

Riskonomics

Improving Results with Effective Risk Management

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Introduction



Vice President of Loss Control for Berkshire Hathaway Homestate Companies

Rick is Vice President of Loss Control for Berkshire Hathaway Homestate Companies

- 38 Years experience
- Certified Safety Professional
- Executive Management in Insurance Loss Control for 20 years



Risk Management Dilemma

I'm willing to spend whatever it takes to prevent all accidents



I need to reduce risk in a manner that ensures we meet our organizational goals

AGENDA

- Define Risk and Risk Characteristics
 - Components of Risk
 - Assumed Risk
 - Residual Risk
 - Organizational vs. Individual Acceptable Risk
- Assumed Risk
- Risk Scoring
- Risk Based Decision Making
- Reducing Risk



Risk Defined

- Hazard /danger exposure
- Omni-present
- Dynamic – can increase or decrease
- Quantifiable
- Common components
 - Frequency
 - Likelihood
 - Severity
- Can have positive or negative, or just negative outcomes

Relative risk calculation

$$RR = \frac{a / (a + b)}{c / (c + d)} \quad \text{where}$$

		Cancer	
		✓	✗
Exposure	✓	a	b
	✗	c	d

Example

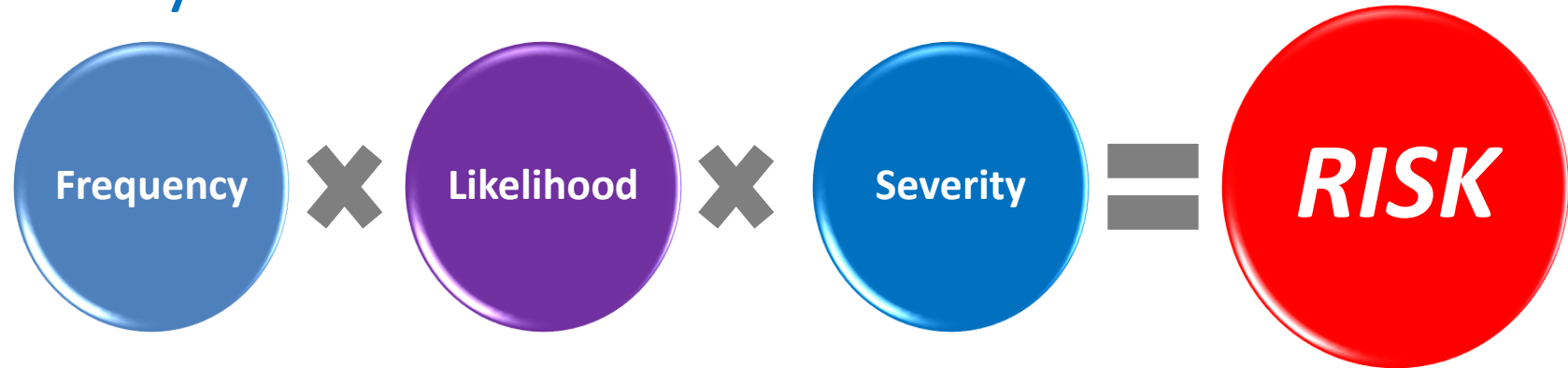
$$RR = \frac{354 / (354 + 143)}{293 / (293 + 511)} \quad \text{where}$$

		Cancer	
		✓	✗
Exposure	✓	354	143
	✗	293	511

$$RR = 2.54$$

$$\text{Odds} = \frac{\text{probability of the event}}{1 - \text{probability of event}} = \frac{P}{1 - P}$$

Occupational Safety & Health Risk



- **Frequency** – number of times exposed to hazard – the number of times you climb a ladder
- **Likelihood** – chance that severity will be realized – the chance that you will fall each time you use a ladder
- **Severity** – consequences of hazard being realized – the injuries and costs associated with a fall off the ladder if it occurs
- Risk can't be eliminated
- Can be identified, quantified and reduced

Individual vs. Organizational Risk

- Individual acceptable risk is almost always higher than organizational acceptable risk
- Organizations have far more frequency, as a result must accept less risk or realize the result in severity
- Workers Compensation typically does not disallow payment for an individuals' acceptable risk – we do not follow the “*Volenti no fit injuria*”* for WC

*If **person** knows the consequences of a particular act and voluntarily accepts that risk, they are solely responsible for any resulting injury.*

If organization knows the consequences of a particular act or failure to act and voluntarily accepts that risk, they are responsible for any resulting loss.

Risk of falls when walking high steel without fall protection, 1 fatal fall per 27000 hours worked

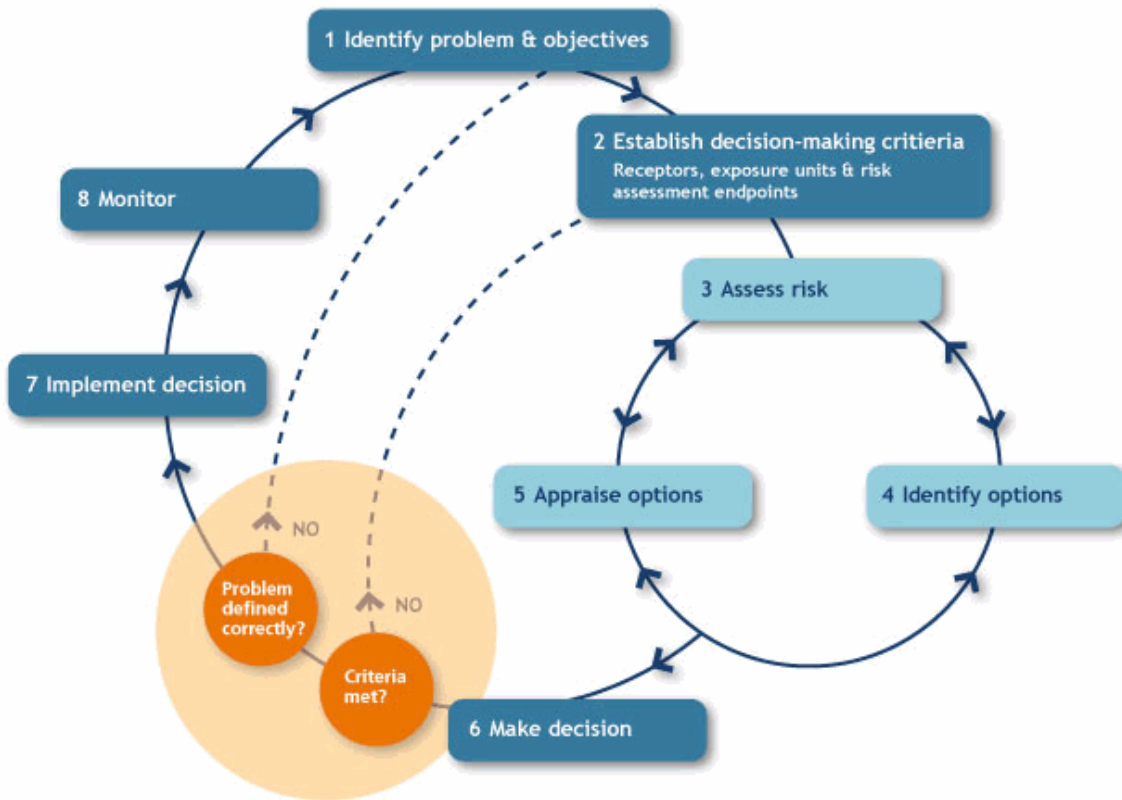


Individual Ironworker may not walk 27000 hours of high steel in their whole career – **Perception of Risk is Low**

Company with 500 Ironworkers walking high steel 10 hours a day will have about 1 fall a week – **Perception of Risk is High**



Assumed Risk by Default



- Assuming risk is a normal and required part of business
- Do not assume risk due to:
 - Being Unaware
 - Making an incorrect assessment
- Assuming risks by default, without consideration can be very dangerous to organizations
- Formal processes should be used to determine acceptable risk

Residual Risk

Building Collapse Risk

- Building codes
- OSHA standards
- Engineering Plans
- Project Engineer
- Competent Parties
- Educated and Certified Staff
- Good Communication

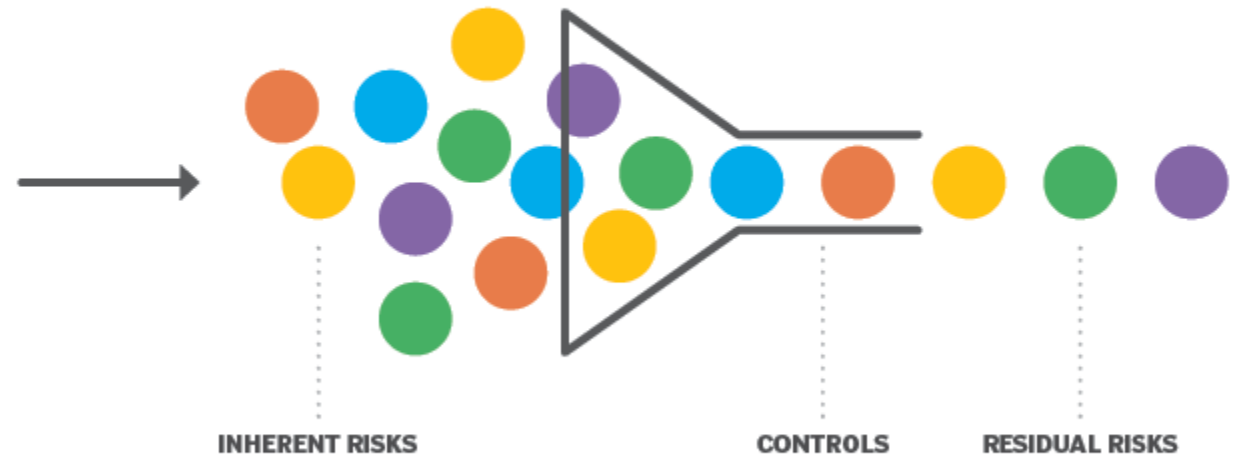


*ONLY way to **eliminate** risk is to
not take the project!*

Residual Risk

- Residual Risk remains after hazard control measures are taken
- Present in every job task in every industry

Inherent risk vs. residual risk

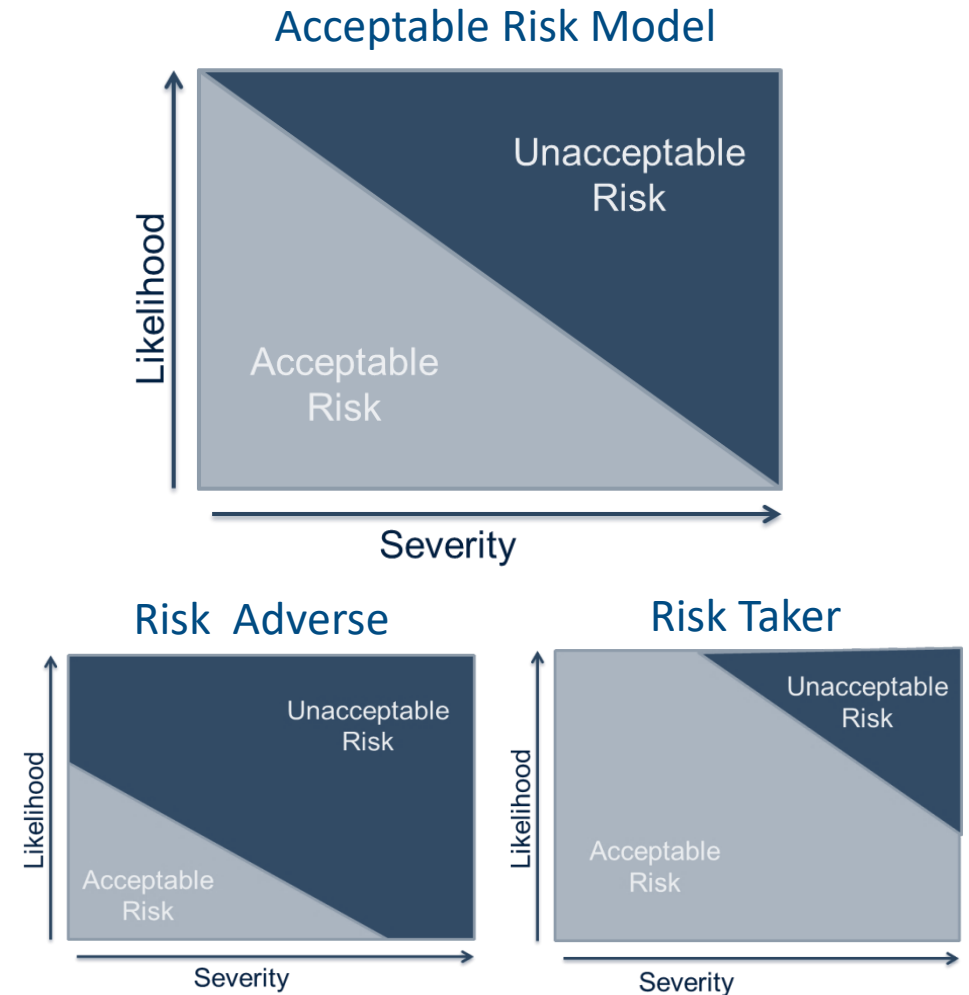


Residual risk is the risk remaining after efforts have been made to reduce the inherent risk.

Residual Risk and Acceptable Risk are not the same.

Acceptable Risk

- Every individual and every organization establishes their level of acceptable risk
- Frequency of exposure to activities increases organizational risk
- Many accident repeaters are Risk Takers



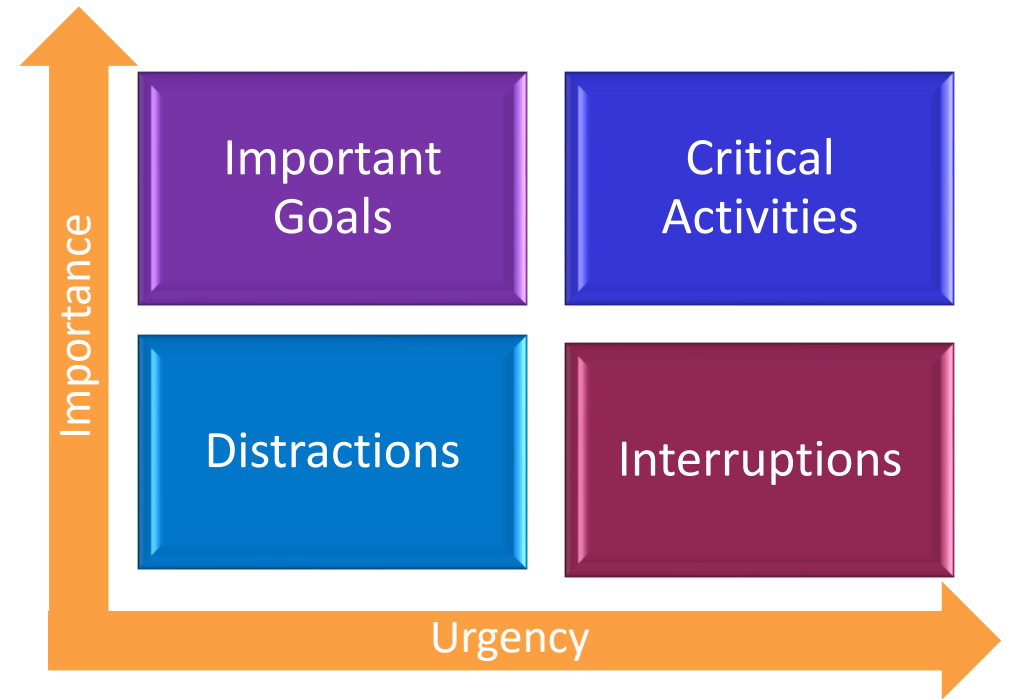
Acceptable Risk Decision Making

Risk Score	TOLERATE IT	TREAT IT	TRANSFER IT	TERMINATE IT
<500	XXX			
<1000	XXXX	XXXX		
<2500		XXXX	XXXX	
<4500			XXXX	XXXX
<6500				XXXX

- Risk Based Decision Making can speed decisions
- Requires an organization to decide what they want to do, what they refuse to do and what they will have someone else do
- Many different types of decision matrices with a variety of scoring options

Risk Prioritization

- Difficult to intuitively evaluate risk
- Scoring Risk
 - Objective prioritization
 - Demonstration of risk reduction
 - Additive scoring or multiplication of components



Dan Peterson Risk Scoring

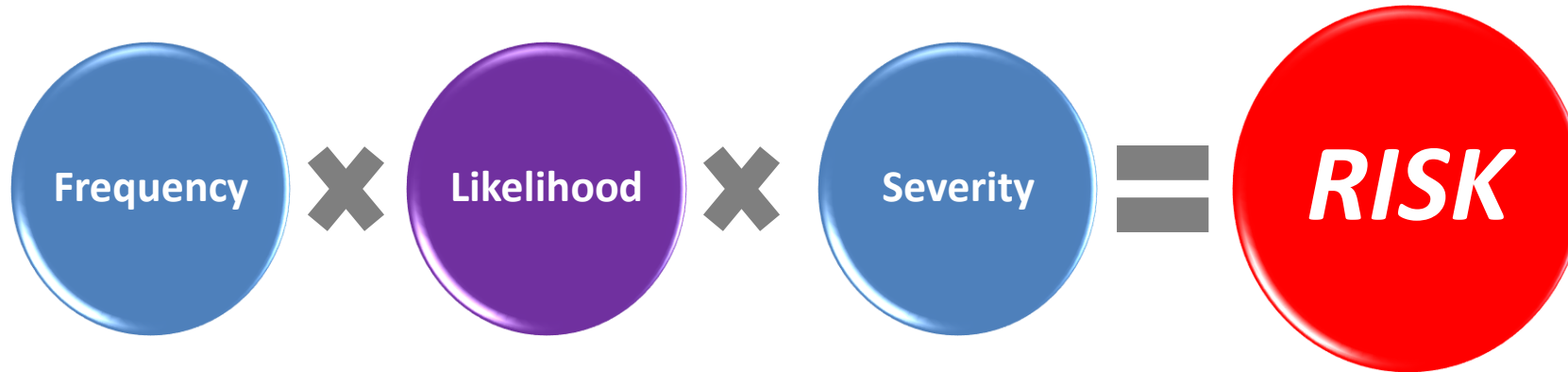
- Peterson Risk Assessment Model scores risk from 0 to 10000
- Most companies have all types of Risk, but some Risks are very low – electrocution for office worker
- Common components
 - Frequency
 - Likelihood
 - Severity

Frequency – The Hazard Event Occurs:	
Continuously (or many times a day)	10
Frequently – Approximately once a day	6
Occasionally – from once per week to once per month	3
Usually – from once per month to once per year	2
Rarely – it has been known to occur	1
Very Rarely – Not known to have occurred, but possible	0.5

Likelihood – for the accident to occur for each event	
Most likely and expected result if hazard event occurs	10
Quite possible, would not be unusual – 50/50 chance	6
Would be an unusual sequence or coincidence	3
Would be remotely possible- has been known to occur	1
Extremely remote but possible – has never happened	0.5
Practically impossible – the one in a million	0.1

Severity – Most Likely Outcome if Hazard is Realized	
Catastrophic – Numerous Fatalities, extensive damage	100
Several Fatalities, \$500,000 - \$1,000,000 damage	50
Fatality, \$100,000 to \$500,000 damage	25
Extremely Serious Injury (PPD), damage \$1000 - \$100,000	15
Disabling injuries, damage to \$1000	5
Minor Cuts, Bruises, Bumps and minor damage	1

Components of Risk



Frequency

- Frequency
- People count
- Activities count
- Tasks completed

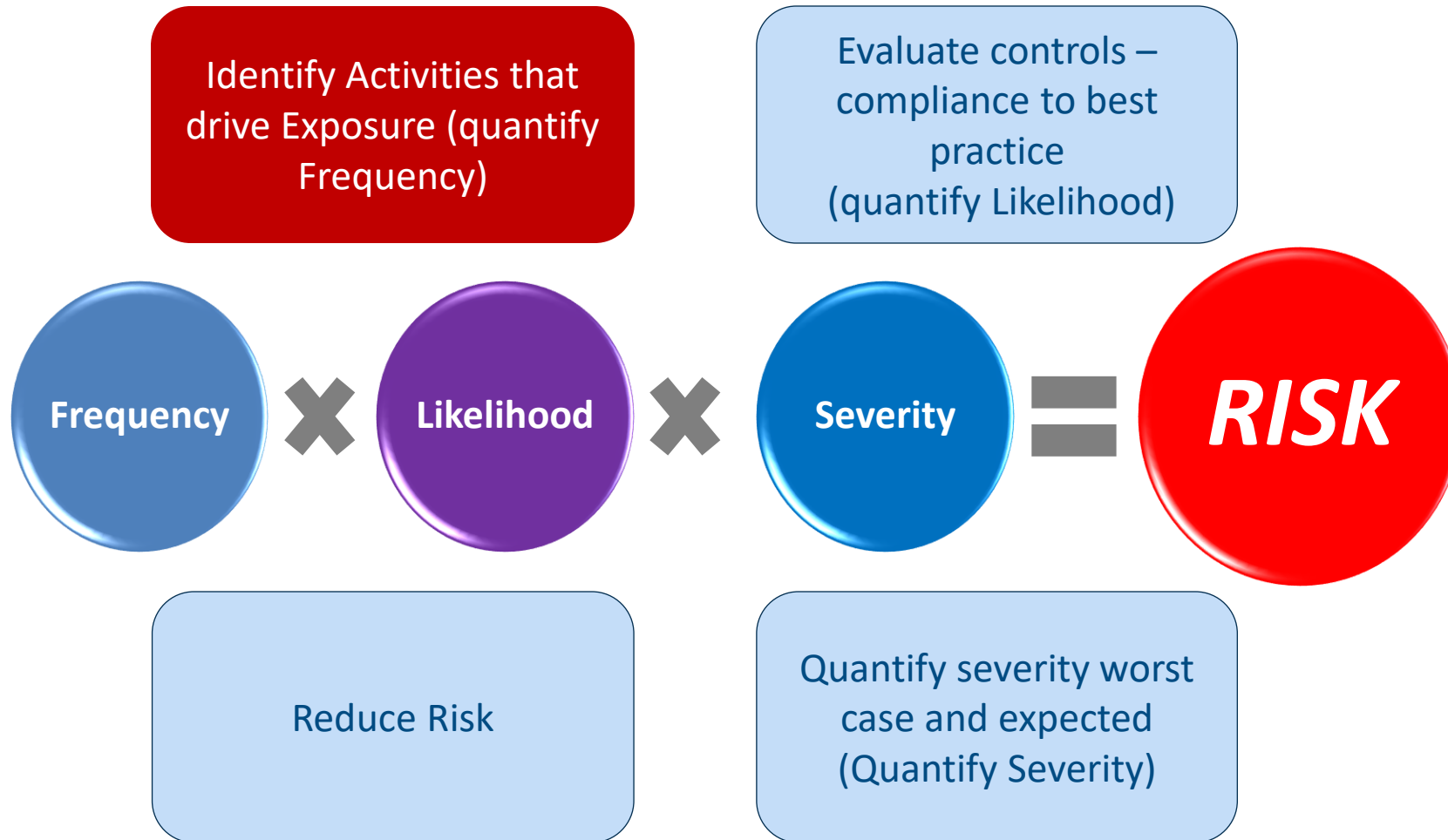
Likelihood

- Likelihood risk will be realized every time there is exposure

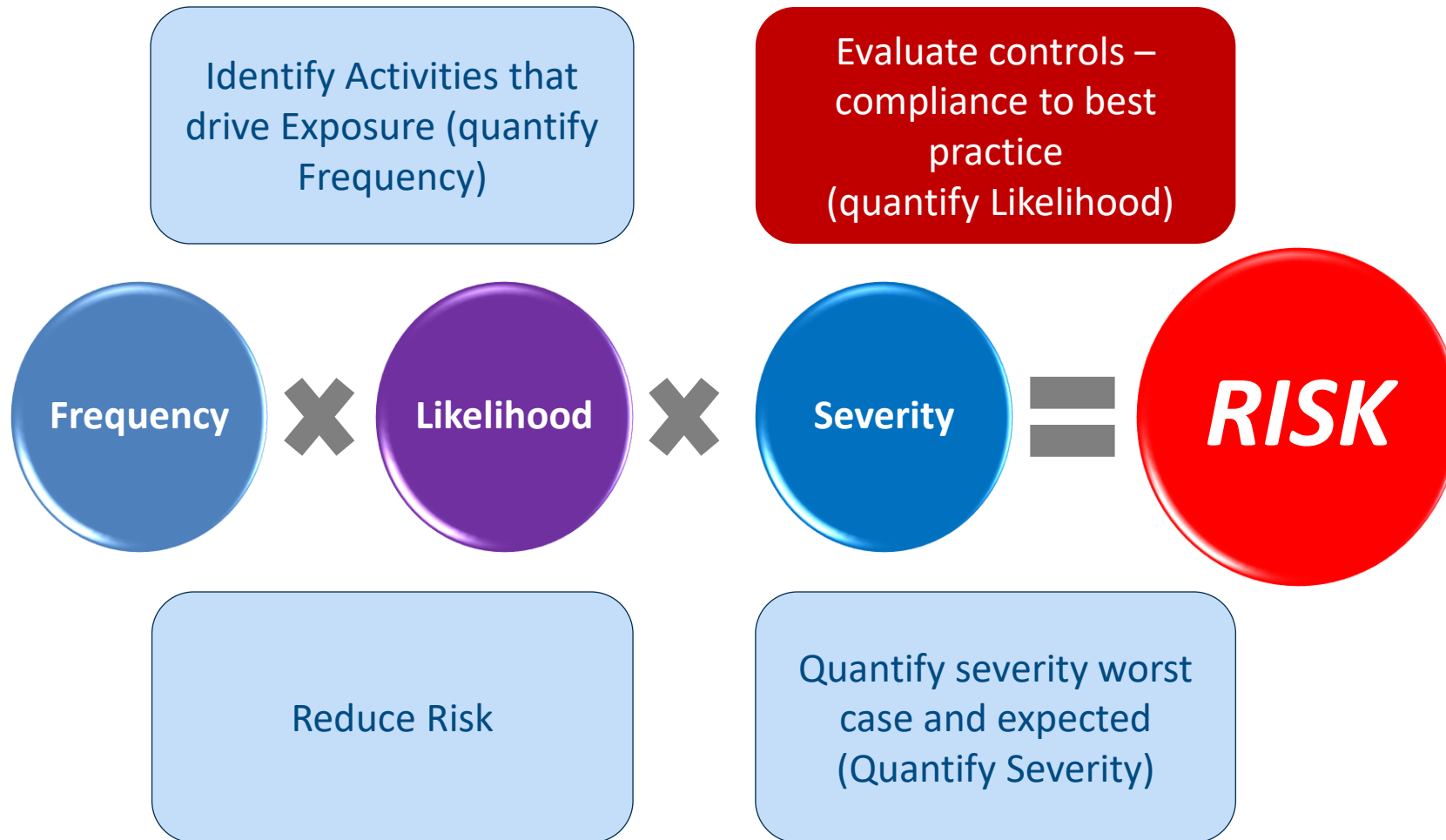
Severity

- Most likely outcome if risk is realized
- Severity

Reducing Risks



Using Risk Reduction to Impact WC



“Best in Class” Control Hierarchy

Falls from Elevation

Substitution of processes to reduce the frequency and likelihood of falls

100% Tie off when feet 6' off the ground

Limited controls – training only & PPE

Elimination of fall exposures

Installation of permanent anchorage points, fixed permanent work platforms

Compliance based – OSHA fall protection standard

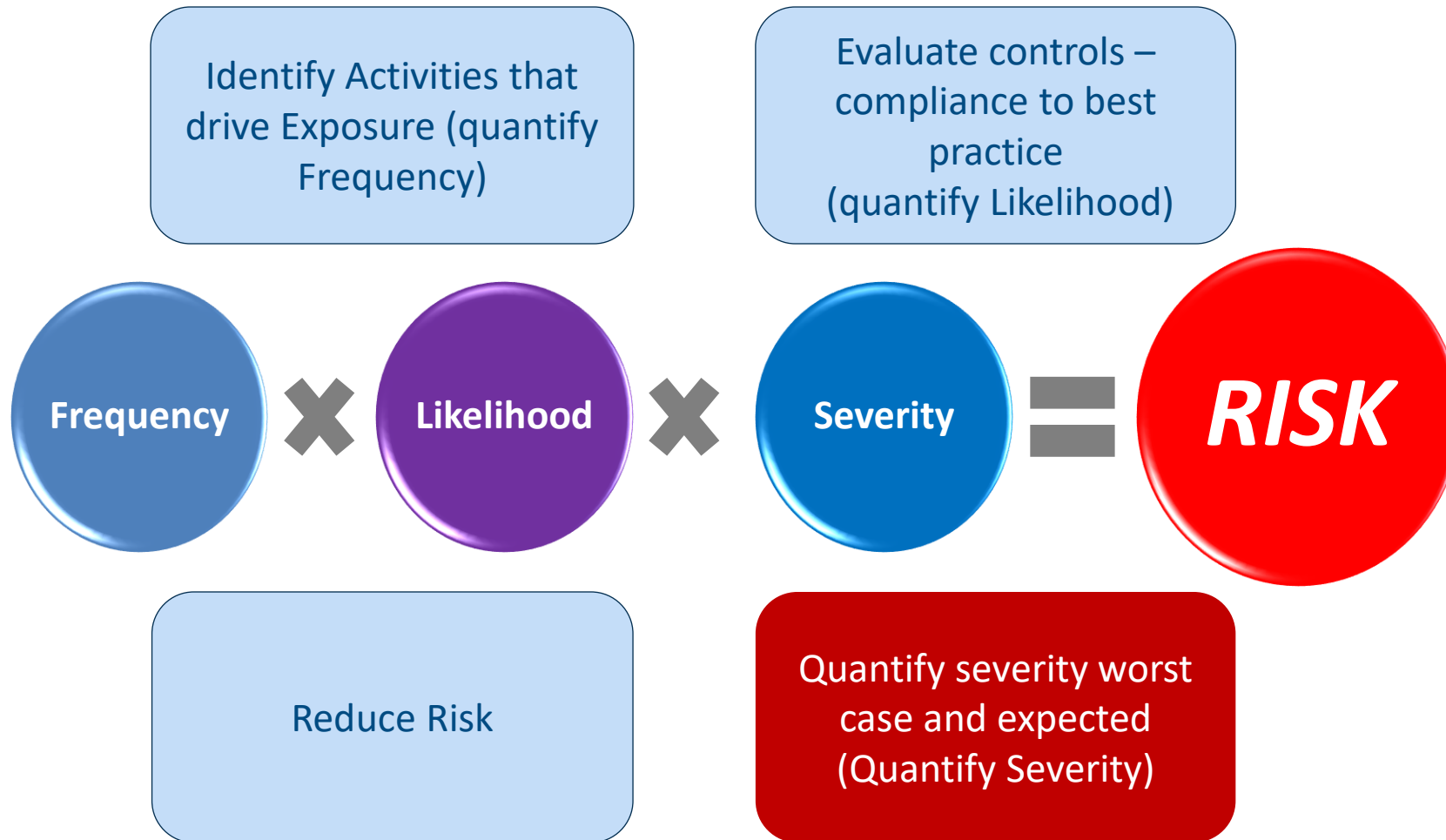


Evaluate the Controls

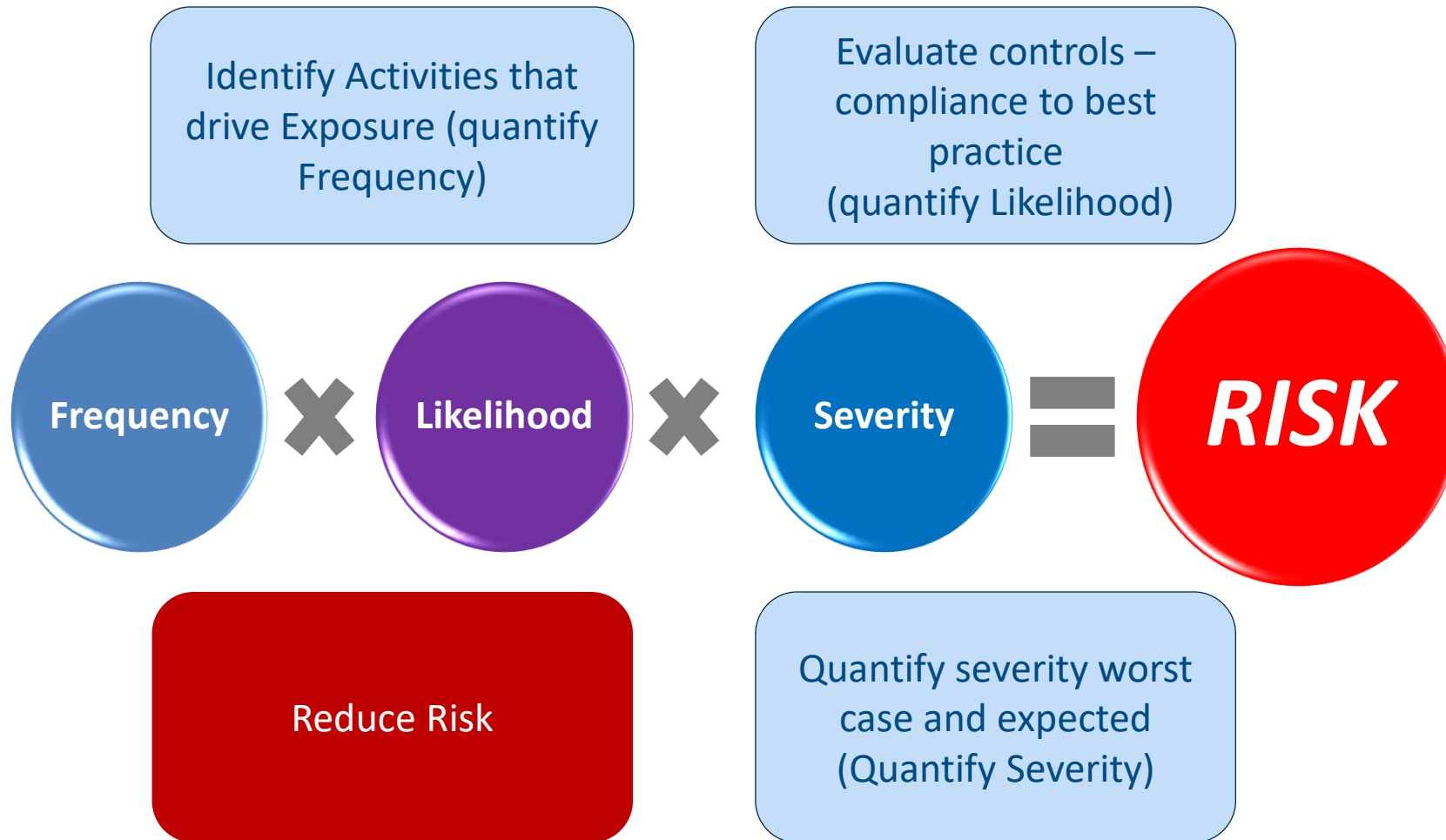
Control	Examples
<i>Elimination</i>	<i>Redesign job to remove hazardous activity</i>
<i>Substitution</i>	<i>Substituting chemical with lower hazard</i>
<i>Isolation</i>	<i>Card key access to restricted area</i>
<i>Engineering Control</i>	<i>Point of operation guard on punch press</i>
<i>Administrative Control</i>	<i>Providing training on equipment and processes</i>
<i>Personal Protective Equipment</i>	<i>Providing gloves, mask and glasses to prevent exposure to blood and OPIM</i>

- Best practice/compliance/informal
- Higher up the ladder the better
- Include control items such as:
 - Compliance (OSHA programs and related procedures)
 - Behavioral safety and safety culture
 - Engineering
 - Administrative
 - PPE & training
 - Organizational

Using Risk Reduction to Impact WC



Using Risk Reduction to Impact WC



Risk Reduction

Goal: Significantly reduce risk

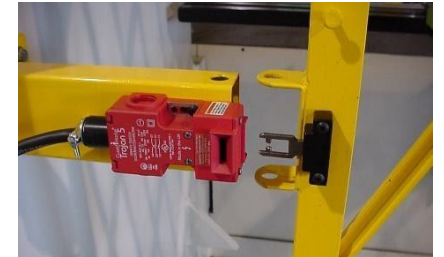
- Number of times exposure activity completed
- Likelihood of accident occurring each time exposure activity completed
- Severity of injury or loss if accident does occur



Prevents the activity of lifting solar while hanging over the roof

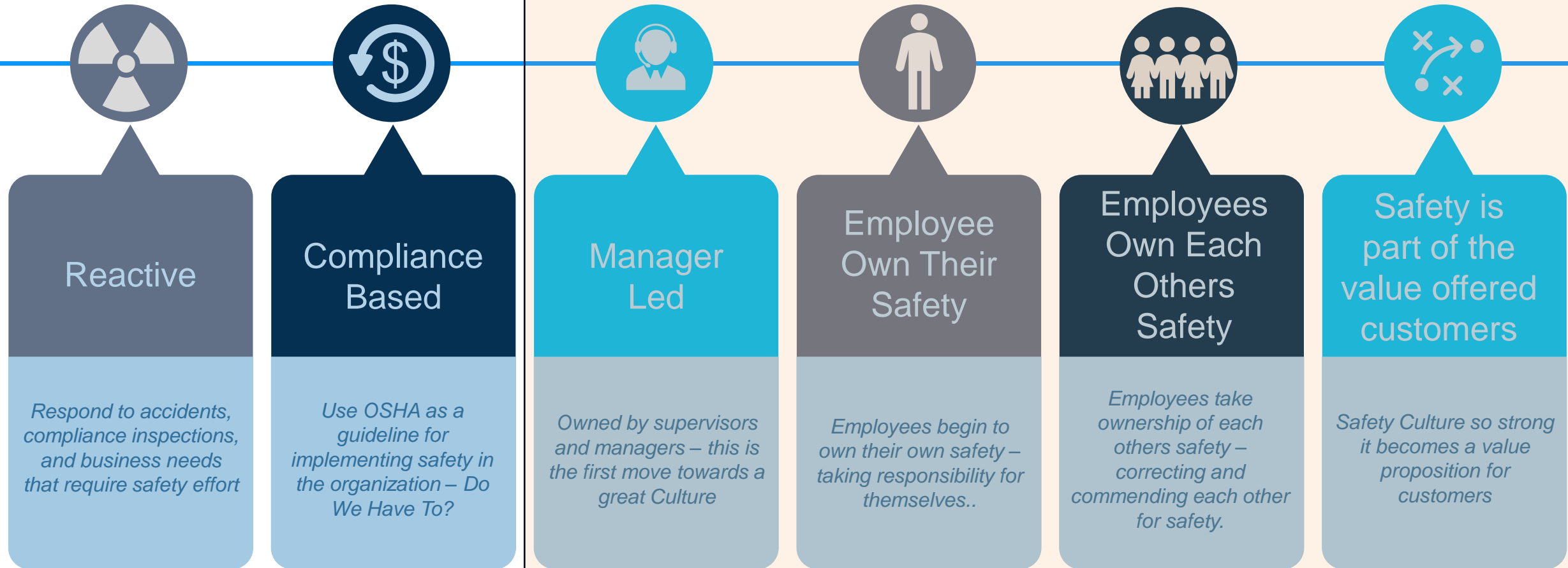


Interlock reduces likelihood of caught in machine



Fall Restraint reduces the likelihood of a fall while fall arrest reduces the severity

Improve Safety Culture



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Thanks for Attending



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