

Root Cause Analysis *as part of* *Enterprise Risk Management*

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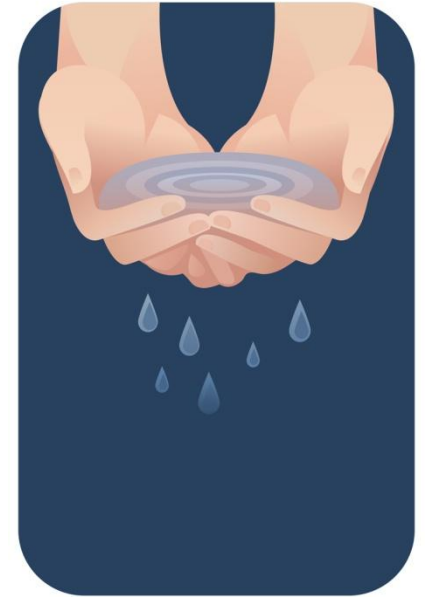
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It All Starts with Culture

- Formal controls
- Informal controls



Root Cause Analysis (RCA)



Part of the both accident investigation and risk assessment



Structured process designed to help an organization define causes to past or future risk events, and most importantly prevent future incidents from happening



Predicated on the belief that problems are best solved by attempting to address, correct, or eliminate root causes, as opposed to merely addressing the immediately obvious symptoms.

Three Basic Causes of a Risk Event



Physical

A tangible or material item failed in some way.

For example, a car's brakes stopped working



Human

People did something wrong or did not do something that was required. Human causes typically lead to physical causes.

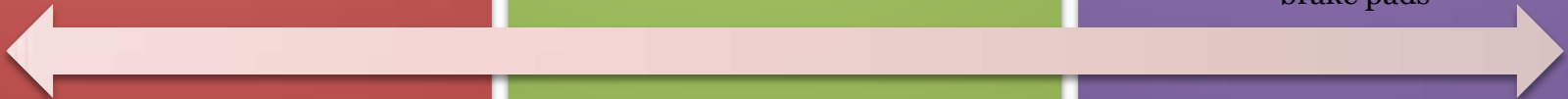
For example, no one filled the brake fluid, or the brake pads were not changed, which led to the brakes failing



Organizational

A system, process, or policy that people use to make decisions in doing their work is faulty.

For example, no one person was responsible for vehicle maintenance and everyone assumed someone else had filled the brake fluid or changed the brake pads



Five Origins of Root Cause Analysis

Safety-Based

Developed from the fields of accident analysis and occupational safety and health

Production-Based

Has its origins in the field of quality control for industrial manufacturing

Process-Based

Follows production-based RCA, but with a scope that has been expanded to include business processes

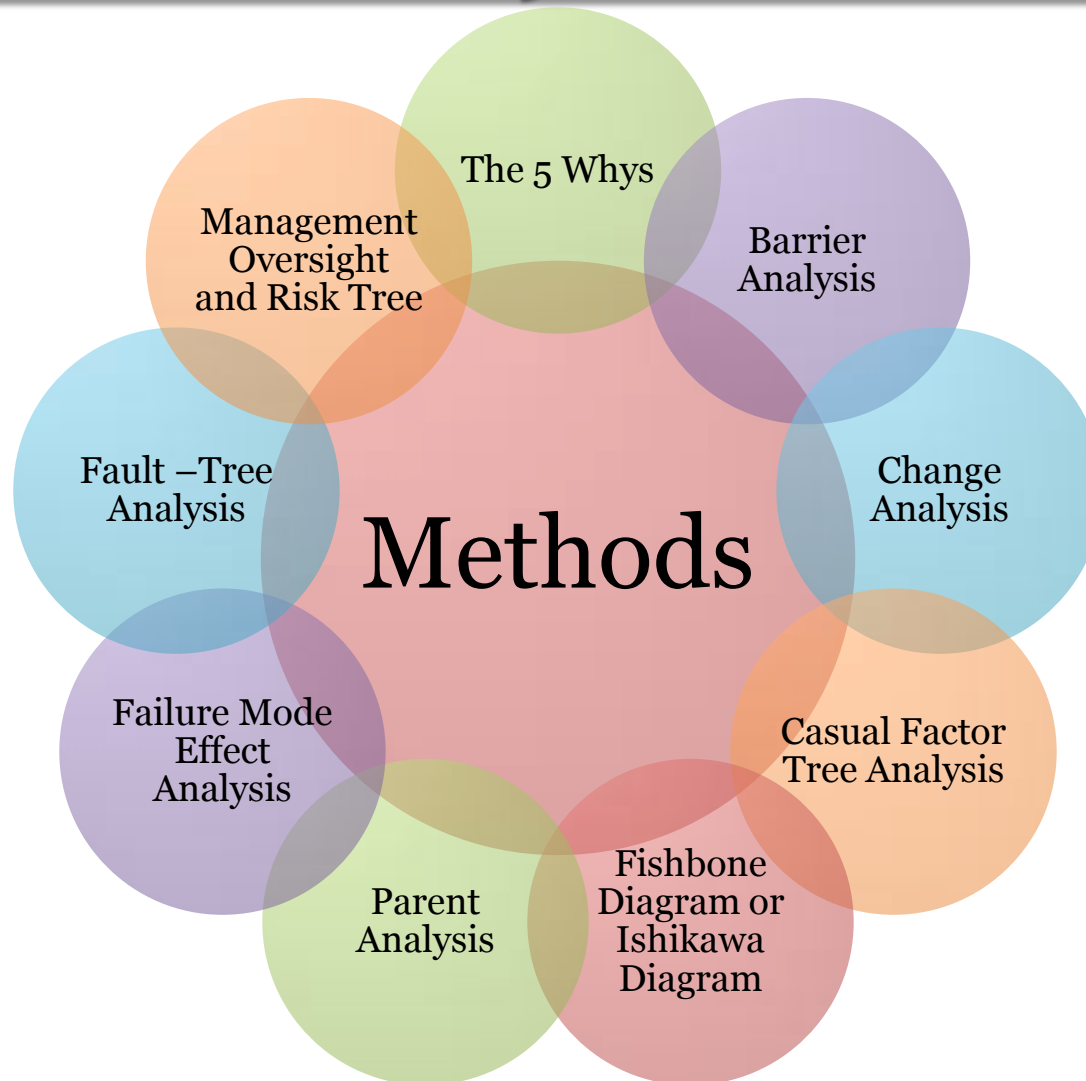
Failure-Based

Rooted in the practice of failure analysis as employed in engineering and maintenance

Systems-Based

Emerged as an amalgamation of the above schools, along the ideas taken from the fields of change management, risk management and systems analysis

Root Cause Analysis Methods



Transforming Pattern of Behavior

Process of discovering the true cause of a problem can help transform a pattern of behavior where people react to problems in society to solve problems before they become major incidents/accidents

RCA is secondary to the goal of prevention, but without root cause analysis, one cannot determine what an effective corrective action for the defined problems will be

The nature of RCA is to identify all contributing factors to a problem or risk event

Two Post Risk Event Examples

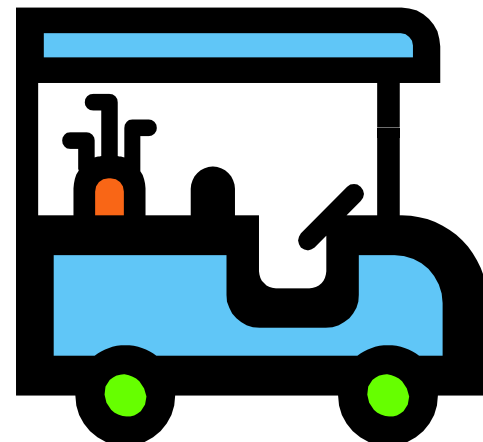
Kingman Escape - July, 2010

- 3 inmates escape with outside help
- Murdered a vacationing couple from OK in NM
- All caught within 3 weeks
- Recently Settled – Confidential!



RIMS Workshop – June, 2011

- Last year's workshop
- On the golf course
- Substance abuse is strongly suspected.
- New rules this year



Arizona State Prison Kingman

Cerbat

Hualapai



ASP Kingman: Security Improvement Program

Change in leadership



Improve Security Practices



Removal of dog program



Fix Alarm System and Add Second Fence



Perimeter Road Alteration



Golf Event - 2011



Bonneville Power Administration



Bonneville Power Administration is self-financed governmental agency headquartered in Portland, Oregon

It includes 31 federal dams, one nonfederal nuclear power plant, and other nonfederal power generation facilities

BPA markets electricity and transmission services to public and private utilities throughout Idaho, Oregon, and Washington states and in parts of California, Idaho, Montana, Nevada, Utah and Wyoming

Business Risk at BPA



Due to fluctuations in river flows and electric market prices, net revenues that result from underlying surplus or deficit energy positions are inherently uncertain



BPA takes a proactive approach in using RCA as part of their strategic decision making process



RCA is embedded into existing business practices and has become a part of BPA culture and is not viewed as an independent activity

BPA Uses RCA As Part of Their ERM Program

ERM Group of BPA uses RCA as part of their annual risk assessment of each department

ERM Group works with each department to identify their critical risks

BPA realizes that to select the correct risk controls and risk responses to a particular risk, it's necessary to focus on the root cause of a potential risk event

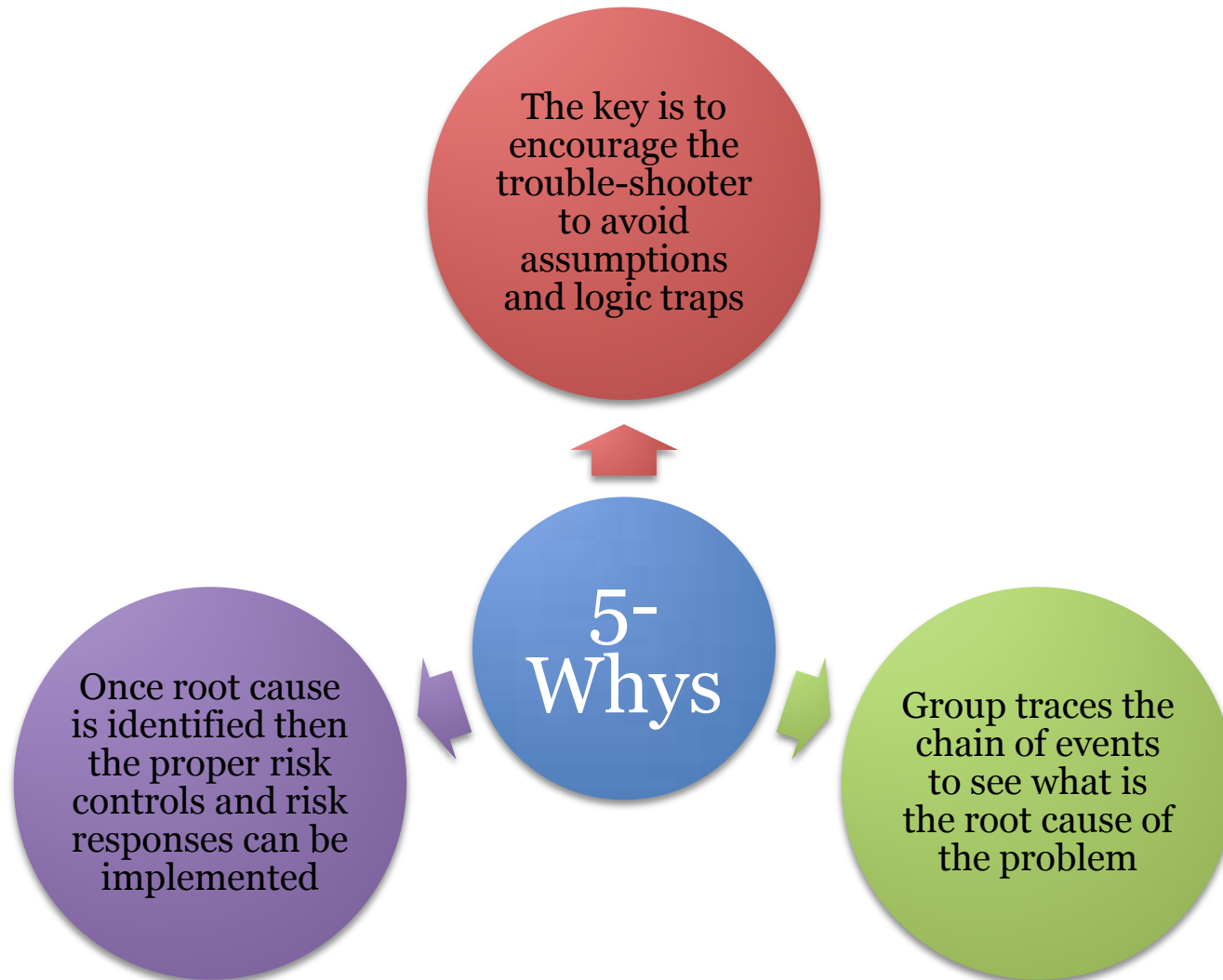
By doing this , they have been more successful at aligning ERM objectives to strategic goals

BPA Uses a Hybrid of Two RCA Methods

5-Whys: A question-asking method used to explore the cause/effect relationships underlying a particular problem, with the goal of determining a root cause of a defect or problem

Fishbone Diagram or Ishikawa Diagram: identifies many possible causes for an effect or problem. It sorts ideas into useful categories of people, methods, machines, materials, measurements, and environment

5-Whys Used in Brainstorming Session



Categories of Fishbone Diagram



People - This includes anyone involved with the process



Methods - This encompasses how the process is performed and the specific requirements for doing it, such as policies, procedures, rules regulations and laws involved



Machines - Any equipment, computers, tools, etc. required to accomplish the job are included



Materials - This includes raw materials, parts, pens, paper, etc. used to produce the final products

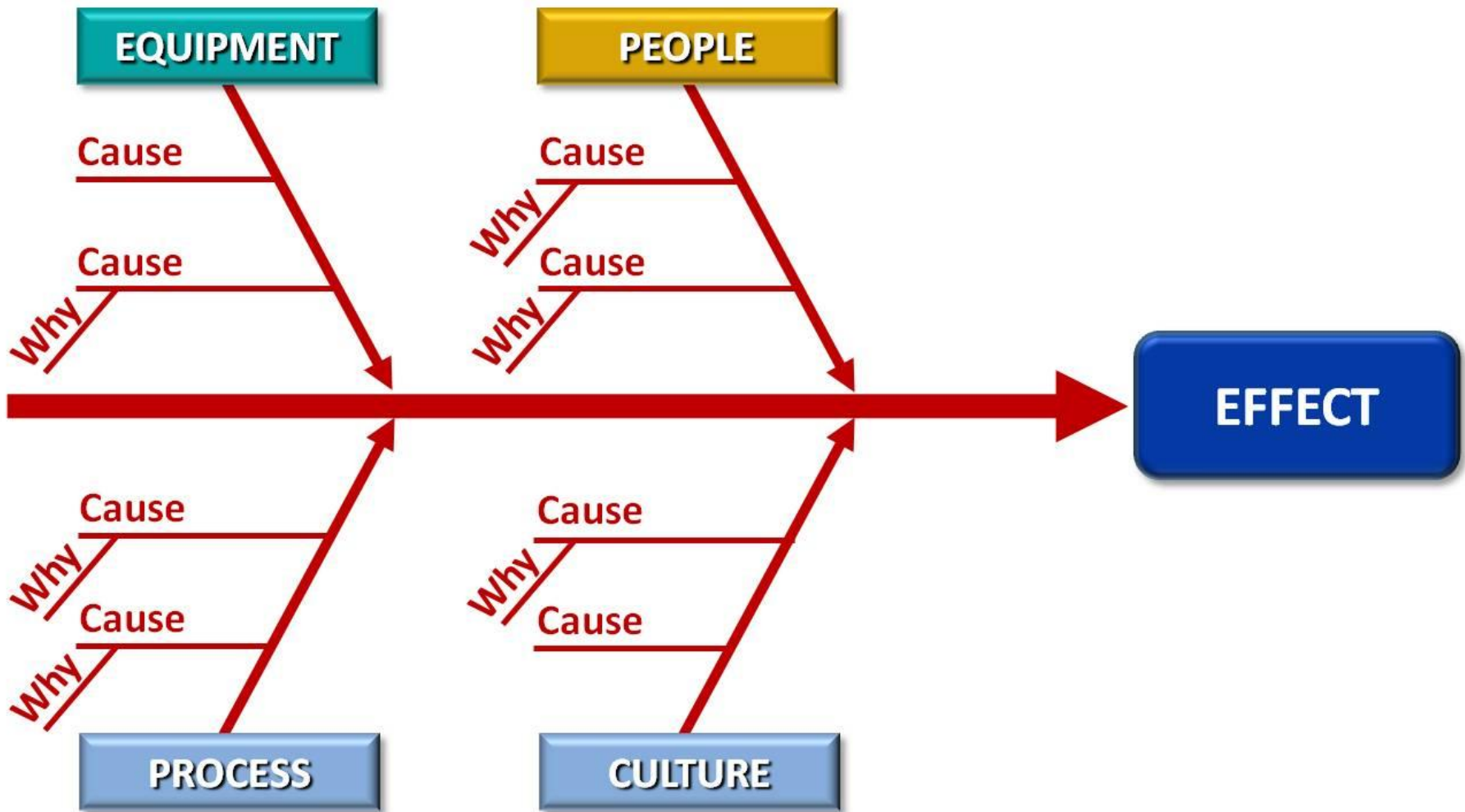


Measurements - All data generated from the process used to evaluate its quality fall into this category




Environment - The conditions, such as location, time, temperature and culture in which the process operates, are included

Example of Fishbone Diagram




Qualitative Assessment

Conduct an anonymous voting of critical risks with aid of a Resolver Ballot tool to analyze the likelihood and consequences of potential risk events



Rank the risk events based on severity and consensus

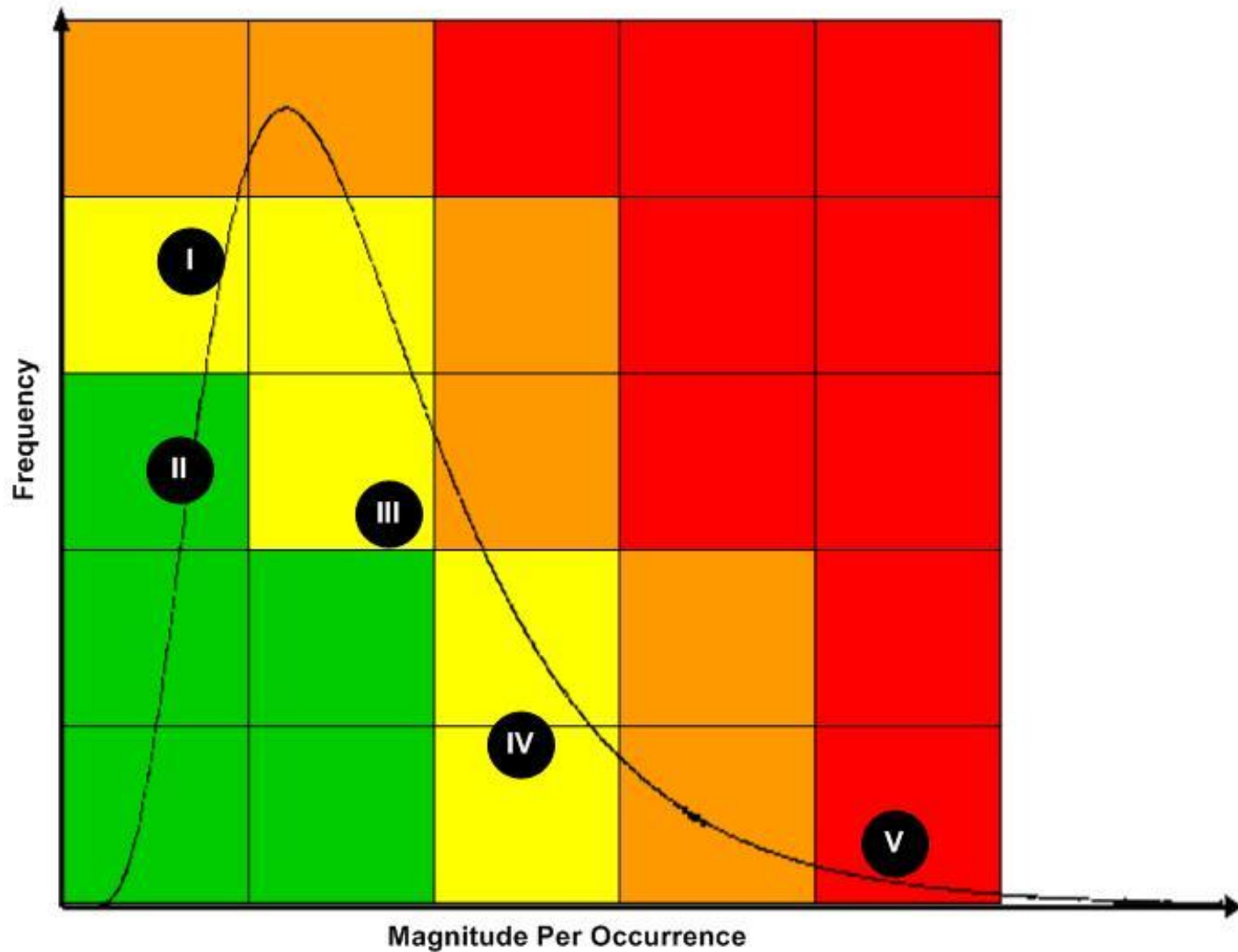


Choose its risk management priorities for the upcoming year



Information is put into a heat map

Using a Heat Map



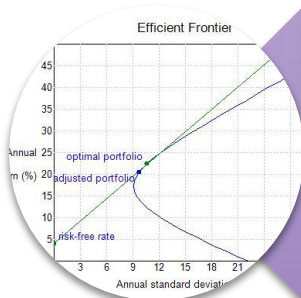
Quantitative Assessment Techniques



Risk-Based Approach factors in actual risk to assets and helps determine how much capital is sufficient to meet business obligations



Monte Carlo Simulation is a problem solving technique used to approximate the probability of certain outcomes by running multiple trial runs, called simulations, using random variables.



Efficient Frontier shows the best possible expected level of return for its level of risk

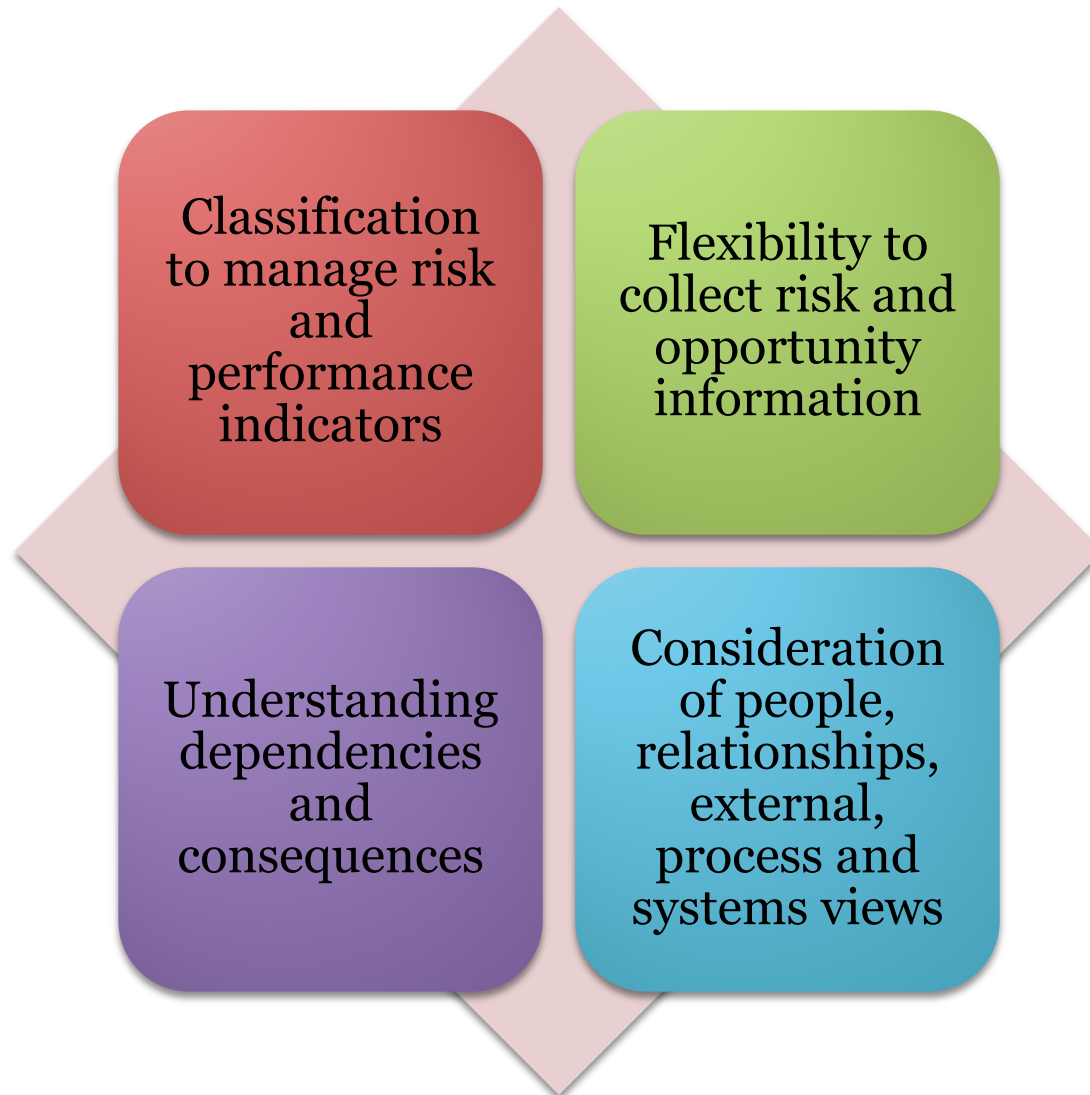
RIMS ERM Maturity Model

Seven attributes that drive business value

Maturity levels that measure each attribute's key drivers, ranging from nonexistent to Level 5 Leadership

Root cause discipline considers people, external environment, systems, and processes; both singularly and in multiple combinations

Root Cause Discipline



RIMS Risk Maturity Model

Risk Maturity Model

Create a roadmap for your risk management program that can deliver on today's expectations.

RIMS Risk Maturity Model is a tool for executives in risk management and others charged with risk management responsibilities to develop sustainable Enterprise Risk Management programs. This online resource for ERM allows risk practitioners to score their risk programs and receive a real-time report. The analysis, based on guidelines set forth in the model, serves as your organizations roadmap for improvement.

Start now:

First, [take the Risk Maturity Assessment](#). Score your risk program on 25 key factors and their underlying competency drivers. Receive a real-time personalized benchmark report on your existing maturity level.

Next, download the RIMS Risk Maturity Model for ERM. Compare your personalized report against the guidelines and develop an action plan to take your risk management program to the next level.

In addition to your [Risk Maturity Assessment](#), you will receive a complimentary copy of the RIMS State of ERM Report. The report provides timely insight and perspectives on risk management programs based on data collected from hundreds of risk practitioners.

If you experience technical difficulties, please call: (617) 649-1327. For more information, please read through the [Risk Maturity Model FAQ](#) page.

RIMS ERM Center of Excellence

ERM Center of Excellence

Latest ERM News & Information

- **New to the CoE!** [RIMS 2011 ERM Benchmark Survey](#)
- **New to the CoE!** [RIMS Executive Report on ERM Technology Tools, September 2011](#)
- **New to the CoE!** Anette Mikes, assistant professor at Harvard Business School, launched the executive education program Risk Management for Corporate Leaders. Her [website](#) offers numerous articles and resources on risk management.
- **New to the CoE!** [Accenture's Life Sciences Industry Report 2011 Global Risk Management Survey](#)
- **New to the CoE!** [Accenture's Global Risk Management Study 2011](#)
- **New to the CoE!** [Strategic Risk Assessment-A First Step for Improving Risk Management and Governance](#), *Strategic Finance*, December 2009
- **New to the CoE!** [Strategic Risk Management-Creating and Protecting Value](#), *Strategic Finance*, May 2007
- **New to the CoE!** [When Strategy and ERM Meet](#), *Strategic Finance*, January 2008
- **New to the CoE!** [RIMS FAQs on Strategic Risk Management](#)
- **New to the CoE!** [An Evolving Model for Board Risk Governance](#), A new executive report from RIMS
- **New to the CoE!** [An Overview of Widely Used Risk Management Standards & Guidelines](#), A new executive report from RIMS, 2011
- **Fall Guys, Risk Management in the Frontline**, A report from the Economist Intelligence Unit, 2010

Thank You for Your Participation

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