

Asset Management Risk 101

Where to start

Triage

Have you ever wondered why...

- How would you prioritize all transportation asset related investments across the country?
 - Where would you start?

“The objective of this performance and outcome-based program is for States to invest resources in projects that collectively will make progress toward the achievement of the national goals.” FTA MAP-21 Fact Sheet

Federal perspective

“MAP–21 fundamentally shifted the focus of Federal investment in transit to emphasize the need to maintain, rehabilitate, and replace existing transit investments.”

(Federal Register / Vol. 81, No. 143 / Tuesday, July 26, 2016 / Rules and Regulations, P. 48912)

“In these financially constrained times, transit agencies will need to be more strategic in the use of all available funds.”

(Federal Register / Vol. 81, No. 143 / Tuesday, July 26, 2016 / Rules and Regulations, P. 48946)

MAP-21

RISKS

Goal area	National goal
Safety	To achieve a significant reduction in traffic fatalities and serious injuries on all public roads
Infrastructure condition	To maintain the infrastructure asset system in a state of good repair
Congestion reduction	To achieve a significant reduction in congestion on the National Highway System
System reliability	To improve the efficiency of the surface transportation system
Freight movement and economic vitality	To improve the national freight network and the ability of rural communities to access national intermodal markets, and to support regional economic development
Environmental sustainability	To enhance the performance of the transportation system while protecting and enhancing the natural environment
Reduced project delivery delays	To reduce project costs, promote safety and the economic good and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, reducing regulatory burdens and improving agencies' work practices

MAP 21: FTA requirements for TAMP elements

No.	TAMP Element	Description
1	Asset inventory	All capital assets owned by agency, including equipment (construction, maintenance, service vehicles), rolling stock (rail cars, buses, ferries), infrastructure (fixed guideway, signal systems, structures, power), facilities (support, passenger, parking)
2	Condition assessment	A rating of the inventoried assets with direct capital responsibility (age, condition, percentage of residual life, vulnerability to natural/climate hazards etc). At the individual or asset class level.
3	Decision-making approach / support tools	List analytical processes used to make investment prioritization, does not have to be software tool
4	Investment prioritization	A financially constrained ranked listing of proposed projects ordered by year of planned implementation, prioritized based on local policy, needs, safety risks, etc
5	TAM and SGR Policy	The agency's vision for TAM, SMART objectives, roles and responsibilities
6	Implementation strategy	Operational level process for implementing TAM Plan
7	Roadmap activities	Description of actions needed to implement TAM Plan for each year of the plan's horizon
8	Needed resources	Staffing, technology, funding, etc
9	Evaluation plan for continuous improvement	How TAM activities will be monitored, evaluated, and updated to ensure the continuous improvement of TAM practices

* Source: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/TAMFinalRule_Presentation.pdf

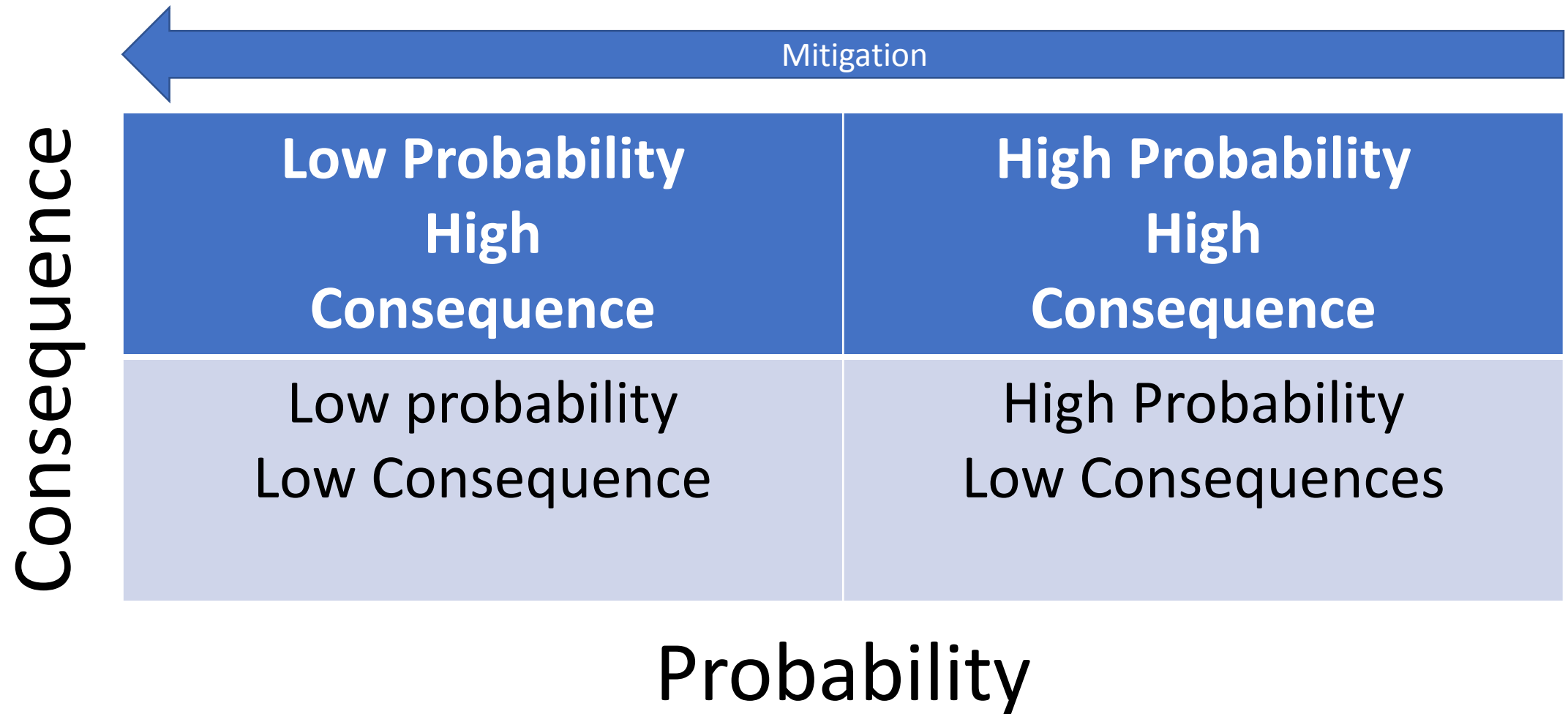
Where is RTD with Risk Management?

- Using experience and best judgement
 - Triage
- We aren't there yet
- Our plan:
 - Achieve minimum understanding and compliance with MAP-21
 - Take action
- Integrated SMS and Risk Management with TAM

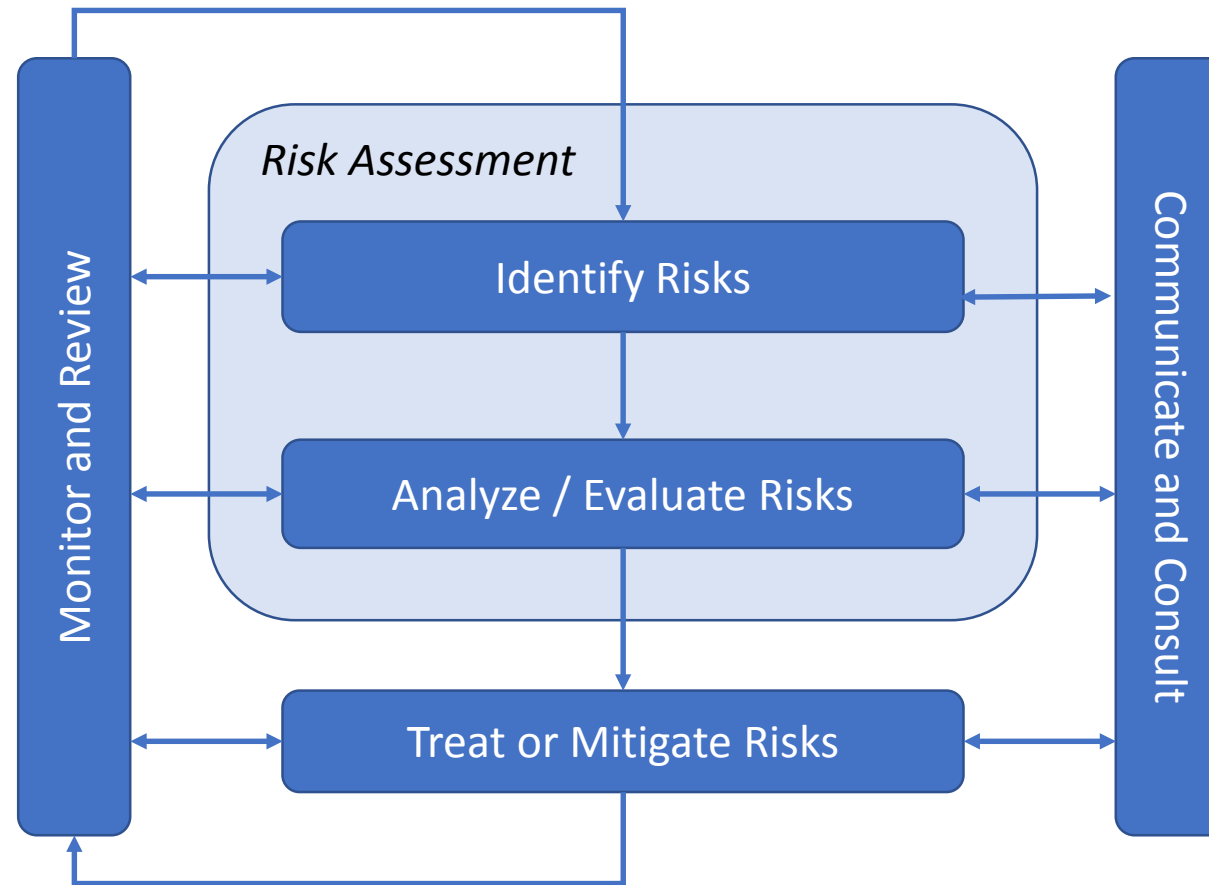
Risk

- Probability and magnitude of a loss, disaster, or other undesirable event. -Hubbard
- Exposure to the chance of injury or loss; hazard or dangerous chance. – Dictionary. Com
- The hazard or chance of loss; Degree of probability of such loss – Insurance Institute
- The possibility that something unpleasant or unwelcome will happen – Oxford
- All these say - Something bad could happen

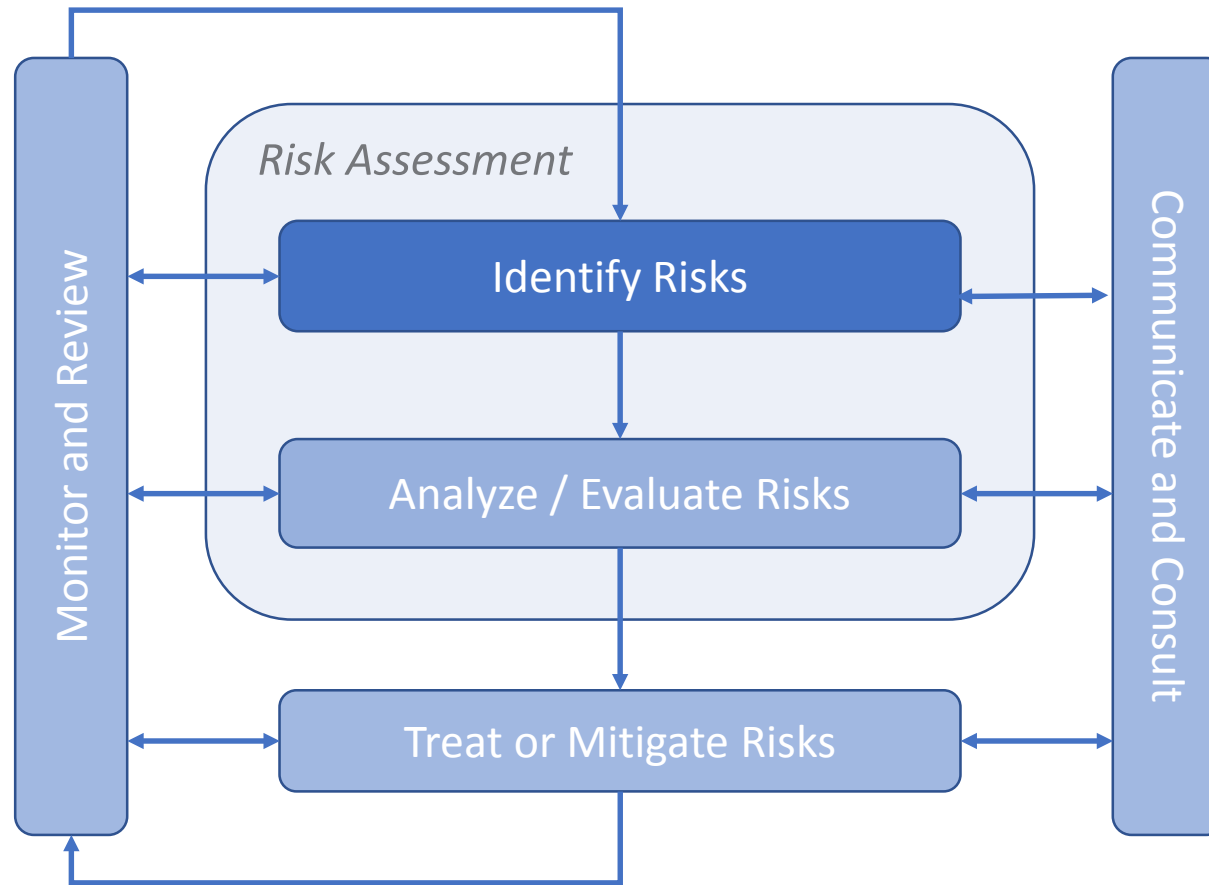
Probability X Consequence = Risk



Simplified Risk Management Process

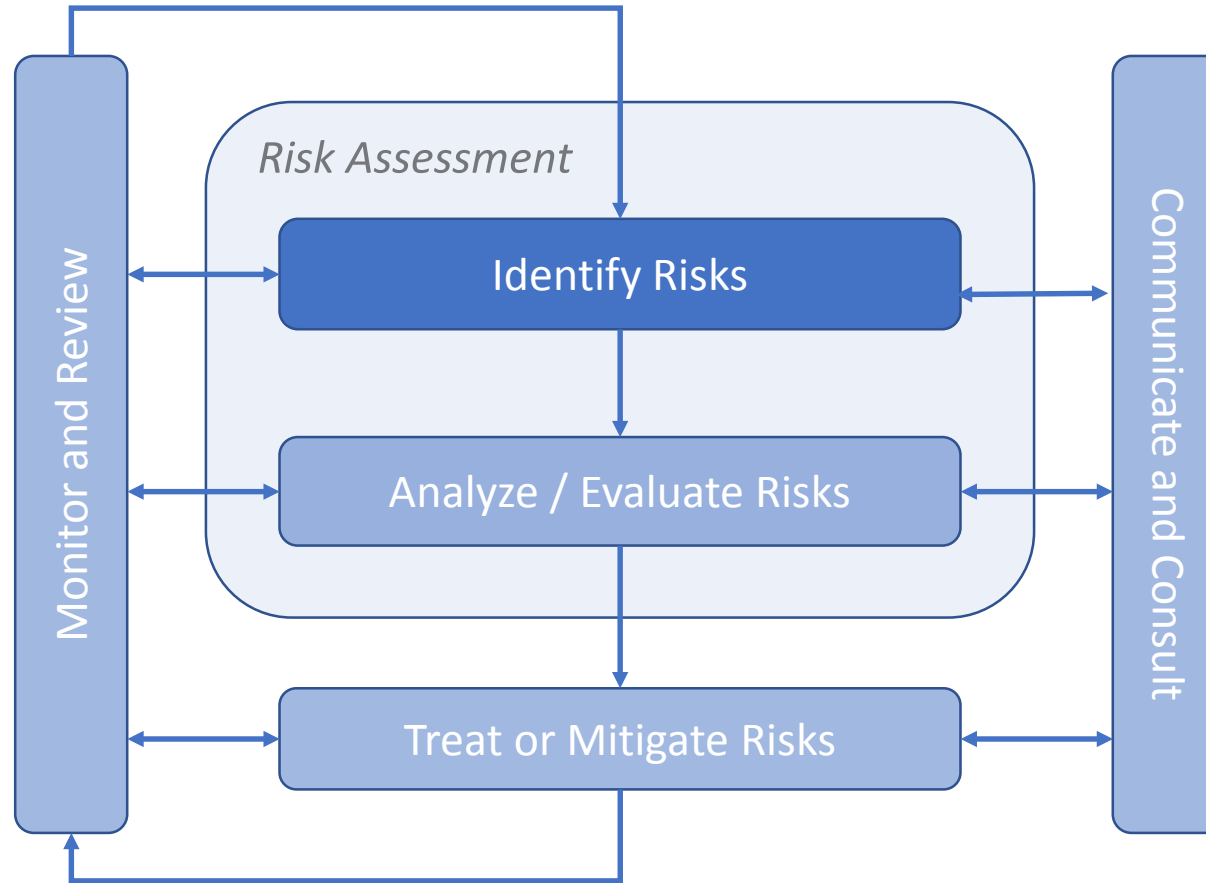


Simplified Risk Management Process



Simplified Risk Management Process

- Service Risks
- Safety Risks
- Security Risks
- Cyber Risks
- Contractual Risks
- Financial Risks
- Funding Risks
- Human resources Risks
- Operation Risks
- Legal Risks
- Network Risk
- Asset Risk
- Competency Risk



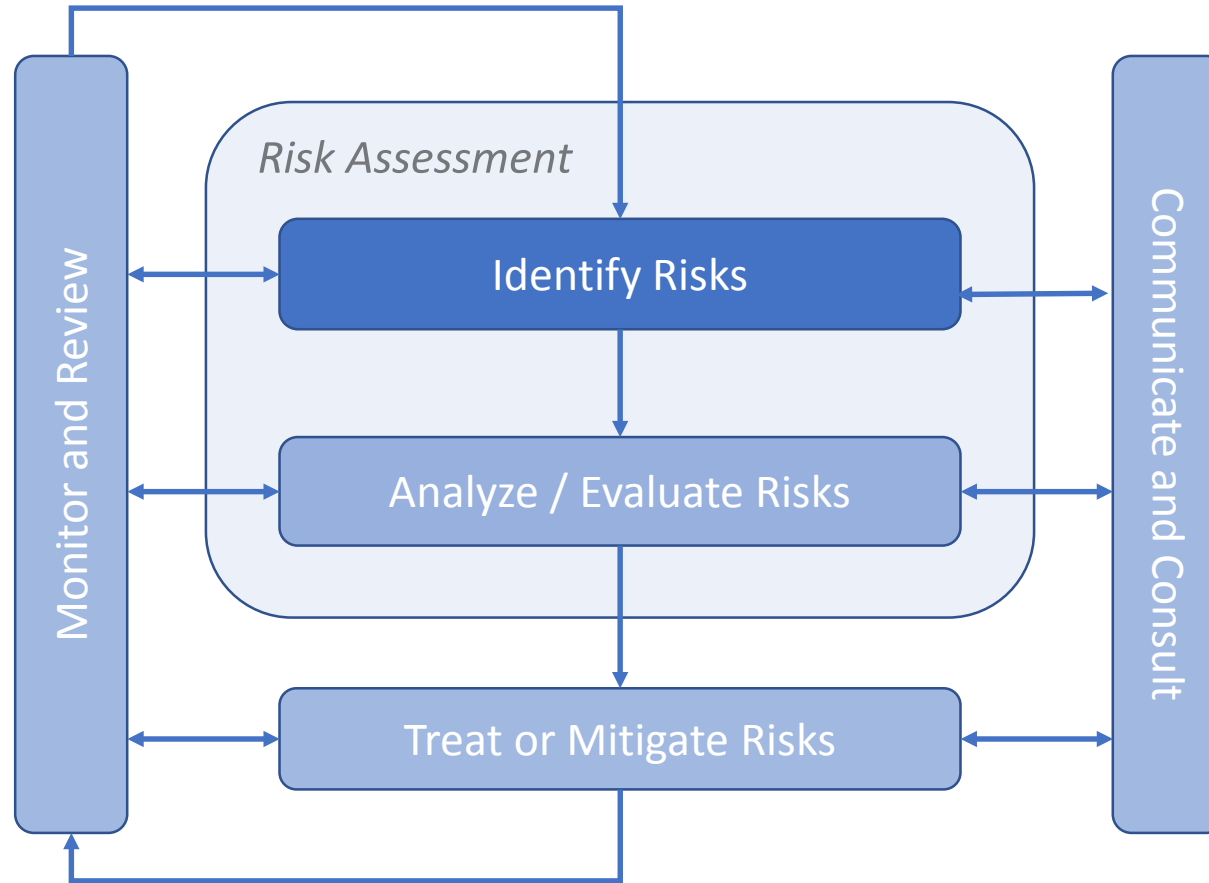
- Reputational Risks
- Capacity Risks
- Credit Risk
- Insurance Risks
- Pension risk
- Operation Risks
- Capacity Risks
- Information Risk
- Weather Risks
- Competition Risks
- Unknown unknowns

Linkages between Risks

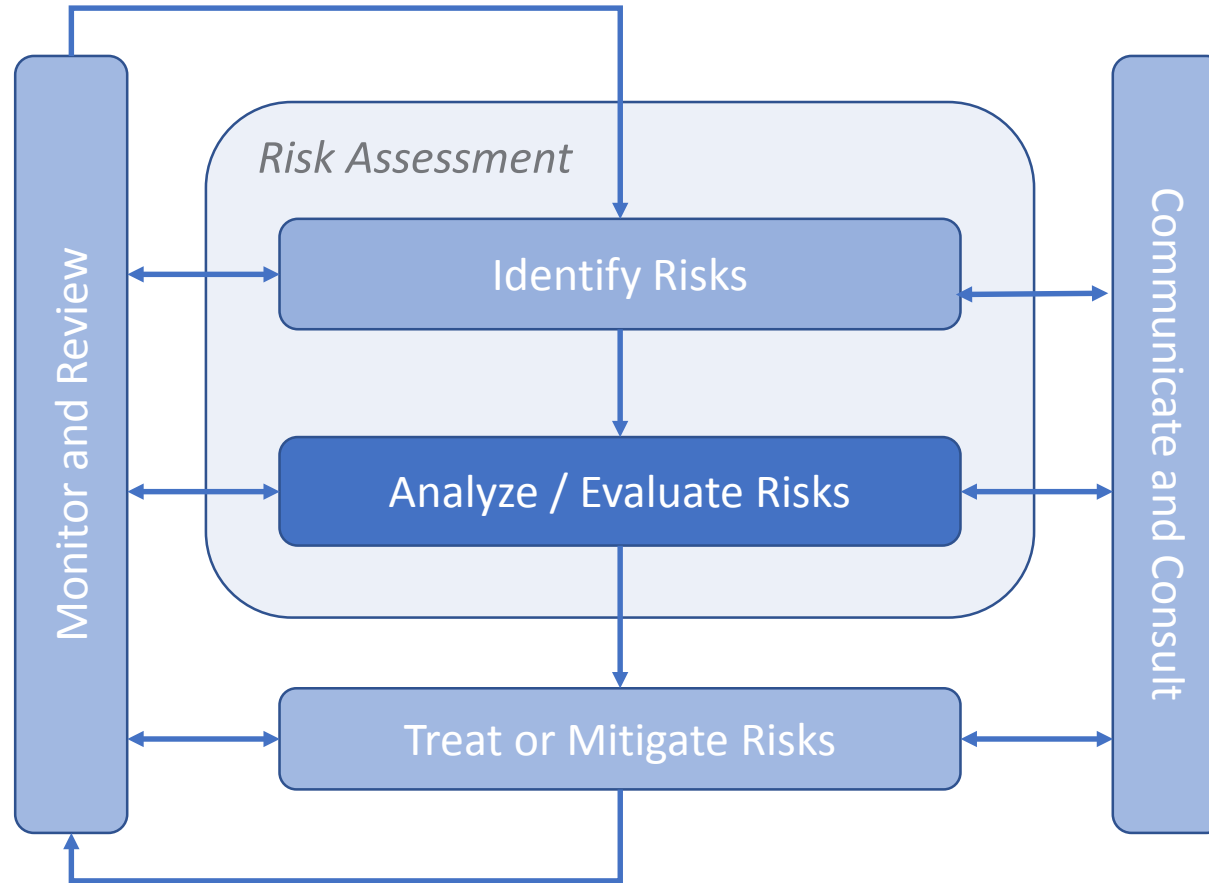
Simplified Risk Management Process



Event



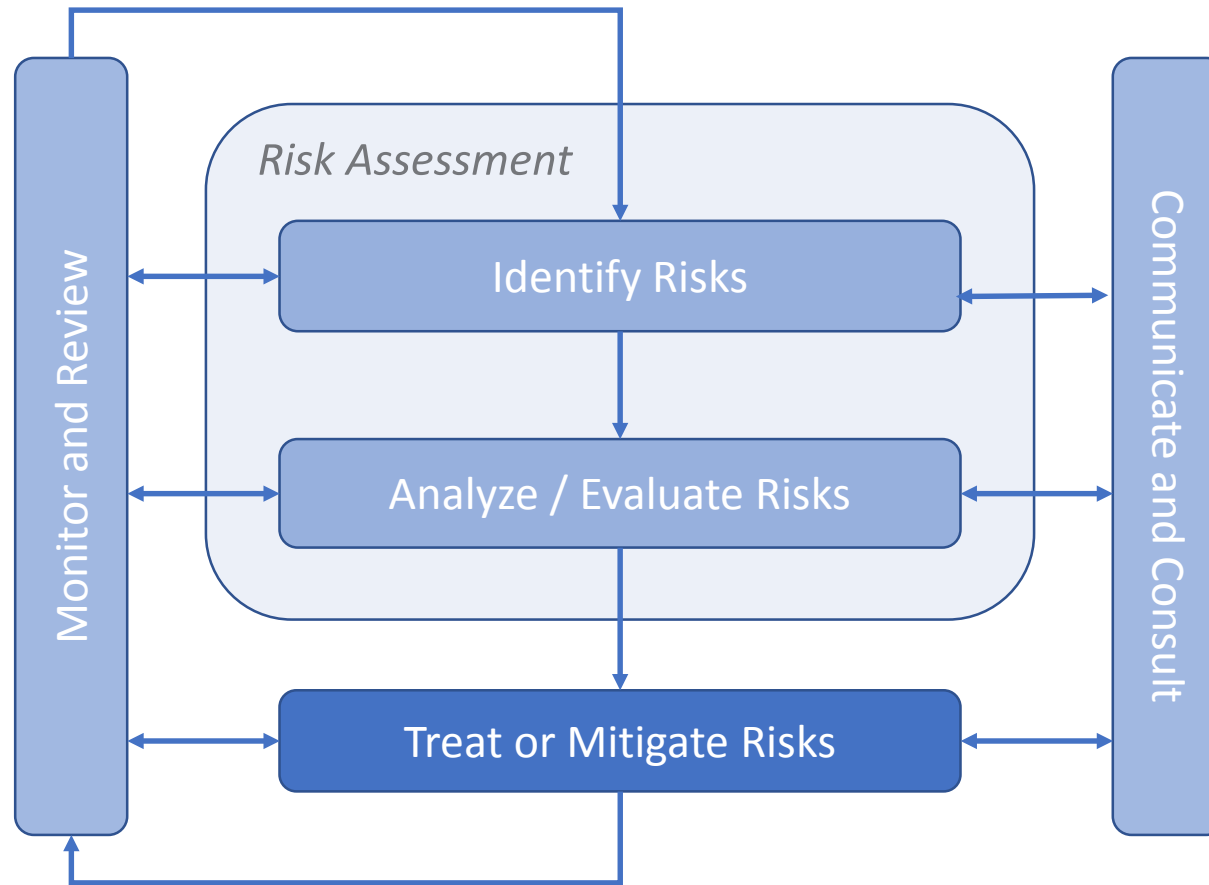
Simplified Risk Management Process



Failure Mode Analysis

- FMEA: Failure Mode and Effects Analysis
- FTA: Fault Tree Analysis
- HAZID: Hazard Identification
- HAZOP: Hazard and operability Study

Simplified Risk Management Process



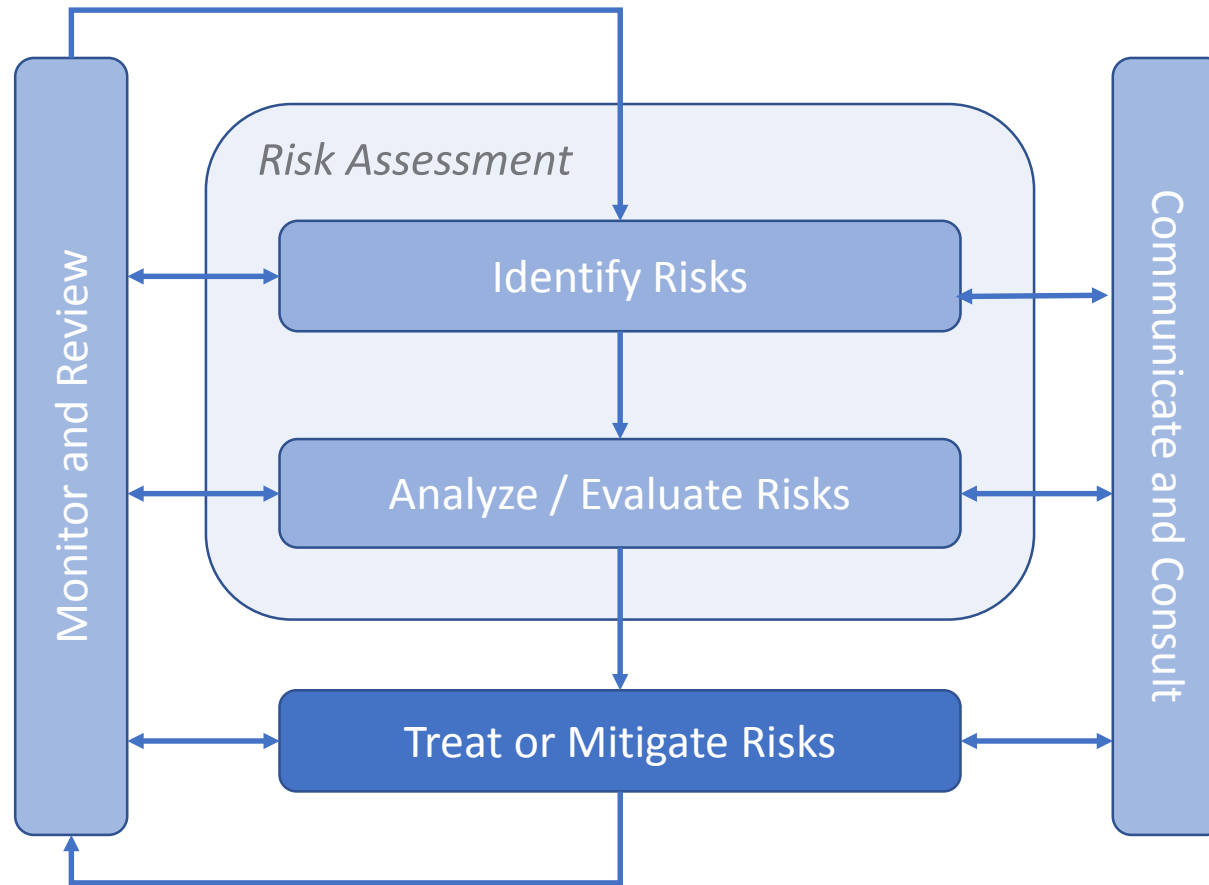
Simplified Risk Management Process

Acceptance

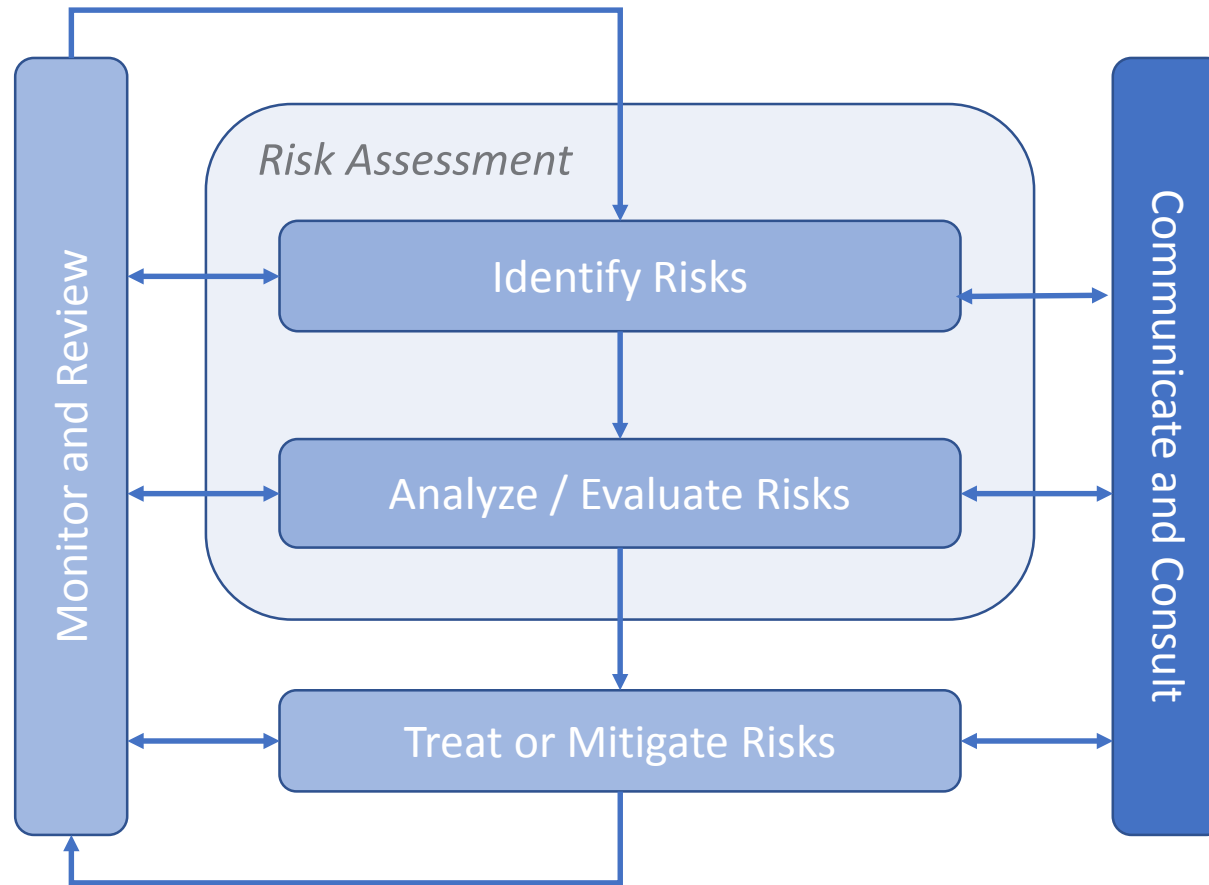
Avoidance

Limiting

Transfer



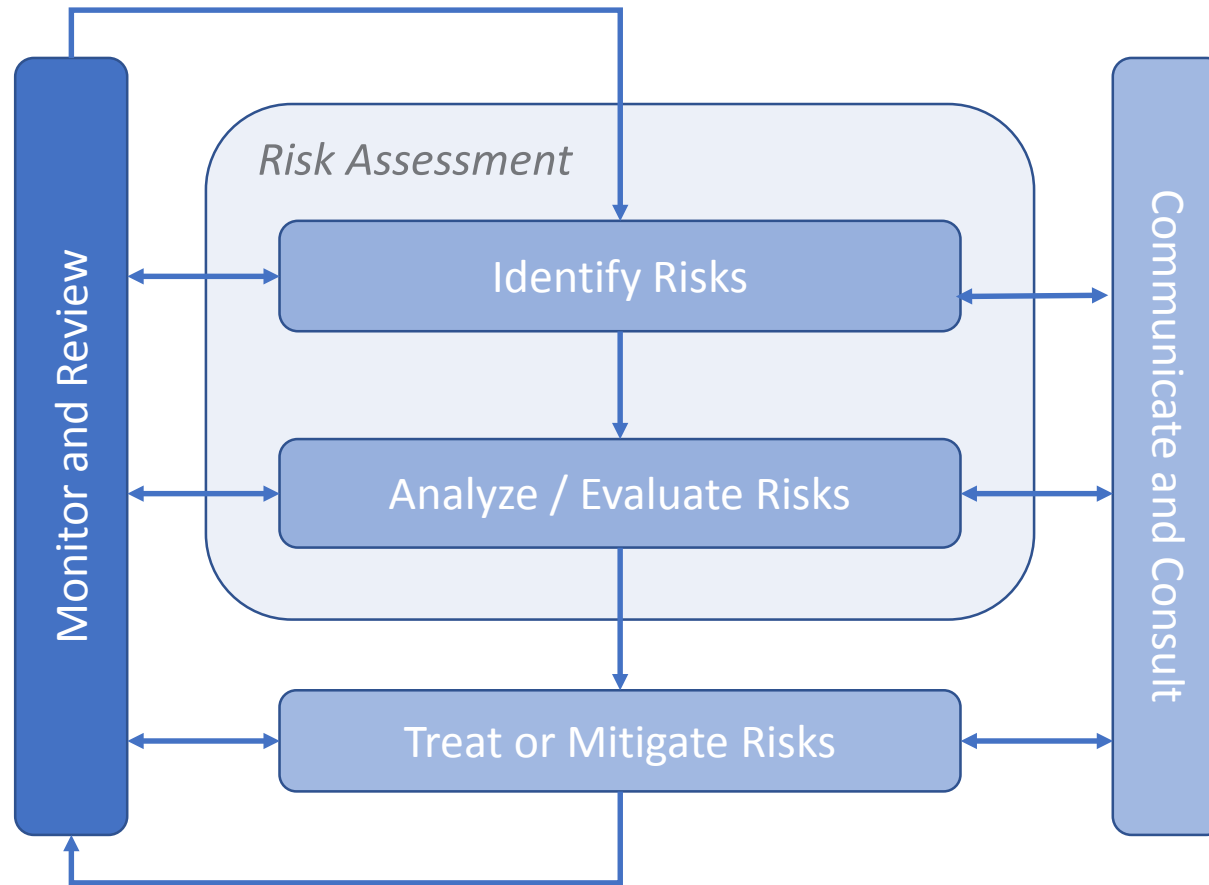
Simplified Risk Management Process



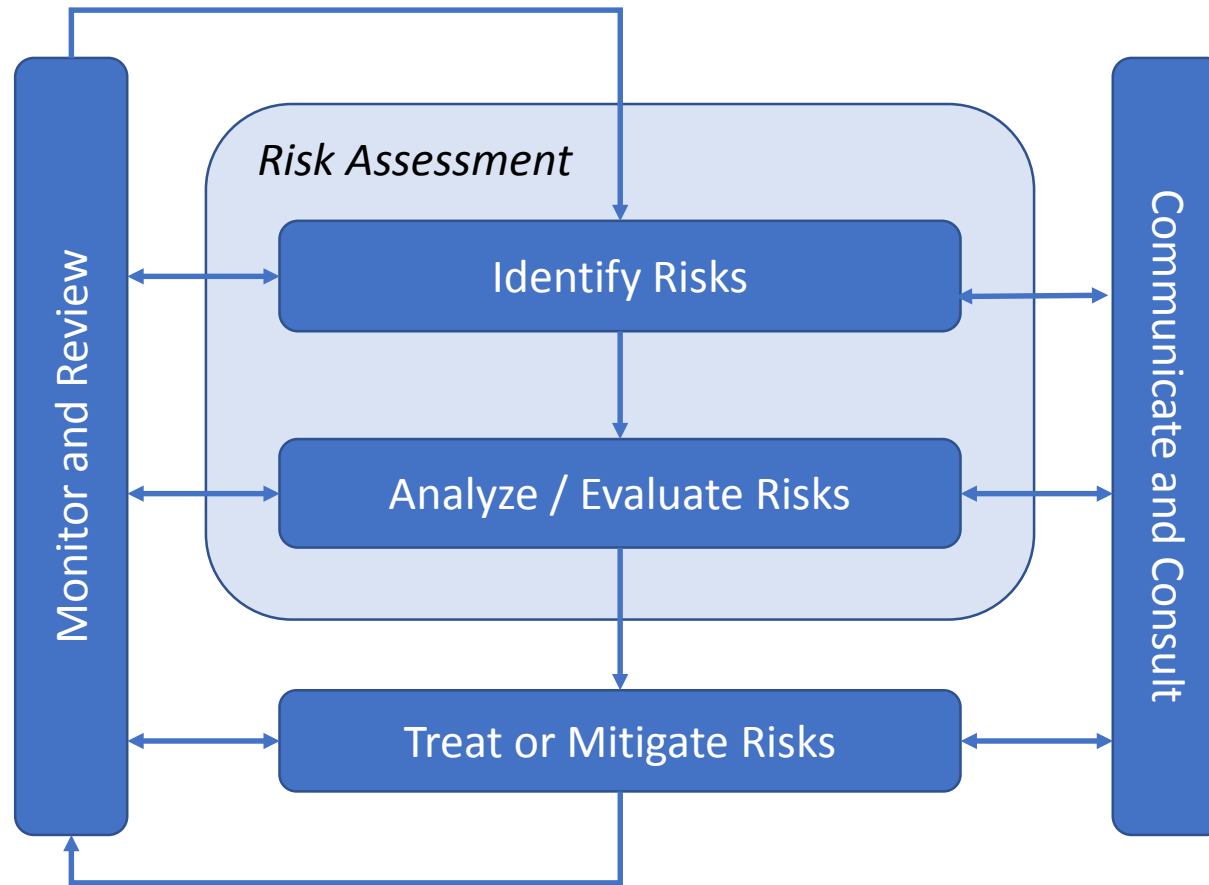
Experience is inevitable. Learning is not. — Paul Schoemaker



Simplified Risk Management Process



Simplified Risk Management Process



Asset exist to deliver our agency goals

- Risks are anything that may prevent this.
- Why MAP-21 exists
 - Safety incidents / Age and Condition of infrastructure / Investments to reduce risks
- Common Risk language
- Risk management is understanding risks of different options
- Models must be back tested
- Develop a system to determine risk outside of subjective judgement
 - We aren't good at this
- Risk are measureable and quantifiable
- All STARTS with good Asset Management practices

Asset Management Team
Regional Transportation District
1600 Blake Street, BLK-40 | Denver, CO 80202
Lou.Cripps@rtd-Denver.com