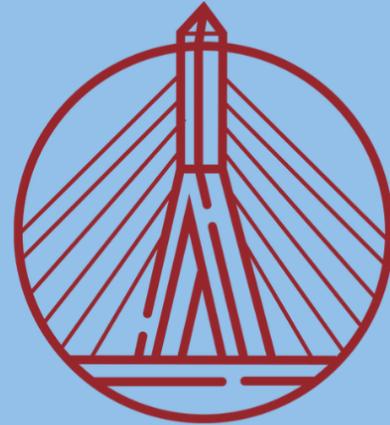


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Lessons Learned from Implementation of a Risk Mitigation Assessment Program

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Agenda

- University of Massachusetts System Overview
- Systemwide Enterprise Risk Management Program Overview
- Risk Assessment Process and Systemwide Risk Registry
- Risk Mitigation Assessment Process and MATRX
- Stakeholder Engagement
- Mitigation Assessment Data
- Derived Outcomes for Our ERM Program
- Conclusion and Take Aways
- Questions?

University of Massachusetts System Overview

University of Massachusetts System Overview

Five undergraduate & graduate campuses

- Medical School
- Law School
- 74,000 students
- 19,000 new graduates annually

- Third-largest research university in Massachusetts (\$752M)
- Fourth-largest research university in New England

- Annual budget of \$3.9B
- Responsible for \$7.5 B in overall economic impact across Massachusetts

Third largest employer in Massachusetts with more than 24,000 employees

Systemwide Enterprise Risk Management Program

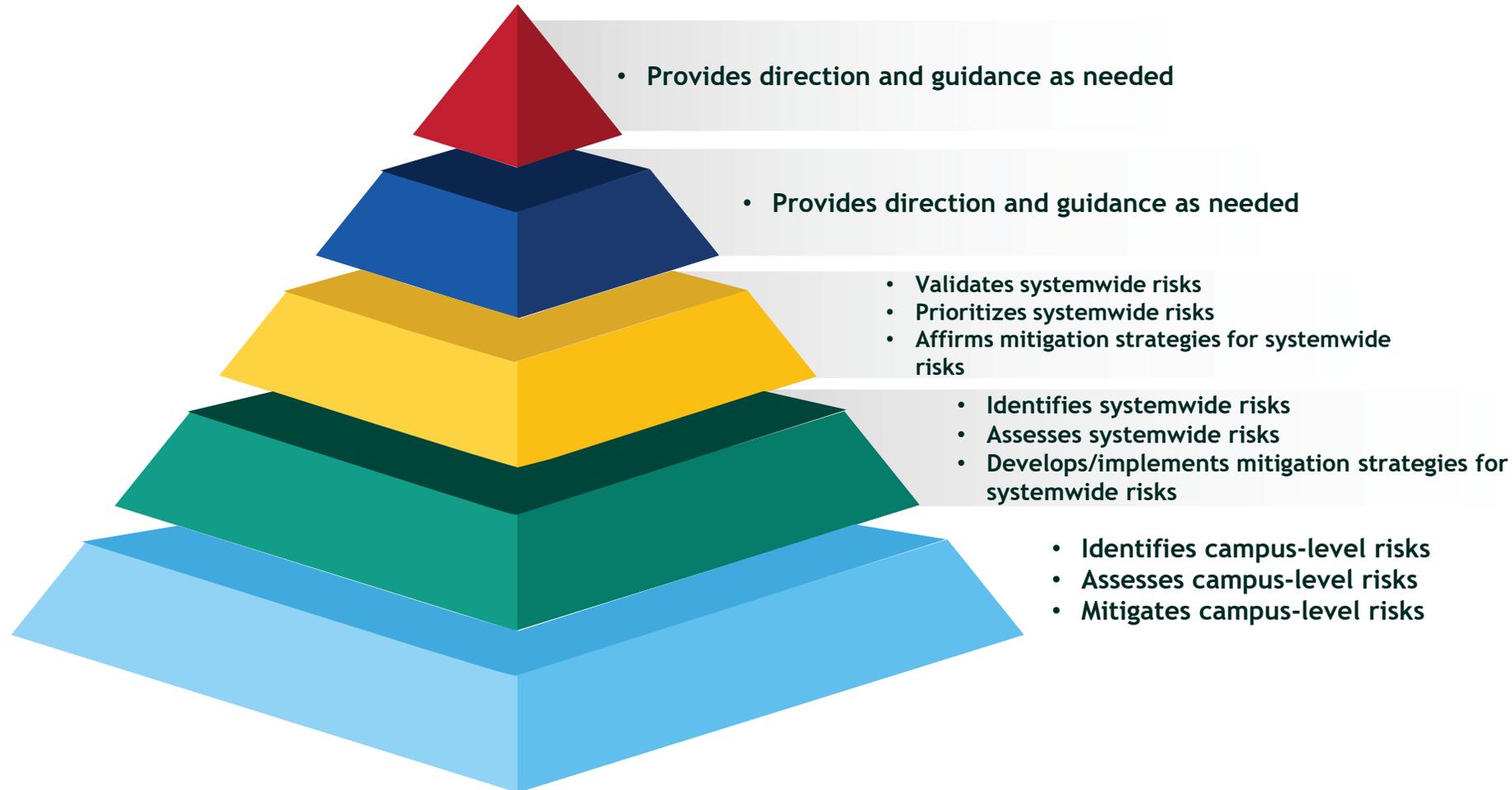
Systemwide ERM Program Cycle

- Proactively identify risks *across the University*
- Assess the potential *systemwide* impact of risks
- Prioritize risks across the University
- Document and assess mitigation strategies
- Monitor risks and risk mitigation actions
- Regularly report updates on the program

Two-Year ERM Program Cycle



Systemwide ERM Governance Structure



How the Systemwide Enterprise Risk Management Program Functions at the University of Massachusetts

- Identify and assess risks with systemwide implications
- Support informed decision-making
 - Transparency of information/activity
 - Normalized review/prioritization of risk
- Facilitate systemwide coordination on risk identification and assessment
- Assist in identifying risk owners
- Facilitate coordination of mitigation activities for crisis response
- Facilitate the assessment of effectiveness of mitigation activities on risk

- Own risk
- Own risk mitigation strategies
- Implement risk mitigation strategies
- Own compliance review or monitoring
- Own campus ERM programs or plans

Risk Assessment Process & Systemwide Risk Registry

Risk Assessment Process

- Focused on systemwide impacts
- Evaluates *inherent* exposure of the University to the risk
 - Risk assessment does not account for mitigation strategies
 - Generates an Inherent Risk Score for each risk
- Rates risks across three factors
 - Values are assigned to each rating
 - Likelihood: Could the University system experience this risk?
 - Consequence: How much would the University system be impacted by this risk?
 - Service/Operations Disruptions
 - Financial
 - Legal/Compliance
 - Workforce
 - Reputation
 - Life Safety
 - Urgency: How soon does the University system need to prioritize this risk?

Risk Assessment Tool – Likelihood Factor

What is the likelihood the University system could experience this risk?

Assessor chooses from the most pertinent column

Rating	Description	OR	Probability of Occurrence	OR	Rate of Occurrence
4 Certain or Almost Certain	HIGH - Almost certain to occur, expected in most circumstances	OR	>75%	OR	more than 2x per year
3 Likely	MEDIUM HIGH - Likely to occur or will probably occur		50 to 75%		1-2x per year
2 Possible	MEDIUM - Possible, this could occur		25 to 50%		once every 2-5 years
1 Unlikely	LOW - Unlikely, not expected to occur		Up to 25%		more than 5 years

Risk Assessment Tool – Consequence Factor



How much would the University system be impacted by the risk?

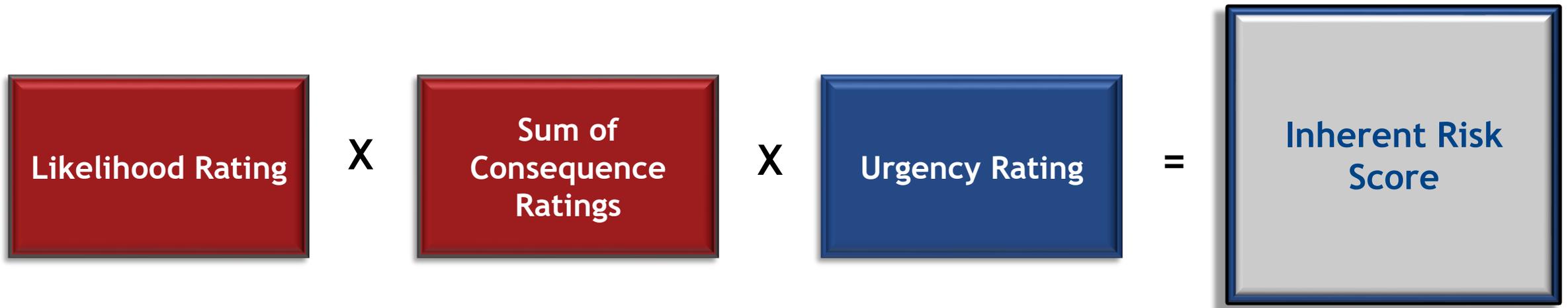
Rating	Service Disruption or Impact to Operations	Financial	Legal/ Compliance	Workforce	Reputation	Life Safety	Rating
4 High	Serious disruption to or failure of service <i>AND/OR</i> Significant impacts to more than two campus	State appropriation reduction of more than 15 percent <i>AND/OR</i> Loss of revenue or increase in expenses of greater than 15 percent or combination of both <i>AND/OR</i> Need to use stabilization fund <i>AND/OR</i> Impacts to all campuses	Increased state or federal regulatory scrutiny for additional campus(es) <i>AND/OR</i> External agency sanctions such as debarment or civil and/or criminal liability <i>AND/OR</i> Litigation exposure with significant financial (\$10M+), reputational or precedent exposure <i>AND/OR</i> Substantial audit findings	Inability to recruit or retain employees with essential knowledge, skills and abilities <i>AND/OR</i> Work culture is defined by excessive internal conflict or widespread negativity <i>AND/OR</i> Inability to collaborate across the system or limited information sharing and cooperation <i>AND/OR</i> Low level of trust among colleagues	Negative national media coverage or negative social media activity ("viral") for multiple days <i>AND/OR</i> Tangible, long-term impacts to enrollment (more than one cycle), philanthropy and public support <i>AND/OR</i> Significant personnel actions <i>AND/OR</i> Widespread internal reaction	Fatality or permanent disability of one or more people	4 High
3 Medium	Moderate disruption to service <i>AND/OR</i> Significant impact to one campus	State appropriation reduction of 10-15 percent <i>AND/OR</i> Loss of revenue or cost increase of 5-10 percent, or combination of both (est. \$175M - \$350M) <i>AND/OR</i> Impacts to BDL or UMA or UMMS	Restrictions or requirements placed on the University's operational activities <i>AND/OR</i> Substantial (\$1M+) regulatory fines and/or response costs <i>AND/OR</i> Moderate audit findings <i>AND/OR</i> Litigation with substantial financial (\$1M - \$10M), reputational or precedent exposure	Difficulty recruiting or retaining employees with essential knowledge, skills and abilities <i>AND/OR</i> Work culture experiences frequent internal conflict or significant <i>AND/OR</i> Significant obstacles to system-wide collaboration <i>AND/OR</i> Decreased information sharing in many circumstances	Negative regional (northeast) media coverage or some negative social media activity <i>AND/OR</i> Tangible, short-term impacts to enrollment (one cycle), philanthropy and public support <i>AND/OR</i> Significant internal reaction	Serious injury of one or more people	3 Medium
2 Low	Minor impact on service <i>AND/OR</i> Some impact to more than one campus	Between \$5M and 1 - 5 percent revenue loss or expense increase or combination of both (est. \$5M to \$175M impact) <i>AND/OR</i> Impacts to up to two campuses	Regulatory fines (less than \$1M) <i>AND/OR</i> Minor audit findings <i>AND/OR</i> Litigation with financial (less than \$1M), reputational or precedent exposure <i>AND/OR</i> Internally-imposed consequences or requirement for formal corrective action	Minor impact to recruitment or retention <i>AND/OR</i> Work culture experiences some internal conflict or negativity <i>AND/OR</i> Challenges with system-wide collaboration <i>AND/OR</i> Decreased information sharing and cooperation in limited circumstances	Negative local media coverage or minimal social media activity <i>AND/OR</i> Moderate on-campus/internal reaction	Minor injury to more than one person	2 Low
1 Negligible	Annoyance	Less than \$5M impact	No to minimal impact	No to minimal impact to recruitment or retention <i>AND/OR</i> No to minimal impact to workplace culture <i>AND/OR</i> No to minimal impact to system-wide collaboration or information sharing	No to minor internal reaction	No impact or minor injury to individual	1 Negligible
Rating	3	3	3	3	3	3	Total Consequence Rating 18

Risk Assessment Tool – Urgency Factor

How soon do we need to prioritize this risk?

Level		Timeframe
3	High	Within the next 12 months
2	Moderate	1-3 years
1	Low	More than 3 years

Inherent Risk Score Calculation



- Assessed by ERM Working Group
- Assessed by ERM Executive Committee

FY2022 Systemwide Risk Registry

Rank	Risk
1	Enrollment
2	Information Security
3	Financial Sustainability
4	Facilities and Deferred Maintenance
5	Student Health & Mental Health Support
6	Vendor Risk Management
7	Attract, Recruit, Retain Faculty and Staff
8	International Activities
9	Information Privacy
10	Diversity, Equity, Inclusion and Accessibility

 Priority Risks

Rank	Risk
11	All Hazards Planning & Response Capabilities
12	Multi-State Payroll Tax
13	Labor Relations
14	Data Management
15	Research
16	Multi-State Business Tax
17	Sexual Assault Policies & Response Procedures
18	IT Disaster Recovery
19	Continuity Planning
20	Environmental Health, Public Health, & Safety Regulations

Rank	Risk
21	Alcohol and Substance Abuse
22	Crisis Communications
23	Immigration Rules and Regulations
24	Fraud, Waste, and Abuse
25	Uninsured Loss
26	Employment Laws and Regulations
27	NCAA Regulations
28	Policies and Procedures Regarding Minors on Campus
29	Academic Quality and Standards
30	Oversight of Student Organizations

Risk Mitigation Assessment Process &



Mitigation Assessment Aligns with Risk Assessment

Mitigation assessment evaluates impact of mitigation on risk exposure; risk assessment evaluates impact of risk on University.

	Risk Assessment Process	Risk Mitigation Assessment Process
Consequence	Assesses impact a risk has on the University system across six risk exposure categories.	Assesses how much the mitigation strategy reduces exposure across six categories of impact.
Likelihood	Assesses the likelihood of the risk impacting the University system.	Assesses whether the mitigation strategy influences the likelihood of the risk impacting the University.
		
Urgency	Identifies how soon the University needs to prioritize the risk.	

Methodology

Individual Effectiveness

Measure the effectiveness of an *individual* mitigation strategy on reducing risk exposure

Comparative Effectiveness

Compare the effectiveness of *multiple* mitigation strategies on reducing risk exposure

Aggregate Effectiveness

Measure the *aggregate* effectiveness of all risk mitigation strategies on reducing risk exposure

Initial Data Capture

- All data is provided by risk mitigation partner(s) conducting the mitigation assessment
- Members of the ERM Governance Structure help identify partners for each risk.

Data Point	Description	Input Method
Title	Title of mitigation strategy being documented/assessed	Free Text
Description	Brief description of mitigation strategy	Free Text
New!	Mitigation Type <ul style="list-style-type: none"> • Everyday/operational/regularly occurring activity • Project/initiative-based activity(finite timeframe) 	Dropdown Menu
	Mitigation Status <ul style="list-style-type: none"> • Proposed (not yet approved/funded) • Planned (approved/funded, but not yet implemented) • Ongoing • Complete 	Dropdown Menu
	Mitigation Implementation Level <ul style="list-style-type: none"> • Fully: Mitigation strategy is fully implemented • Partially: Mitigation strategy is not yet implemented at full capacity • N/A: Not applicable or not yet implemented 	Dropdown Menu

Impact on Consequence

Evaluation

Users evaluate the degree of effectiveness the mitigation strategy has on a risk within each risk consequence category:

- Service Disruption, Process Impact on Operations
- Finance
- Legal/Compliance
- Workforce
- Reputation
- Life Safety

These consequence categories align with the consequence categories used in the risk assessment process.

Rating Options

What effect does or would the mitigation strategy have on the risk category?

Rating	Description
Significant Effect	Greatly reduces the University's exposure in this risk category.
Moderate Effect	Somewhat reduces the University's exposure in this risk category.
Little to No Effect	Barely or does not reduce the University's exposure in the risk category.
Adverse Effect	Creates additional/increases exposure in the risk category.

Impact on Likelihood

Evaluation

Evaluate whether the mitigation strategy has influenced the likelihood of the risk impacting the University system.

Rating Options

Does or would this risk mitigation strategy impact the likelihood of the risk occurring?

Rating	Description
Decreases Likelihood	Mitigation strategy has decreased the likelihood that the risk will occur (made it better).
No Impact	Mitigation strategy has made no impact on the likelihood that the risk will occur (neutral).
Increases Likelihood	Mitigation strategy has increased the likelihood that the risk will occur (made it worse).

Individual Effectiveness Score Calculation

- The Consequence Rating Values for the Individual Effectiveness Score Calculations are a set value that are separate from the ratings from the Inherent Risk Score
- The Likelihood Rating Values for the Individual Effectiveness Score Calculations are relative to the Inherent Likelihood Rating
- Each of the Consequence and Likelihood Ratings are multiplied by the Implementation Level before being multiplied and rounded to the nearest whole number for the Individual Effectiveness Score

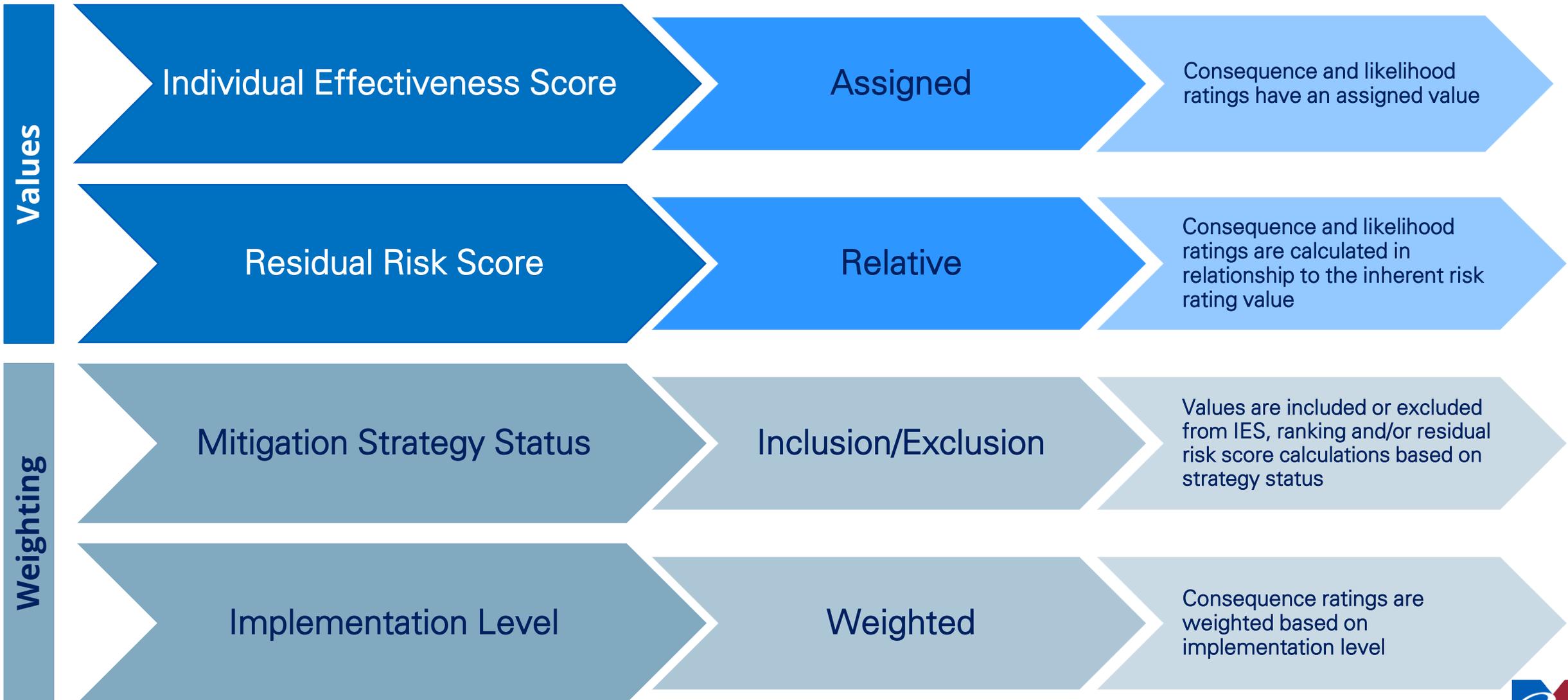


Residual Risk Score Calculation

- The Consequence Rating Values are relative to the Inherent Consequence Rating Values
- The Likelihood Rating Values are relative to the Inherent Likelihood Rating Value
- The Urgency Value is carried over from the Risk Assessment Process based on the risk
- Each of the Consequence and Likelihood Ratings are multiplied by the Implementation Level



Mitigation Assessment Rating Values and Weighting



Impact of Mitigation Strategy Status and Implementation Level on Calculations

Mitigation Strategy Status

Mitigation Strategy Status	Is the Mitigation Strategy Included in the Calculation?		
	Individual Effectiveness Score (IES)	IES Ranking	Residual Risk Score
Ongoing	Included	Included	Included
Completed	Included	Included	Included
Planned	Included	Included	Excluded
Proposed	Excluded	Excluded	Excluded

Implementation Level

Implementation Level	Individual Effectiveness Score	Residual Risk Score
	Rating Weighted?	Rating Weighted?
Fully	No	No
Partially	Yes	Yes
N/A	No	No

Demo of MATRX



Screenshot

Risk Data	
Risk Name	Financial Sustainability
Risk Rank	3
Risk Description	Inability to adapt the University's business model to ensure financial sustainability, mitigate risk, and adjust to changing circumstances that influence funding or revenue.
Responsible Department(s)	A&F (UMPO and campuses) Budget Controllers HR

Risk Score Data	
Inherent Risk Score	144
Residual Risk Score	96

Quick Links	
A. Table of Contents	L. Reference - Consequence Assessment
B. Instructions	D. Reference - Likelihood Rating

Risk Mitigation Strategy Assessment Table

Mitigation Strategy Reference Number	Mitigation Strategy Title	Mitigation Strategy Description	Mitigation Strategy Type	Mitigation Strategy Status	Implementation Level	Consequence Ratings						Individual Effectiveness Score	Individual Mitigation Strategy Rank	
						Service Disruption, Process Impact on Operations	Financial	Legal/ Compliance	Workforce	Reputation	Life Safety			Likelihood Rating
						Inherent Risk Rating: Medium	Inherent Risk Rating: Medium	Inherent Risk Rating: Low	Inherent Risk Rating: Medium	Inherent Risk Rating: High	Inherent Risk Rating: Negligible			Inherent Risk Rating: Likely
11	State Financial Support	Continual advocacy to state Legislature and Administration regarding state appropriation by developing and providing rational budget requests and ensuring fiscal transparency	Project-Based	Ongoing	Fully	Significant Effect	Significant Effect	Little to No Effect	Significant Effect	Moderate Effect	Little to No Effect	Decreased	57	1
13	State Funding of CBA Increases	Monitor and ensure state funding for CBA increases wages/salary	Project-Based	Completed	Fully	Significant Effect	Significant Effect	Little to No Effect	Significant Effect	Moderate Effect	Little to No Effect	Decreased	57	1
7	Reporting - Quarterly Budget Projections and Annual Budget Reporting	Quarterly report assesses budget to actuals and completing projection to year end, and develop strategies to ensure budget stay on plan; annual budget sets plan for upcoming fiscal year to achieve a balanced budget at minimum, and progress toward achieving 2% operating margin by FY25	Operational	Ongoing	Fully	Significant Effect	Significant Effect	Moderate Effect	Little to No Effect	Moderate Effect	Little to No Effect	Decreased	54	3
9	Reporting - Quarterly Capital Reporting and Biennial Capital Plan	Quarterly report assesses capital plan to actuals, reports on any changes and how changes impact overall long-term financial plan; biennial capital plan sets plan for capital investments while preserving a debt service burden of less than 8%	Operational	Ongoing	Fully	Significant Effect	Significant Effect	Moderate Effect	Little to No Effect	Moderate Effect	Little to No Effect	Decreased	54	3
2	Cash Flow Modeling and Projections	Implemented planning tool to show actuals, trends, and historical data on cash flow.	Operational	Ongoing	Fully	Significant Effect	Moderate Effect	Little to No Effect	Little to No Effect	Little to No Effect	Little to No Effect	Decreased	45	5

What effect does or would this risk mitigation strategy have on reducing the University system's exposure to actual or potential service disruptions, impacts associated with service disruptions, and/or impacts to operations?



What MATRX Does and Does Not Accomplish



- Documents risk mitigation strategies
- Provides transparency on risk mitigation strategies
 - Demonstrates progress in mitigating risk
 - Depicts areas that may require additional attention
- Enables more robust discussion on risk and risk mitigation
- Generates standalone Residual Risk Score



- Track key performance indicators
- Define specific actions or next steps
- Does not alter Inherent Risk Score

Stakeholder Engagement

Mitigation Assessment - Stakeholder Engagement Process

Outreach

ERM Program makes outreach to stakeholders (risk and/or mitigation partners)

- Leverage existing systemwide affinity groups where possible
- Coordinate with ERM governance members to identify stakeholder

Meeting

ERM Program convenes meeting with stakeholder(s)

- Include systemwide representation wherever possible
- Alternately, meet with stakeholders campus by campus

Identification

Stakeholder(s) identify mitigation strategies to be documented and assessed

Assessment

Stakeholder(s) assess mitigation strategies

- ERM facilitates and navigates tool

Compilation

ERM Program compiles resulting information

- Identify trends across individual campus assessments
- Share results with ERM governance members and stakeholders prior to leadership

ERM

Stakeholders

Mitigation Assessment Data

Previous Depiction of Results

Inherent Risk Score	Residual Risk Score
144	42

Mitigation Strategy Rank	Mitigation Strategy Title	Type	Status	Implement. Status	Service Disruption	Financial	Legal/ Compliance	Workforce	Reputation	Life Safety	Likelihood
1	Sample Strategy 3	PB	ON	F	Green	Green	Yellow	Green	Yellow	Yellow	Green
	Sample Strategy 14	PB	CM	F	Green	Green	Yellow	Green	Yellow	Yellow	Green
2	Sample Strategy 4	OP	ON	F	Green	Green	Yellow	Yellow	Yellow	Yellow	Green
	Sample Strategy 15	OP	ON	F	Green	Green	Yellow	Yellow	Yellow	Yellow	Green
3	Sample Strategy 17	OP	ON	F	Green	Yellow	Yellow	Yellow	Yellow	Yellow	Green
	Sample Strategy 1	OP	ON	F	Yellow	Green	Yellow	Yellow	Yellow	Yellow	Green
	Sample Strategy 9	PB	CM	F	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green
	Sample Strategy 10	OP	ON	F	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green
4	Sample Strategy 16	PB	ON	F	Yellow	Green	Yellow	Yellow	Yellow	Yellow	Green
	Sample Strategy 2	OP	ON	P	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green
	Sample Strategy 8	OP	ON	F	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green
	Sample Strategy 18	OP	ON	P	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green
	Sample Strategy 6	OP	ON	F	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green
5	Sample Strategy 7	OP	ON	F	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green
	Sample Strategy 19	OP	ON	P	Yellow	Yellow	Green	Yellow	Yellow	Yellow	Yellow
6	Sample Strategy 5	OP	ON	P	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
	Sample Strategy 11	OP	ON	F	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
	Sample Strategy 13	PB	ON	F	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
NA	Sample Strategy 12	PB	PR	N	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow

Key

Status	
Completed	CM
Ongoing	ON
Planned	PL
Proposed	PR

Type	
Operational	OP
Project-based	PB

Implementation Status	
Fully	F
Partially	P
N/A	N

Consequence Rating	
Significant Effect	Green
Moderate Effect	Yellow
Little to No Effect	Orange
Adverse Effect	Red

Likelihood Rating	
Decreases	Green
Does Not Change	Yellow
Increases	Red

Current Depiction of Results: Individual and Comparative Assessment

Information Security

1	Incident Detection and Response
2	Attack Resistance
3	Communications Protection Identity and Access Management Vulnerability Management
4	Business Continuity/Disaster Recovery Data Management Data Theft Resistance
5	Data Loss Prevention Network Protection Third-Party Assessment
6	Administrative System Access Managed Cloud Environments (IaaS) Third Party Penetration Testing Training/Awareness
7	Cyber Security Insurance Optimization

# Strategies	17
Risk Mitigation Partners	<ul style="list-style-type: none"> • Campus Chief Information Security Officers • UITS
Key Observations	<ul style="list-style-type: none"> • Substantial progress has been made systemwide • Campus readiness varies • More detailed information will be provided in Executive Session

Effective

More Effective



Current Depiction of Results: Individual and Comparative Assessment

Facilities and Deferred Maintenance

1	Reaching/Maintaining Keep Up Targets
2	Reaching/Maintaining Catch Up Targets Reporting – Biannual Capital Plan Reporting – Quarterly Capital including Catch Up and Keep Up
3	Capital Policy
4	Annual Update of Campus Deferred Maintenance (Gordian)
5	Tracking Spending Against DCAMM Contracts



# Strategies	7
Risk Mitigation Partners	Facilities and Deferred Maintenance Working Group (EE)
Key Observations	<ul style="list-style-type: none"> • Systemwide tracking provides increased transparency and informs decision-making • Targets for catch up and keep are newly established • This reflects progress from a systemwide perspective; campus level assessments have not been completed

Current Depiction of Results: Individual and Comparative Assessment

Financial Sustainability

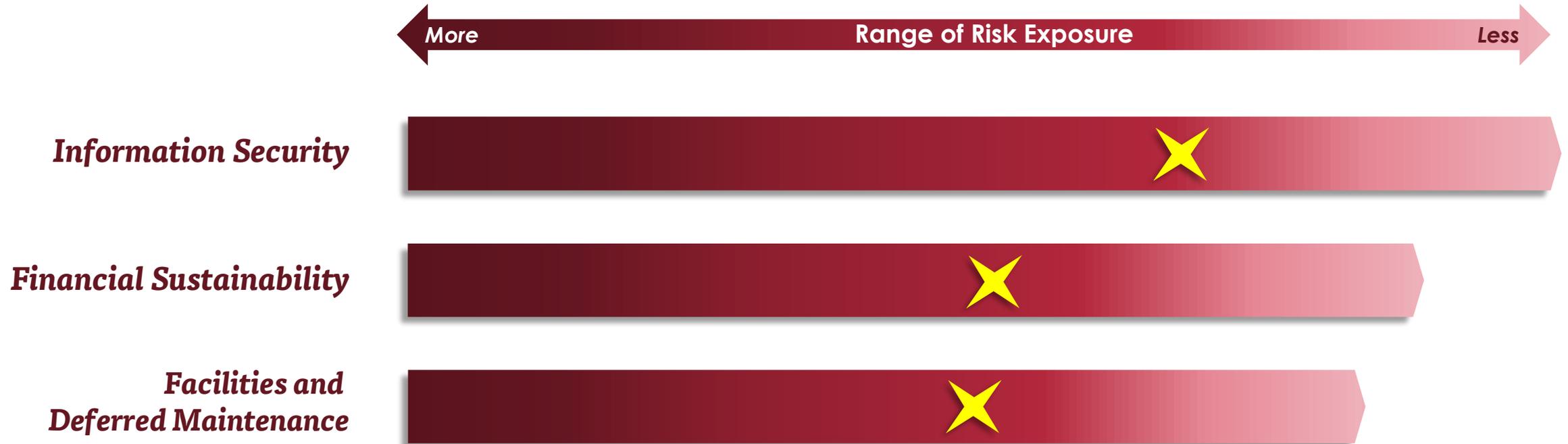
1	State Financial Support State Funding of CBA Increases
2	Reporting: Quarterly Budget Projections & Annual Budget Reporting Reporting: Quarterly Capital Reporting & Biennial Capital Plan
3	Reaching/Maintaining 2% Operating Margin Cash Flow Modeling and Projections Reporting - Annual Five-Year Forecast Refresh Reserve Policy SPARC Dashboard UMass Global Financial Reporting
4	Maintaining Availability of Line of Credit Operating Cash Invested with Foundation Implementation of UMPlan for Annual Budgeting UMPlan - Financial Forecast Module UMPlan - Tuition Planning Module
5	Compliance with Federal Grants
6	Monitoring Standard Metrics Adoption and Forecasting of Changes in GASB Appropriate Account Treatment for P3s

# Strategies	19
Risk Mitigation Partners	<ul style="list-style-type: none"> • UMPO A&F Team • Campus Budget Directors • Campus Controllers
Key Observations	<ul style="list-style-type: none"> • Reporting and tracking increase transparency and inform decision-making • State financial support is essential to sustainability



Current Depiction of Results: Residual Risk

Movement in Reducing Risk Exposure



 Assessed Residual Risk

Derived Outcomes for Our ERM Program

Derived Outcomes



Operationalization of Enterprise Risk Management

- Developing a risk-informed culture
- Enhancing discussions around risk and risk mitigation



Higher Program visibility to and buy-in from stakeholders

- Broader engagement with stakeholders beyond governance membership
- Resource for other ERM Programs



Increasing the value of ERM

- ERM is more than a process to identify risk
- ERM is not a standalone entity

Triumphs and Turbulences

Triumphs

- MATRX has been well received by both internal and external stakeholders
- Results to date have been shared with leadership and our Board of Trustees
- Results have driven additional discussion around priority risks
- Adaptability of the tool to capture additional detail on mitigation strategies

Turbulences

- Lengthier process than originally anticipated
- Challenges in identifying stakeholders and mitigation strategies for risks that do not have existing affinity groups

Conclusion and Take Aways

Conclusion and Take Aways

- Aligning assessment of risk mitigation strategies to risk assessment methodology allows for contextual comparison of risk exposure and risk mitigation
- Transparency on risk mitigation strategies and visibility on progress in reducing risk exposure is empowering
- Volume of mitigation strategies have intuitively been implemented around highest areas of risk exposure
- Connecting the dots contributes to building a risk informed culture

Questions?



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