--|----------------------|-----------------------------|
| Changing external economics including inflation, oil prices, gas prices, fuel efficiency, demographics, etc, | 4.65 | 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. | 80% | .93 |
| 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. | 3.8 | 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. | 100% | 0 |
| Improving Cost Estimates submitted throughout the STIP. Causing minimization of delays in projects and program impacts. | 3.4 | 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. | 10% | 3.06 (worth it?) |

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

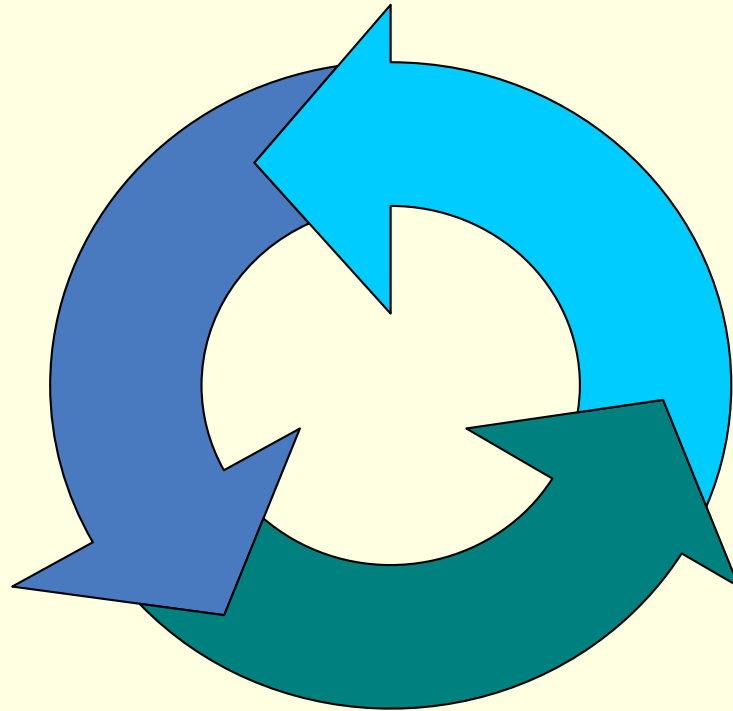
The Wisdom of Crowds - by James Surowiecki



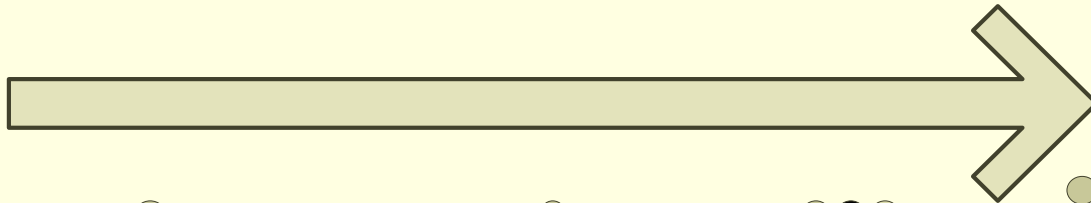
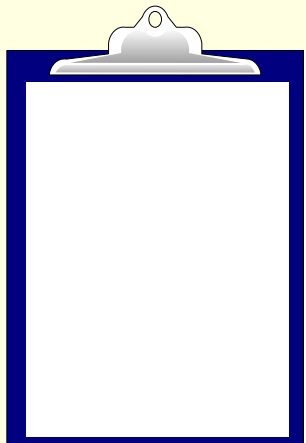
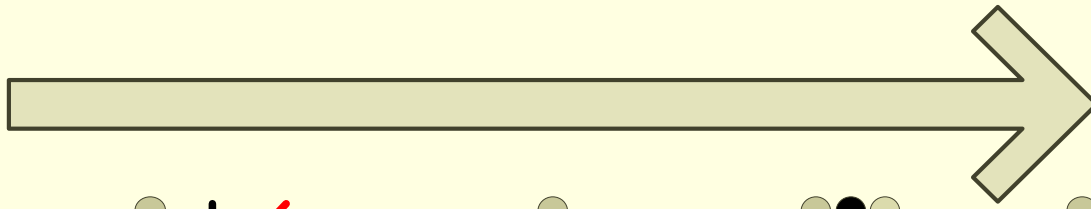
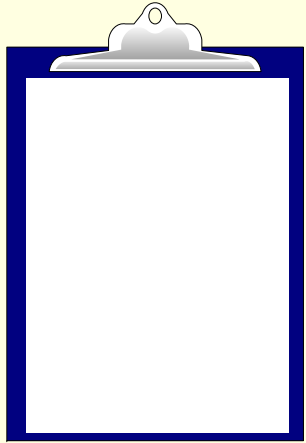
Risk Consultant Services Available

PARI Strategic Directions

- Services available *in-house* at Mn/DOT:
 - Consultations
 - Workshops
 - Trainings



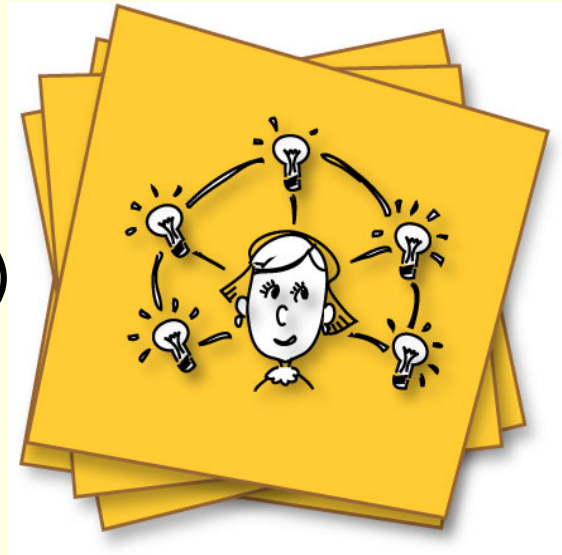
Risk Manager Integration



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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