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# ELEPHANT GUNS & SMALL PROJECTS

Right sizing for your risk management process

Matt Slowikowski | PMP, MBA, P.Eng, MASc

# WHO AM I?

MATT SLOWIKOWSKI

- Experience across many construction fields: nuclear, mining, real property
- Experience in various functions including engineering, construction management, management consulting
- Understanding of risk from different countries, industries, and business functions
- Alma mater in mechanical engineering

# AGENDA

1. Why Elephant Guns
2. One Size Doesn’t Fit All
3. Tools and Techniques
4. New Developments

# Why Elephant Guns

Process Overview and Standard Practices

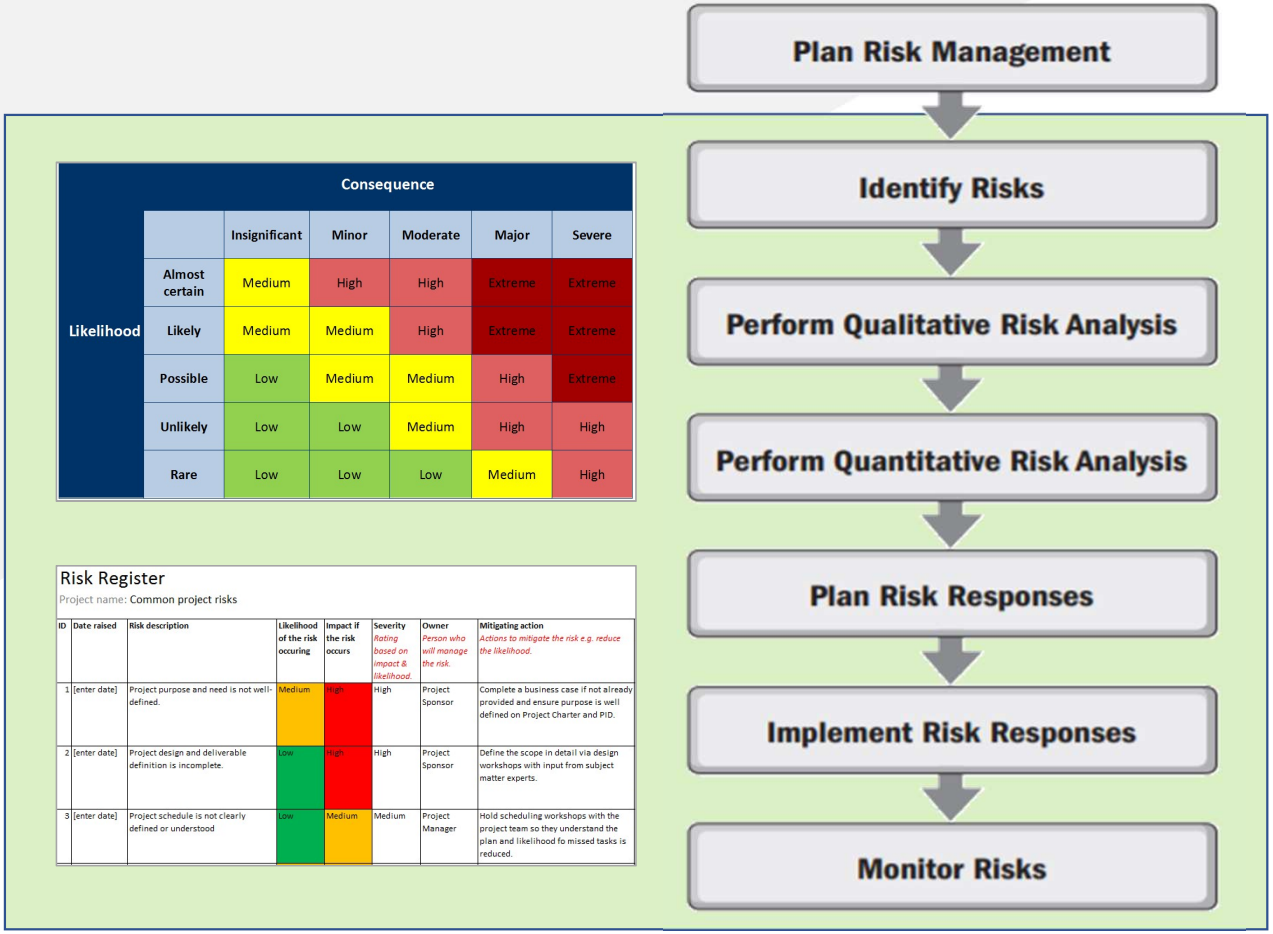
# PROJECT RM PLANNING: A SCALABLE PROCESS


| Likelihood | Consequence: Insignificant | Minor | Moderate | Major | Severe |
|---|---|---|---|---|---|
| Almost certain | Medium | High | High | Extreme | Extreme |
| Likely | Medium | Medium | High | Extreme | Extreme |
| Possible | Low | Medium | Medium | High | Extreme |
| Unlikely | Low | Low | Medium | High | High |
| Rare | Low | Low | Low | Medium | High |

**Risk Register**

Project name: Common project risks

| ID | Date raised | Risk description | Likelihood of the risk occuring | Impact if the risk occurs | Severity *Rating based on impact & likelihood.* | Owner *Person who will manage the risk.* | Mitigating action *Actions to mitigate the risk e.g. reduce the likelihood.* |
|---|---|---|---|---|---|---|---|
| 1 | [enter date] | Project purpose and need is not well-defined. | Medium | High | High | Project Sponsor | Complete a business case if not already provided and ensure purpose is well defined on Project Charter and PID. |
| 2 | [enter date] | Project design and deliverable definition is incomplete. | Low | High | High | Project Sponsor | Define the scope in detail via design workshops with input from subject matter experts. |
| 3 | [enter date] | Project schedule is not clearly defined or understood | Low | Medium | Medium | Project Manager | Hold scheduling workshops with the project team so they understand the plan and likelihood fo missed tasks is reduced. |



# PROJECT RM PLANNING: A SCALABLE PROCESS

Organizational Risk Tolerance

| Complexity | Size | Priority |
|---|---|---|
| Simple | Small | Low |
| Average | Medium | High |
| Complex | Large | Critical |

Simplified Risk Process
(Small / low risk Projects)

Standard Risk Process
(Most Projects)

Comprehensive Risk Process
(High risk / high complexity projects)

# WHAT IS RISK?

- PMI Definition:
  - An uncertain event or condition that surrounds the achievement of an objective.
- Positive & Negative aspects [risk vs opportunity]
- Risks vs Hazards
- Probability & Impact [risks vs issues]

# RISK MANAGEMENT'S MANY STANDARDS

## Discipline specific:

| Organization | Standard | Focus |
|---|---|---|
| **ASME** - American Society of Mechanical Engineers | Risk Management for Project Managers | **Mechanical** |
| **ASCE** - American Association of Civil Engineers | Policy 437 – Risk Management | **Civil** |
| **IEEE** - Institute of Electrical and Electronics Engineers | Risk Management IEEE STD 1540-200 | **Electrical** |
| **SME** - Society for Mining, Metallurgy & Exploration | Project Management for Mining | **Mining** |
| **AACE** - Association for the Advancement of Cost Engineers | Cost Management Framework | **Cost Management** |

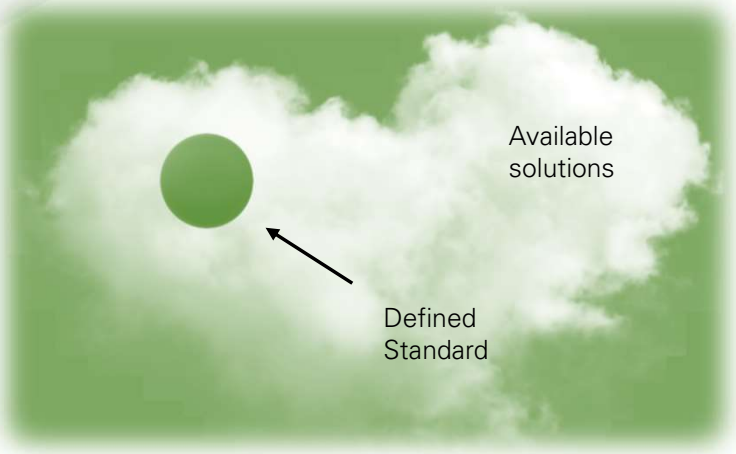
## Group specific:

| Organization | Standard | Focus |
|---|---|---|
| **PMI** Project Management Institute | Standard for Risk Management in Portfolios, Programs, & Projects | **Many (IT, EUMI, ICI…)** |
| **PSPC** Public Services & Procurement Canada | Policy on Integrated Risk Management | **Government real property** |
| **ISO** - International Standards Institute | ISO 31000:2018 Risk Management Guidelines | **Quality** |
| **IRM** - Institute of Risk Management | Fundamentals for Risk Management | **Enterprise** |
| **CII** - Construction Industry Institute | IPRA - International Project Risk Assessment<br>Project Definition Rating Index | **Industrial & Commercial** |
| **ASTM** - American Society for Testing and Materials | ASTM E2081 - 00(2015) Standard Guide for Risk-Based Corrective Action | **Chemicals** |

# RISK MANAGEMENT – CHOOSING A STANDARD

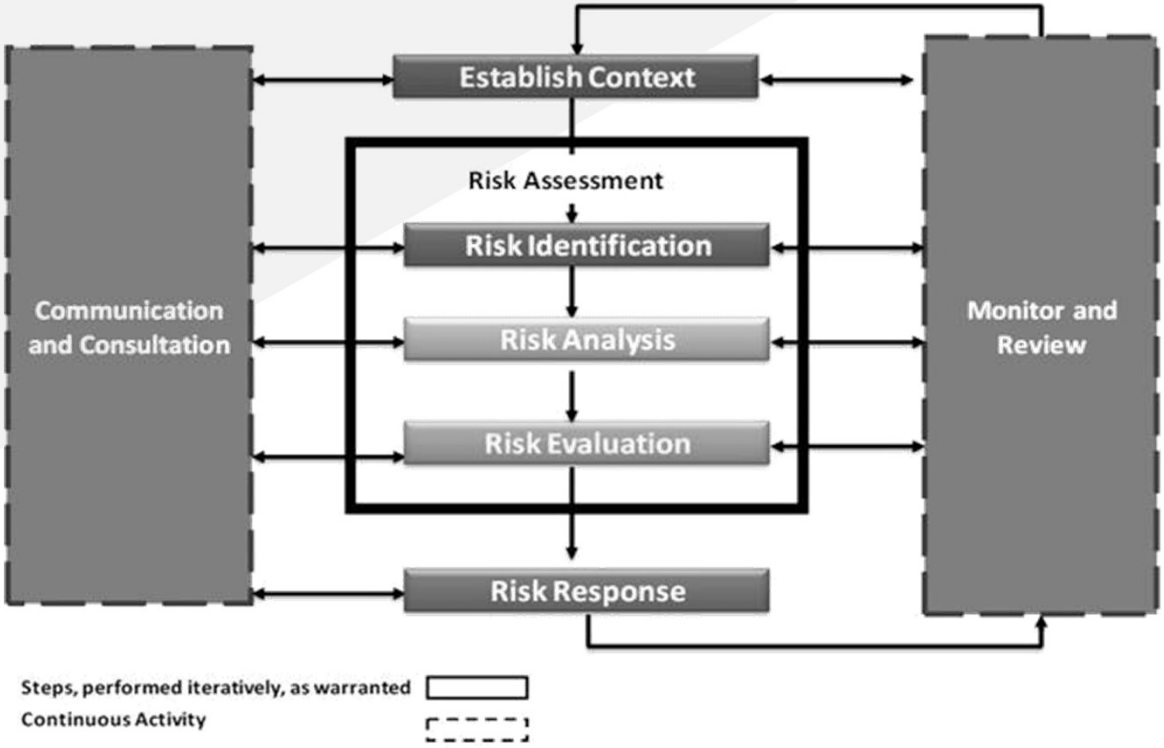
- Your organization should find the best-fitting Risk Management process
- There is no "one-size-fits-all" risk management system that is appropriate for all organizations or every project

  - Best option: Have a flexible framework, that standardizes routine tasks and allows for flexibility in non-routine tasks.
  - Have a graded approach to risk management



# NPMS RISK MANAGEMENT

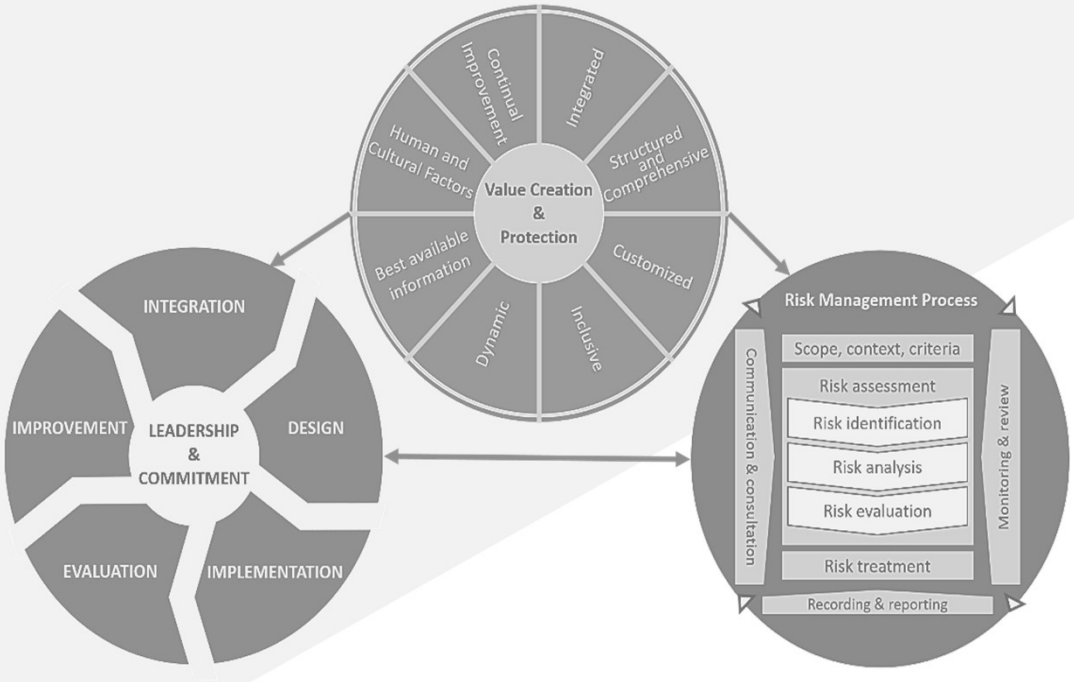
- Public Services and Procurement Canada (PSPC): Policy on Integrated Risk Management (082)



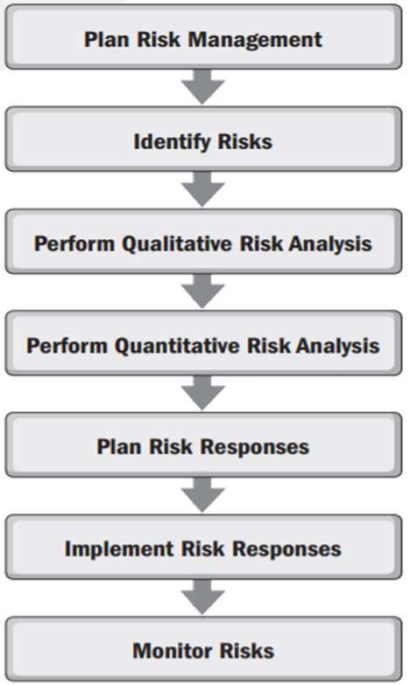

Risk Management Process

Extracted from Public Services and Procurement Canada's Risk Management Guide

# OTHER RISK MANAGEMENT STANDARDS




Risk Management Standard (ISO 31000:2018)




The Standard for Risk Management (PMI)

# PROJECT RM IN THE ENTERPRISE CONTEXT

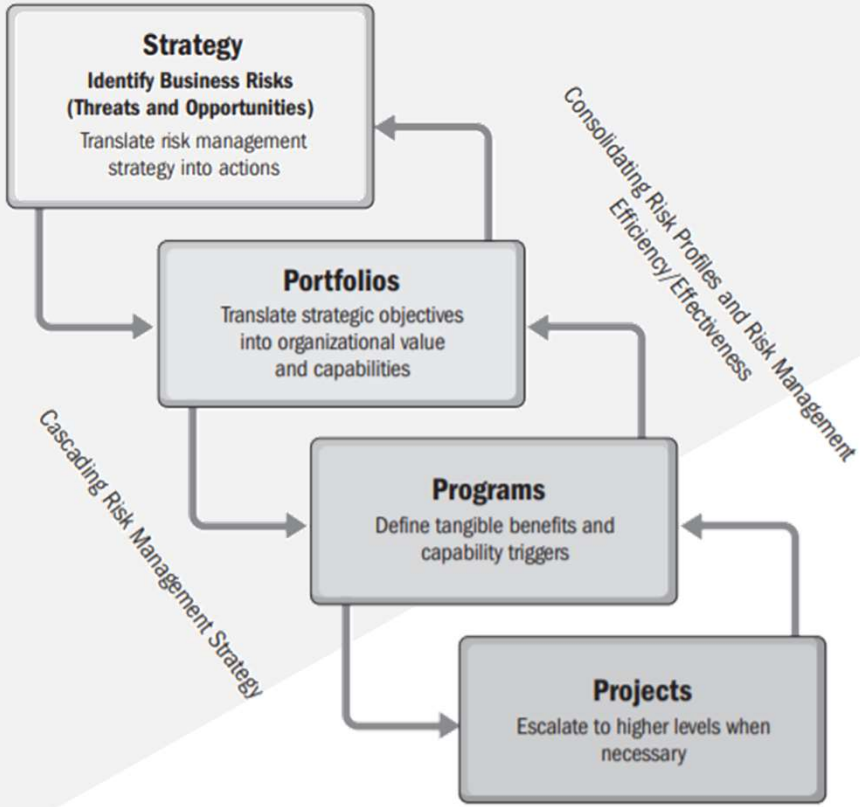



Figure reference: The Standard for Risk Management (**PMI**)

- Project risks are managed in the organizational context
- Every project affects the organization differently
- Smaller projects will have a smaller risk to the organization

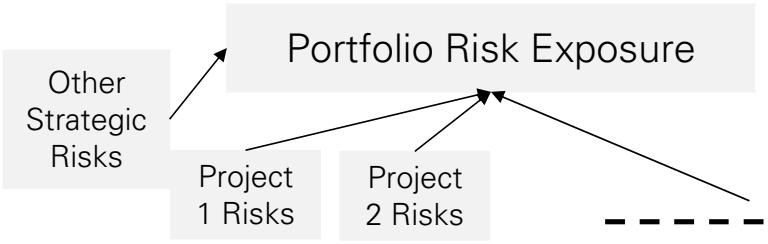
# One Size Doesn't Fit All

# CONSIDERATIONS

- Risk Appetite
- Organizational Alignment
- Tailoring
- Scaling

# THE PORTFOLIO RISK APPETITE

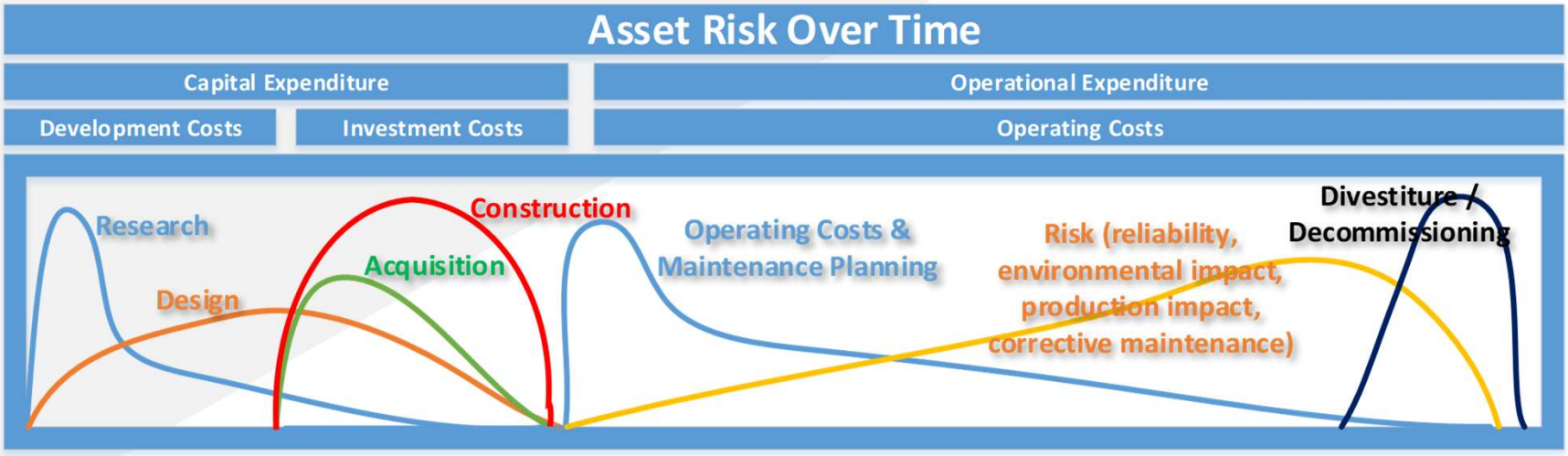

- The Portfolio risk profile should match the organizations' strategic risk appetite
- Consider: risk appetite, frequency, severity, risk thresholds, stakeholders



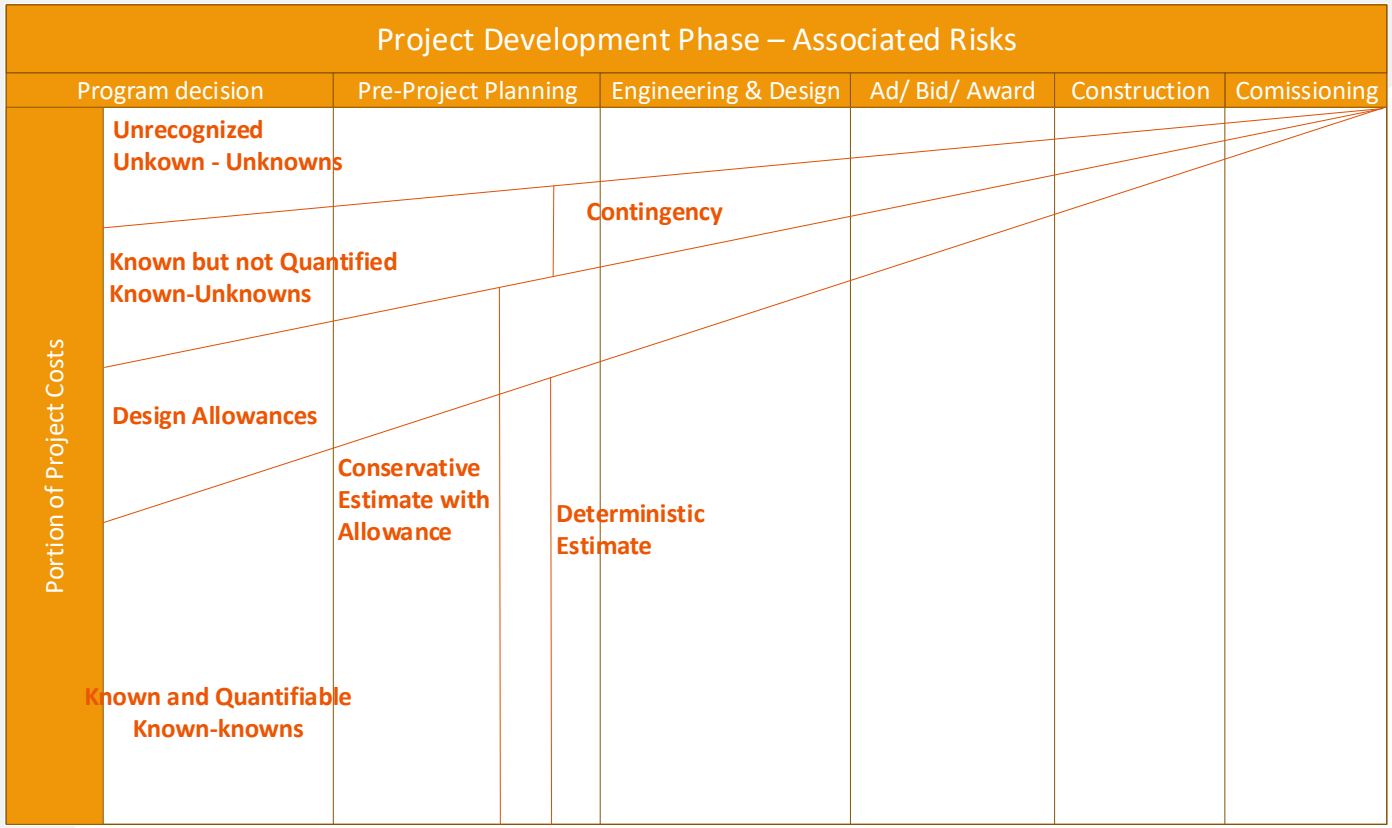

**Portfolio / Organizational Goal:** Maximize portfolio value while balancing risks

# MANAGING RISK AS ASSETS EVOLVE

- Real asset risk considerations evolve over an assets' lifetime
- Focus on mitigating /managing those risks at the assets' current stage

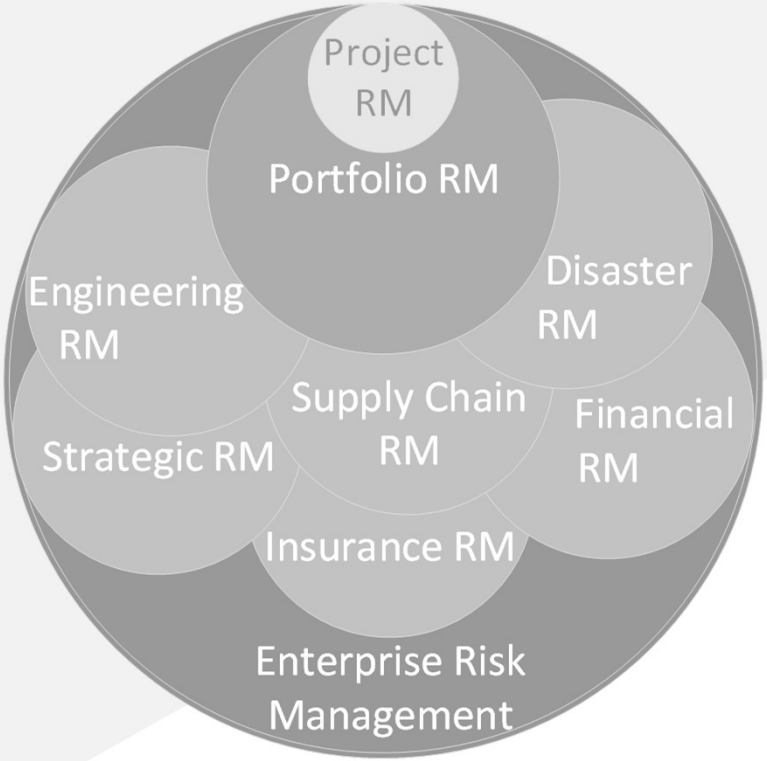


# RISK CHANGES AS PROJECTS DEVELOP



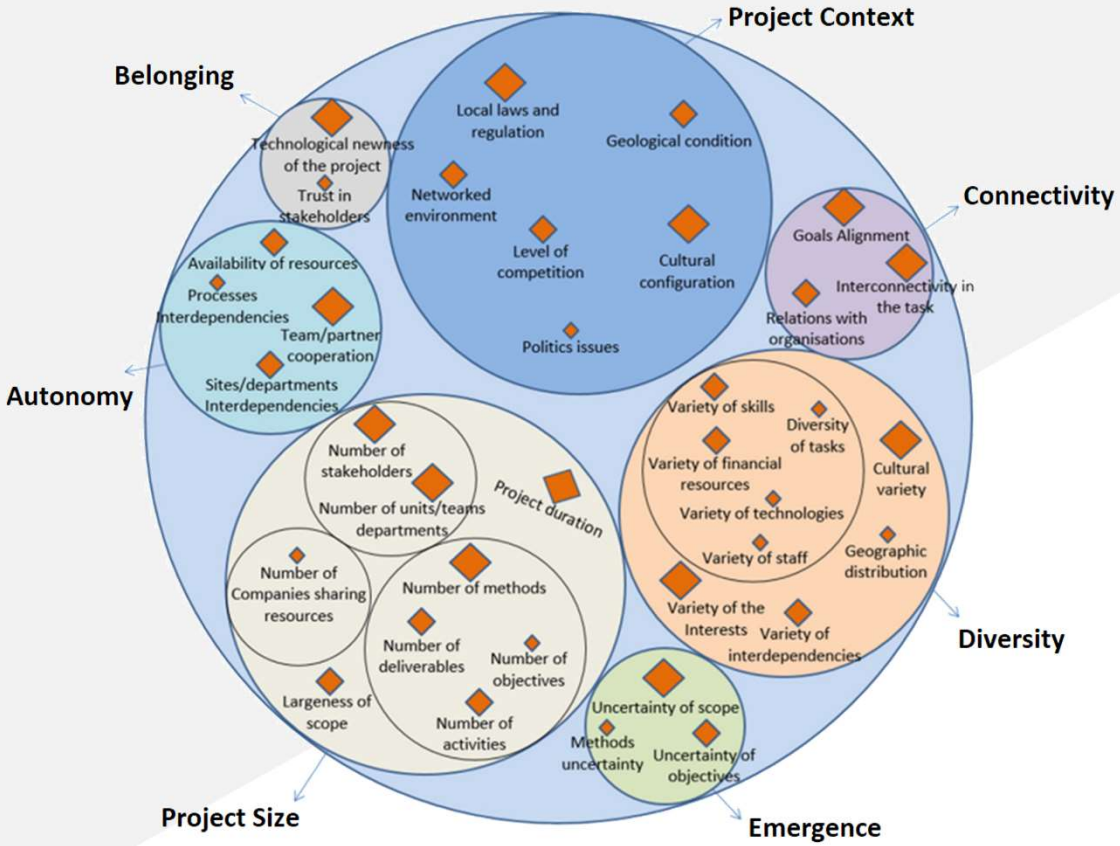

- As projects are initiated, many unknowns need to be defined to understand the full project
- Risk is manifested in ambiguity on the future, variability in data, or possible future events.
- Organizations should focus on mitigating and managing those risks that are most important at the assets' current stage in its lifecycle

# ORGANIZATIONAL ALIGNMENT




- Managing risk is done in all organizational areas
- Organizations need to consider what the best way to manage risk is across all organizational functions
- Processes can be tailored for some groups like legal and financial, however should be largely aligned
- This will allow for more effective risk management, as some risks will be better managed one functional area, despite affecting many areas

# WHAT IS COMPLEXITY?




Project Complexity Factors | Source: Bakashi et al.

- How is risk managed across the organization?
- Can some organizational functions streamline risk management?
- Which areas require special consideration?

# RISK MANAGEMENT TODAY

- Risk Management - PMI standard practice
- Processes can be scaled project size
- Scaling done through a complexity rating

# PROJECT RM PLANNING: A SCALABLE PROCESS

| Complex | Large | Critical |
|---|---|---|
| Average | Medium | High |
| Simple | Small | Low |
| Complexity | Size | Priority |

# THE PSPC SCALABLE PROCESS

- PSPC uses seven different sections to classify the complexity of a project
- This rating scale can be used to scale the risk management process

| Section | Number of Questions | Maximum Score |
|---|---|---|
| Project Characteristics | 18 | 90 |
| Strategic Management Risks | 6 | 30 |
| Procurement Risks | 9 | 45 |
| Human Resource Risks | 5 | 25 |
| Business Risks | 5 | 25 |
| Project Management Integration Risks | 6 | 30 |
| Project Requirements Risks | 15 | 75 |
| Total | 64 | 320 |

# TOOLS AND TECHNIQUES

Standard Practices: Current state of the art

# THE GoC RISK MANAGEMENT PROCESS


- PSPC: Integrated Risk Management Policy requires all real projects to follow risk management
- Some risk-management related activities are already dependent on project size

# RISK TAXONOMY (BREAKDOWN STRUCTURE)

- Organizational
  - Business planning
  - Scoping guidance
- Performance guidance
  - Design / Engineering
  - Construction
  - Startup
  - People
- Financing / Budget
- Political
- Security
- Regulatory
  - Tax / Tariff
  - Legal
  - Permits
- Data / Information
- Stakeholder
- Supply Chain
  - Sourcing / procurement

- The Risk breakdown structure can be a tool used to differentiate between different project RM processes

- RM process differentiation can be done through consideration of risk at different breakdowns for different sized projects

# ADOPTING RACI FOR PROJECT SIZE

**RACI chart definition guide**

| | DEFINITION | NUMBER OF TEAM MEMBERS TO ASSIGN |
|---|---|---|
| Responsible | Does the work to complete the task | At least 1 per task |
| Accountable | Delegates work and is the last one to review the task or deliverable before it's deemed complete | Limit to 1 per task |
| Consulted | Provides input based on either how it will impact their future project work or their domain of expertise on the deliverable itself | No max or minimum |
| Informed | Needs to be kept in the loop on project progress, rather than roped into the details of every deliverable | No max or minimum |

- A RACI chart can be adapted depending on the project size
- Higher-level managers or executives are not as concerned with smaller projects

# PROBABILITY | IMPACT | ACTION

Risk Assessment Matrix (5x5)

| Consequences | | Likelihood | | | | |
|---|---|---|---|---|---|---|
| | | 1 Rare | 2 Unlikely | 3 Possible | 4 Likely | 5 Almost Certain |
| | 5 Catastrophic | 5 Moderate | 10 High | 15 Extreme | 20 Extreme | 25 Extreme |
| | 4 Major | 4 Moderate | 8 High | 12 High | 16 Extreme | 20 Extreme |
| | 3 Moderate | 3 Low | 6 Moderate | 9 High | 12 High | 15 Extreme |
| | 2 Minor | 2 Low | 2 Moderate | 6 Moderate | 8 High | 10 High |
| | 1 Negligible | 1 Low | 2 Low | 3 Low | 4 Moderate | 5 Moderate |

- The Actions or outcomes of different risk levels can be considered in the context of a large or small project
- Risks should be mitigated or dealt with at their lowest appropriate level, however
- Systemic risks should be tracked as they may be more easily dealt with at a strategic level

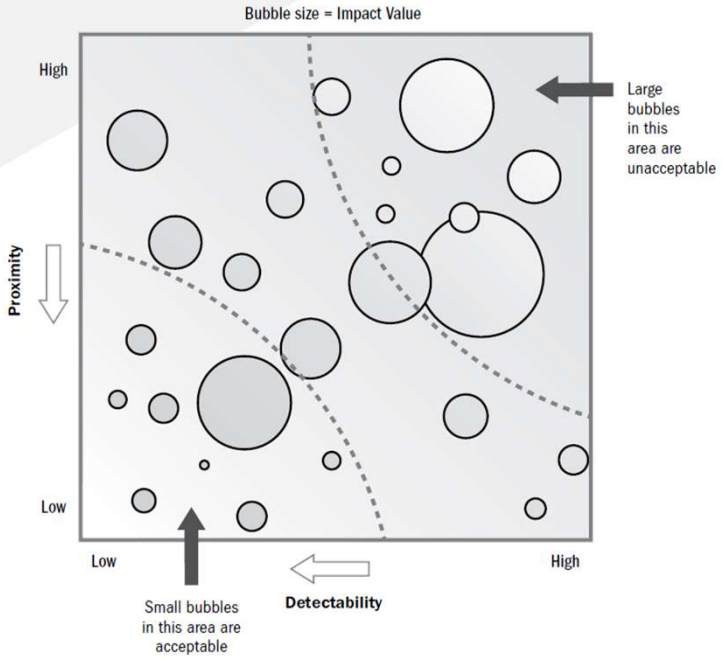
# RISK MANAGEMENT: NEW DEVELOPMENTS

Technology, Processes, Techniques

# CHANGING HOW RISK IS TRACKED

| Probability | Very Low 0.05 | Low 0.10 | Moderate 0.20 | High 0.40 | Very High 0.80 |
|---|---|---|---|---|---|
| Very High 0.90 | 0.05 | 0.09 | 0.18 | 0.36 | 0.72 |
| High 0.70 | 0.04 | 0.07 | 0.14 | 0.28 | 0.56 |
| Medium 0.50 | 0.03 | 0.05 | 0.10 | 0.20 | 0.40 |
| Low 0.30 | 0.02 | 0.03 | 0.06 | 0.12 | 0.24 |
| Very Low 0.10 | 0.01 | 0.01 | 0.02 | 0.04 | 0.08 |

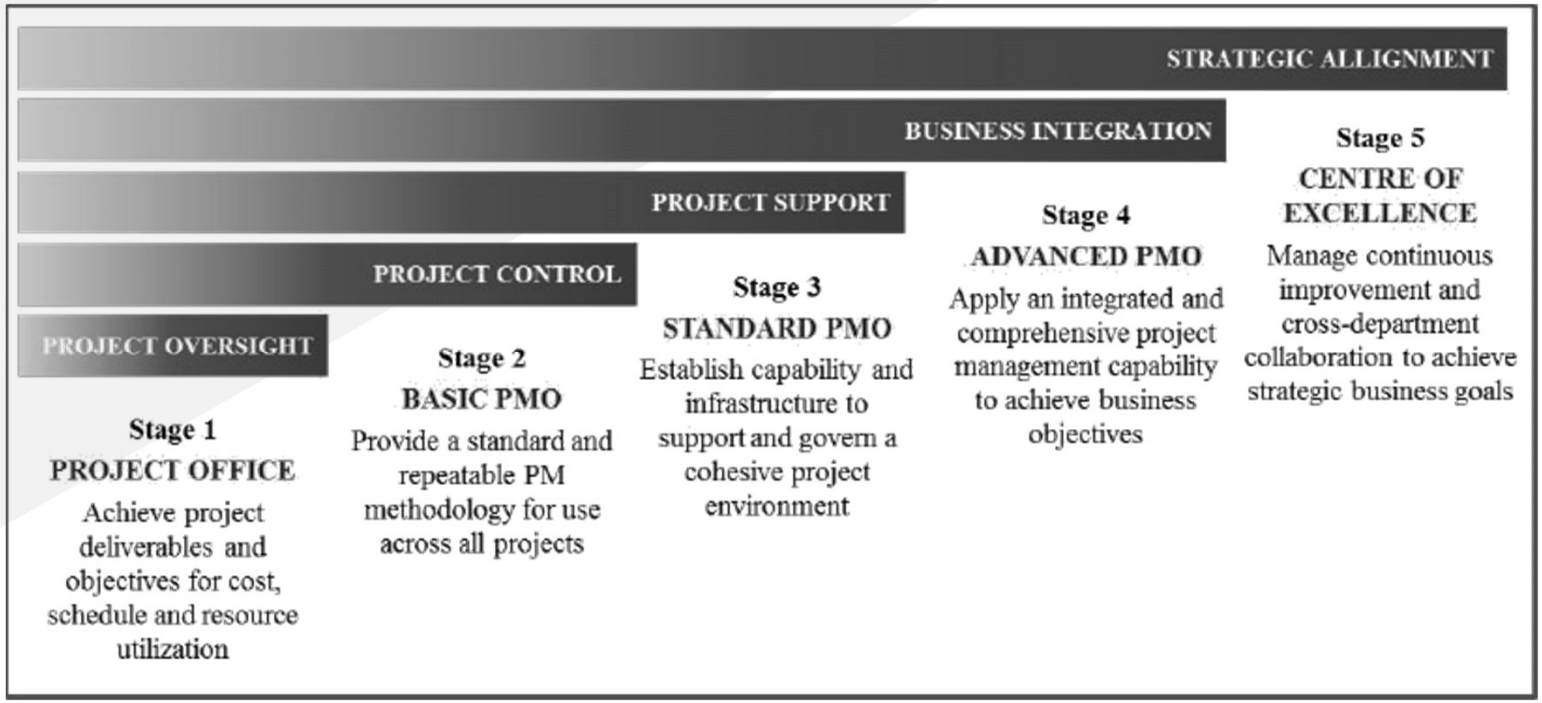
Impact




- To account for the time-impact of risk, some organizations are turning to a three-point risk tracking system
- Proximity refers to where in the asset lifecycle the risk will manifest itself

# USING A PM CENTRE OF EXCELLENCE

- A centre of excellence can ensure consistency and alignment across the portfolio



# INTEGRATING LEAN, and SIX SIGMA in RM

- As real projects use more manufacturing principles, Lean and Six Sigma can be applied more directly

| Lean / Six Sigma | **Principle One:** Directly observe work as activators, connections and Flow | **Principle Two:** Systematic waste elimination | **Principle Three:** Establish High Agreement | **Principle Four:** Systematic Problem Solving | **Principle Five:** Create a Learning Organization |
|---|---|---|---|---|---|
| Define (D) | Process Flow | SIPOC, VOC | Project Charter, VOC, Pareto | Multi Level Pareto | Business Process Management<br>Tollgates, Project Reviews, Forums<br>Learn, Apply, Reflect |
| Measure (M) | Process Map, Operational Definitions | Process Map, 5 Ways, Value Added Assessment | Cause & Effect | MSA, Process Capability | |
| Analyze (A) | Data Integrity, Multi-Variation | Hypothesis Testing | Cause & Effect/Stability | FMEA, Regression | |
| Improve (I) | Updated Process Map | Solution Selection | Solution Selection | DOE, TRIZ/ASIT | |
| Control (C) | Pilot Solution | Control Chart Action Plan | Control Plan | Solution Sustain | |

# NEW TECH: PREDICTABILITY IN RM

| Technologies | Processes | Models |
|---|---|---|
| IA | Lean | Dynamic Capabilities |
| Deep Learning | Six Sigma | Resilience Engineering |
| Big Data | | |

# THANK YOU