Consulting Engineers:

Catalysts for Innovation in Construction Industry

DESCON

Objectives

01

To Clarify the pivotal functions and responsibilities of consulting engineers within the construction industry under the umbrella of ESG.

02

To Showcase how consulting engineers drive the adoption of sustainable construction methods and green technologies.

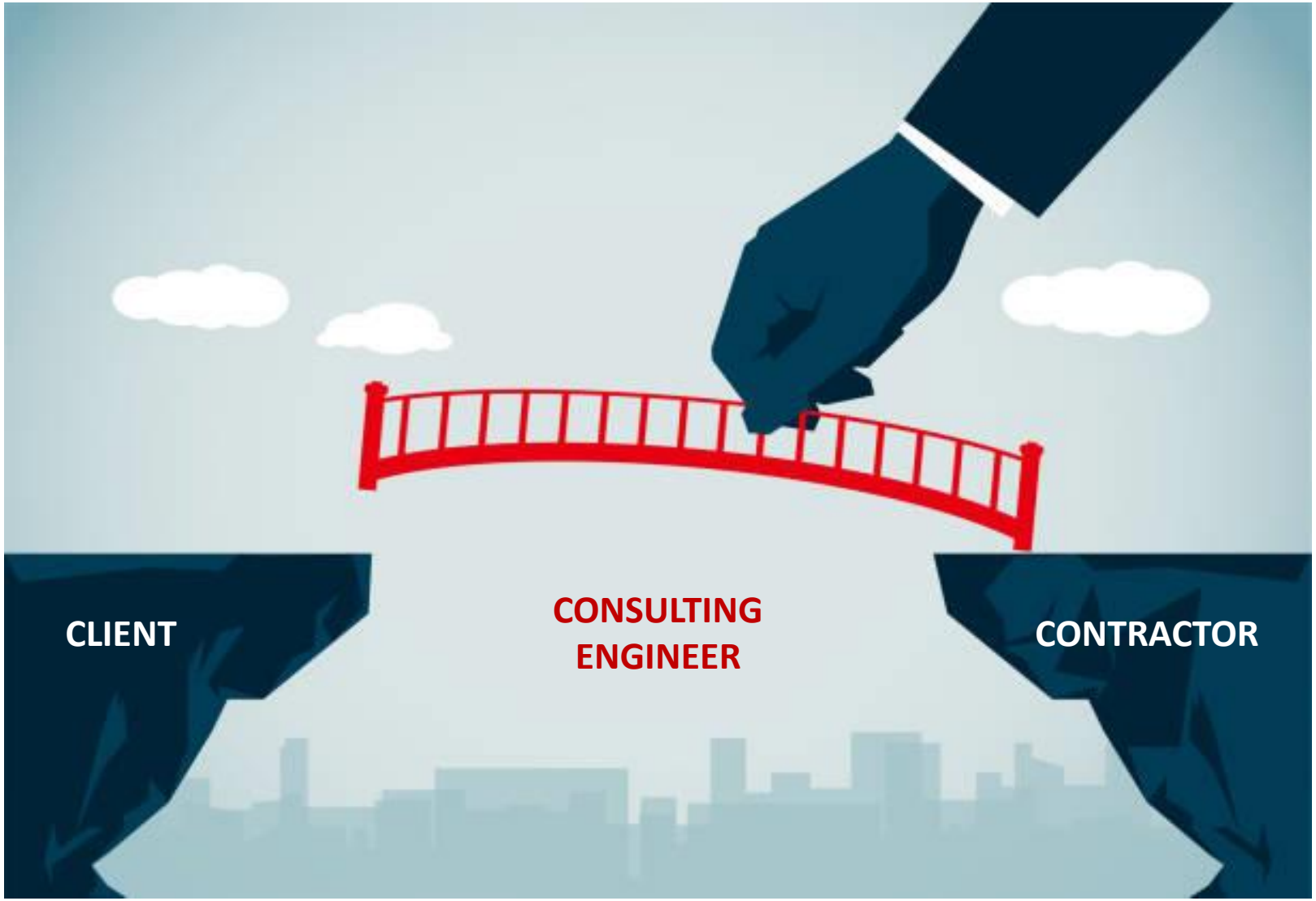
03

To Demonstrate consulting engineers' proficiency in mitigating risks effectively and implementing strategies to reduce carbon emissions in construction projects.

04

To Examine how consulting engineers anticipate and adapt to emerging industry trends while ensuring adherence to regulatory standards and compliance requirements.

Role of Consulting Engineers



Modern Day Challenges in Construction Industry

1

Fast Paced Projects

Dealing with increasingly fast paced projects, designs, and technologies.

2

Cost Management

Balancing the need for cost efficiency with quality and safety standards.

3

Technological Integration

Adopting and integrating new technologies while ensuring compatibility and efficiency.

4

Risk Management

Identifying, assessing, and mitigating risks throughout the project lifecycle.

5

Environment, Health & Safety

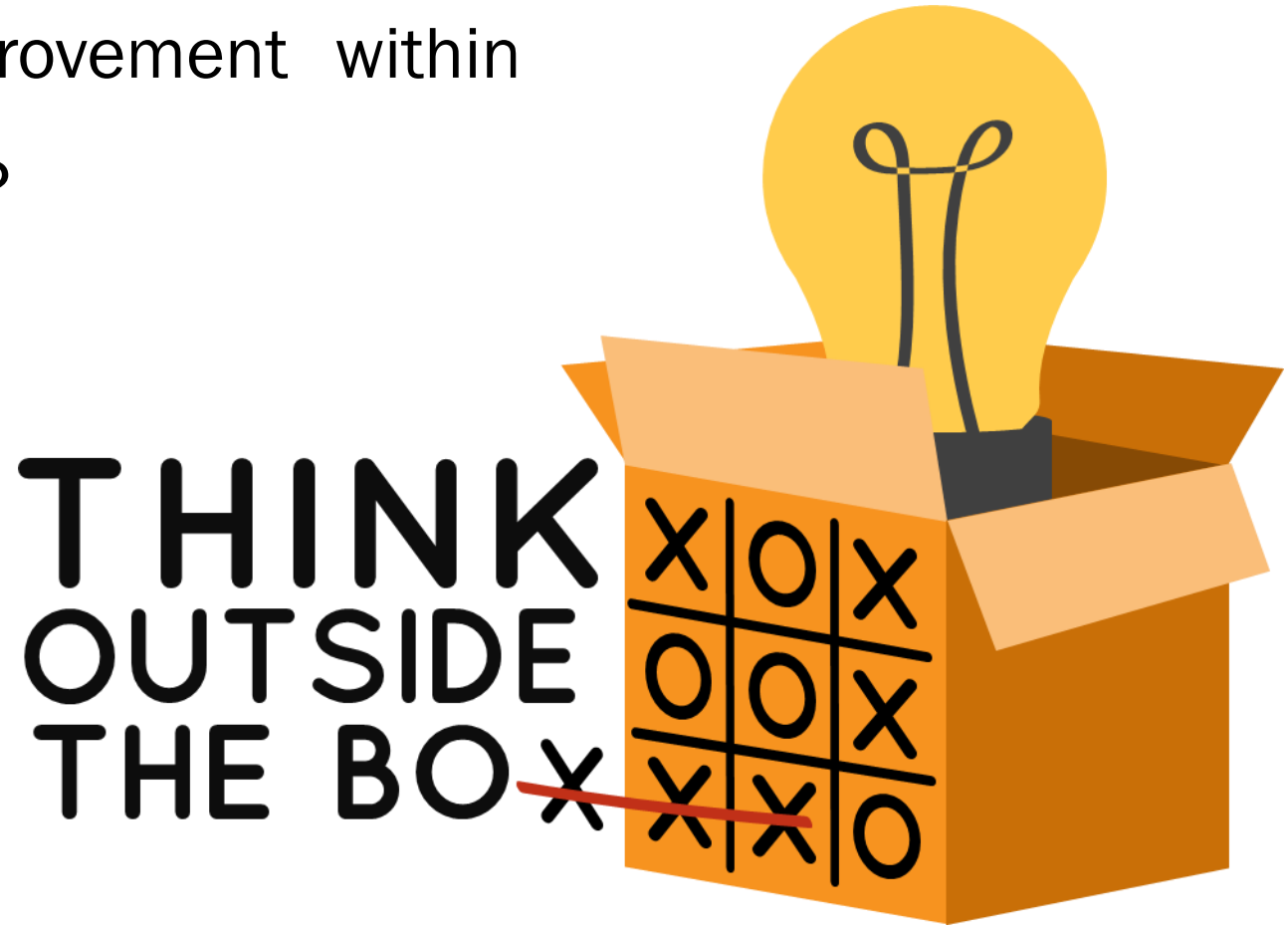
Ensuring the safety of workers and adhering to stringent safety standard.

6

QA/QC Compliance

Navigating a complex landscape of regulations and standards.

Amidst increasing demand for innovation, how do Consulting Engineers foster a culture of creativity and continuous improvement within construction projects?



Adding Value in Construction:
Consulting Engineers' Role in ESG Practices

- Leadership in ESG Integration
- Stakeholder Engagement and Collaboration
- Innovation and Best Practices
- Developing tailored ESG strategies
- Continuous Improvement and Leadership
- Conducting ESG assessments and audits

1 – Environmental, Health, and Safety (EHS) in Construction

In an industry often driven by tight budgets and profit margins, how can consulting engineers ensure that EHS remains a top priority?

How Consultant Engineers add Value in EHS Implementation

Highlight the long-term financial benefits of robust EHS practices

Innovate within Budget Constraints & Continuously Monitor and Improve the System

Integrate EHS into Project Planning

Implement Cost-Effective EHS Solutions

Promote a Safety-First Culture & Educate Stakeholders

EHS Culture in DEL

Stop Work Authority Policy

Descon Engineering is committed to maintaining a safe and healthy work environment for all employees, contractors, and visitors. We recognize the importance of empowering all individuals to raise concerns and take immediate action if they believe that a work activity may pose a threat to the safety and well-being of people, the environment, or property.

This Stop Work Authority (SWA) Policy is designed to provide a framework to encourage open communication regarding safety concerns.

In order to achieve this, we shall:

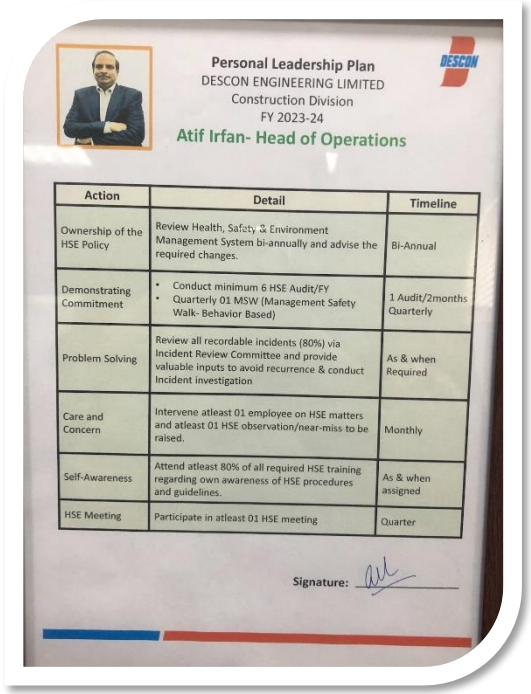
1. Encourage and enable all employees to take immediate action to stop work if they believe it presents a Health and Safety Risk.
2. Provide a mechanism for employees to identify and address hazards, unsafe conditions, or unsafe practices promptly.
3. Prevent accidents, injuries, and near-misses by allowing employees to intervene and report concerns without fear of retaliation.
4. Empower every employee, contractor, and stakeholder is responsible for stopping any work activity when they identify a hazard or condition that may cause harm or damage.
5. Ensure that line supervisors and management are accountable for supporting and respecting SWA decisions and taking prompt actions to address identified concerns.
6. Strictly prohibit any form of retaliation against individuals exercising SWA rights, employees and contractors can report any perceived retaliation without fear of reprisal.
7. Ensure that all SWA reports, investigations, and corrective actions must be documented and retained for review and analysis to improve safety processes continually.
8. Provide comprehensive training and communication to ensure that all employees, contractors, and stakeholders understand their rights and responsibilities regarding SWA.

Taimur Saeed
Chief Executive Officer

DIMS / Stop Work Authority Policy
Rev.00, Dec 01, 2023

Implementation of EHS Policies

Daily Site Toolbox Talks



EHS Leadership Board

In an industry where unforeseen challenges are the norm, how can consulting engineers ensure that risk management strategies are both proactive and adaptive?

How Consulting Engineers can add Value to Risk Management

RISK IDENTIFICATION & ASSESSMENT

RISK MITIGATION PLANNING

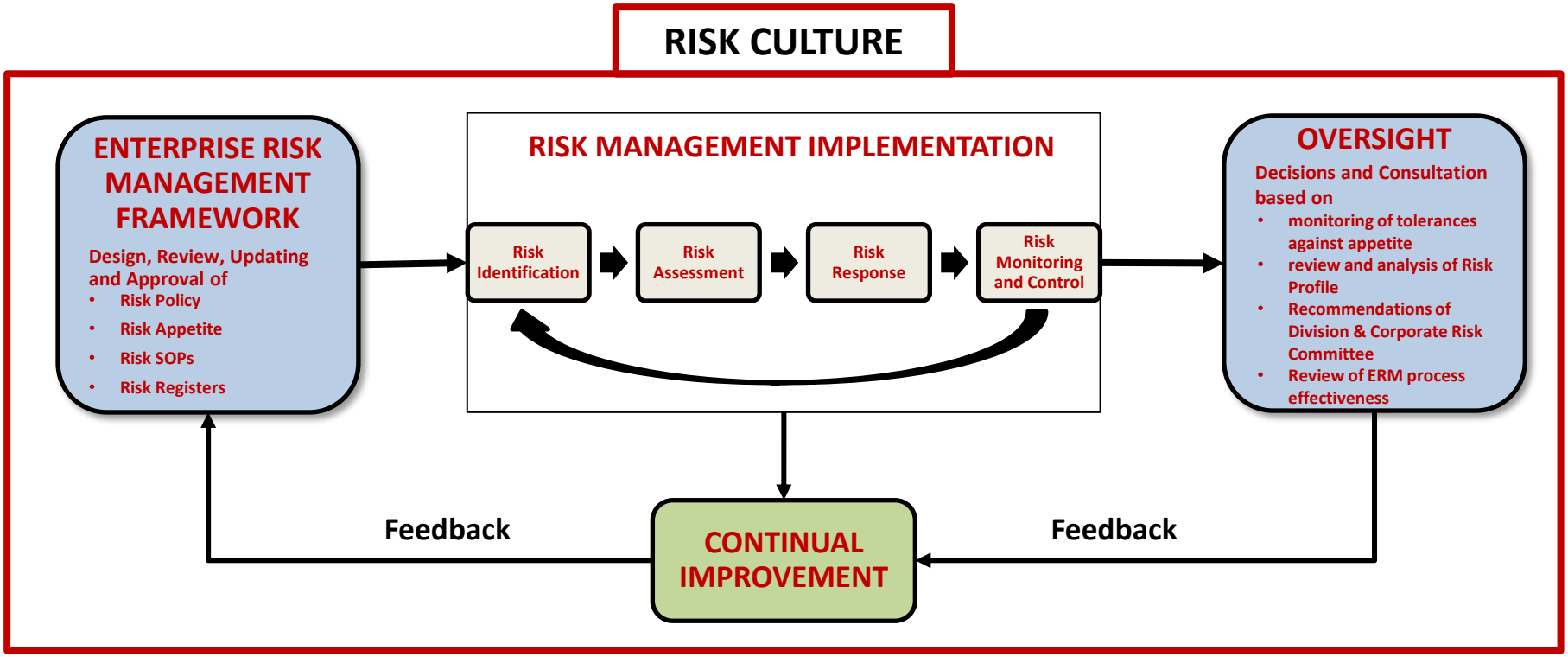
REGULATORY COMPLIANCE

PROJECT MONITORING AND CONTROL

STAKEHOLDER COMMUNICATION

CRISIS MANAGEMENT AND CONTINGENCY PLANNING

Risk Management



Prevalent Risk Culture

- Reactive approach
- Not showing opportunities
- Fear of performance exposure
- Taking risk exercise as add on

Desired Risk Culture

- Proactive approach
- Open communication
- Risk based decision making
- Risk management embedded in company processes

Risk Register & Contingency Development

PROJECT RISK REGISTER

Risk Identification						Risk Analysis								Risk Response							Risk Monitoring			
Risk ID	Nature of risk	Date Identified	Cause	Risk Event	Effect	Impact Nature	Effect on Div/BU Objectives	Cost Category	Max Impact		Risk Likelihood		Overall Risk Rating	Expected Monetary Value (EMV) Mill PKR	Risk Response Strategy	Risk Owner	Residual Risk Likelihood of Occurrence (%)	Residual Risk Max Impact (Mill PKR)	Residual Risk Expected Monetary Value (EMV) Mill PKR	Contingency / Provisions Available Mill PKR	Deficit/ Surplus (Mill PKR)	Target Closure Date	Rev. #	Actual Closure Date	Status
									Value (Mill PKR)	Rating (1-5)	Rating (1-5)	Value (%)													
CP.10076.43	T	18-Mar-21	Price inflation risk on Diesel and petrol may affect cost of other materials	Price inflation may cause contractor to incur cost	Cost impact	Financial	PAT	BCTC		2	2	40%	LOW	0	Mitigate	SM	30%		0.00		0.00	30-Sep-22	3	30-Sep-22	Closed
CP.10076.44	T	31-Aug-21	BOQ description not matching with drawing description for some items	Client may not pay for few items	Revenue may decrease	Financial	Revenue	Revenue	10	2	3	60%	MEDIUM	6	Mitigate	SM	50%	10.00	5.00		5.00	30-Dec-22	3	30-Sep-22	Closed
CP.10076.48	T	15-Mar-22	Delays in final reconciliation of project (surplus material , tax issues , punch items , final hand over ,TOC)	Delays in final reconciliation of project	Cost and schedule impact	Financial	PAT	BCTC	28	5	3	60%	HIGH	16.8	Mitigate	SM	60%	28.00	16.80	16.60	0.20	30-Dec-22	3	30-Nov-22	Closed
CP.10076.49	O	12-Jun-22	Increase in reveneue may be expected on final reconciliation (cost savings + quantities increase + contingency)	Increase in revenue	Increase in PAT	Financial	PAT	BCTC	14	3	3	60%	MEDIUM	-8.4	Exploit	SM	60%	14.00	-8.40		-8.40	30-Dec-22	0	30-Nov-22	Closed
CP.10076.50	T	30-Nov-22	Delays in issuance of TOC and final payments on client	Delays in award of TOC	Increase in PAT	Financial	PAT	BCTC	28	5	3	60%	HIGH	16.8	Exploit	SM	60%	28.00	16.80	16.60	0.20	31-Jan-23	0		Open

Risk Identification

Risk Analysis

Risk Response

Risk Monitoring

Risk Library & ProAACT Software

ProAACT - Proficiency Tool for Anticipation, Actions Management, Continuous Improvement and Transparency

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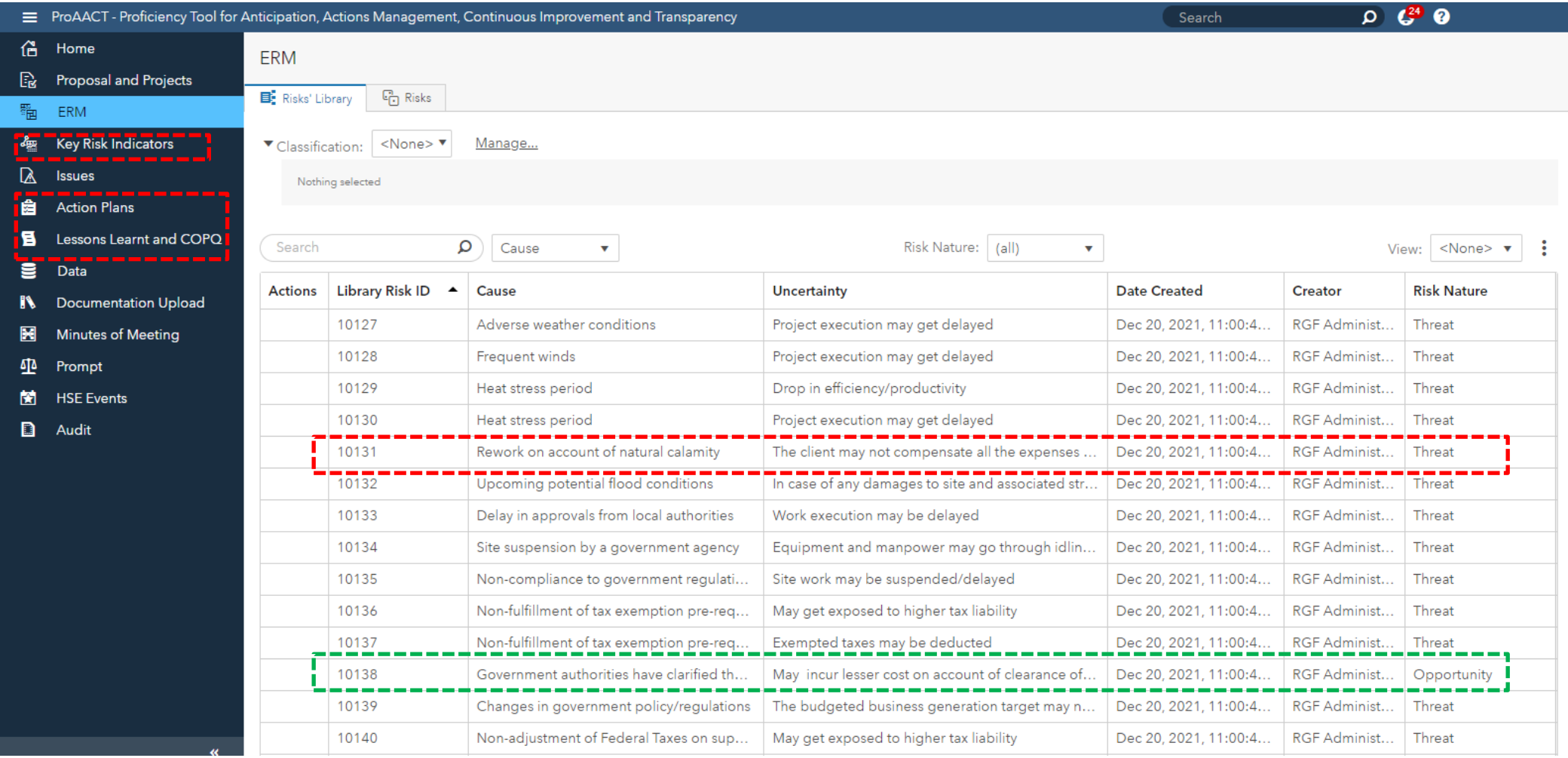
ProAACT



Actions	Library Risk ID	Cause	Uncertainty	Date Created	Creator	Risk Nature
	10127	Adverse weather conditions	Project execution may get delayed	Dec 20, 2021, 11:00:4...	RGF Administ...	Threat
	10128	Frequent winds	Project execution may get delayed	Dec 20, 2021, 11:00:4...	RGF Administ...	Threat
	10129	Heat stress period	Drop in efficiency/productivity	Dec 20, 2021, 11:00:4...	RGF Administ...	Threat
	10130	Heat stress period	Project execution may get delayed	Dec 20, 2021, 11:00:4...	RGF Administ...	Threat
	10131	Rework on account of natural calamity	The client may not compensate all the expenses ...	Dec 20, 2021, 11:00:4...	RGF Administ...	Threat
	10132	Upcoming potential flood conditions	In case of any damages to site and associated str...	Dec 20, 2021, 11:00:4...	RGF Administ...	Threat
	10133	Delay in approvals from local authorities	Work execution may be delayed	Dec 20, 2021, 11:00:4...	RGF Administ...	Threat
	10134	Site suspension by a government agency	Equipment and manpower may go through idlin...	Dec 20, 2021, 11:00:4...	RGF Administ...	Threat
	10135	Non-compliance to government regulati...	Site work may be suspended/delayed	Dec 20, 2021, 11:00:4...	RGF Administ...	Threat
	10136	Non-fulfillment of tax exemption pre-req...	May get exposed to higher tax liability	Dec 20, 2021, 11:00:4...	RGF Administ...	Threat
	10137	Non-fulfillment of tax exemption pre-req...	Exempted taxes may be deducted	Dec 20, 2021, 11:00:4...	RGF Administ...	Threat
	10138	Government authorities have clarified th...	May incur lesser cost on account of clearance of...	Dec 20, 2021, 11:00:4...	RGF Administ...	Opportunity
	10139	Changes in government policy/regulations	The budgeted business generation target may n...	Dec 20, 2021, 11:00:4...	RGF Administ...	Threat
	10140	Non-adjustment of Federal Taxes on sup...	May get exposed to higher tax liability	Dec 20, 2021, 11:00:4...	RGF Administ...	Threat

3 – QA/QC & Regulatory Considerations

How can consulting engineers balance stringent regulatory requirements with innovative QA/QC practices to enhance project quality and compliance?

Role of Consultants in Navigating Regulatory Landscapes

- REGULATORY COMPLIANCE
- REGULATORY STRATEGY DEVELOPMENT
- RISK MITIGATION & STRATEGIC PLANNING
- TRAINING AND EDUCATION
- CRISIS MANAGEMENT
- STAKEHOLDER COMMUNICATION

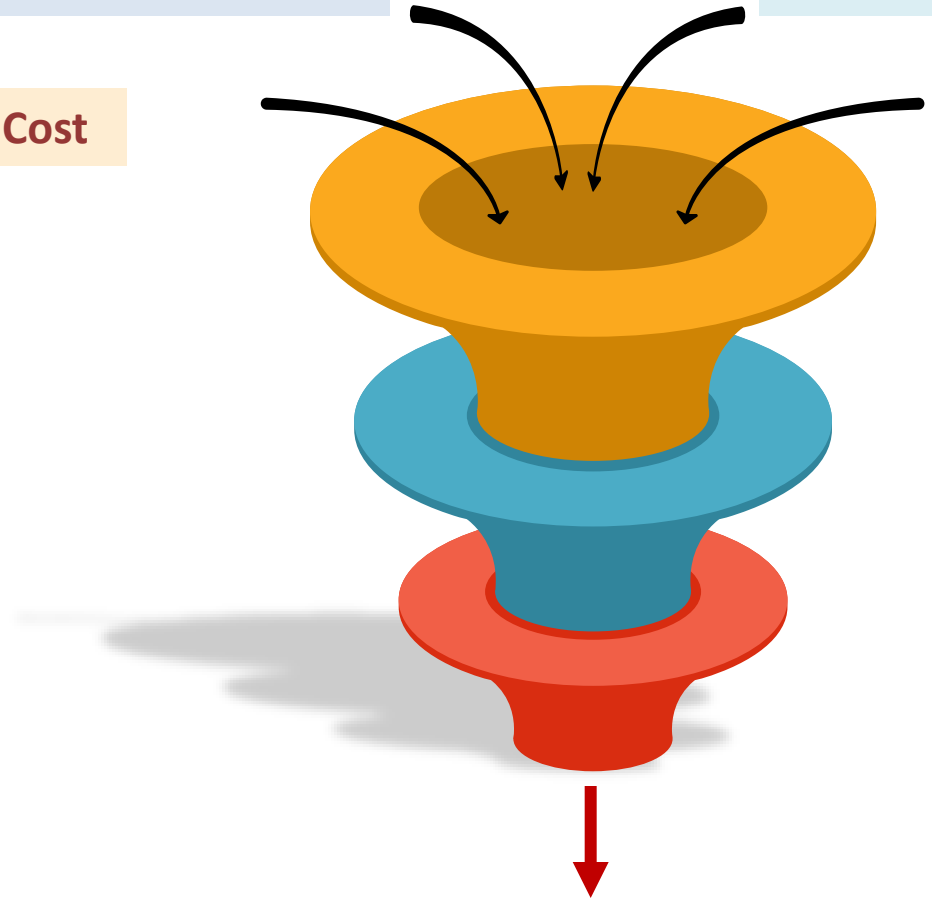
Understanding COPQ (Cost of Poor Quality) & Its Impact on Project

External Failure Cost

Prevention Costs

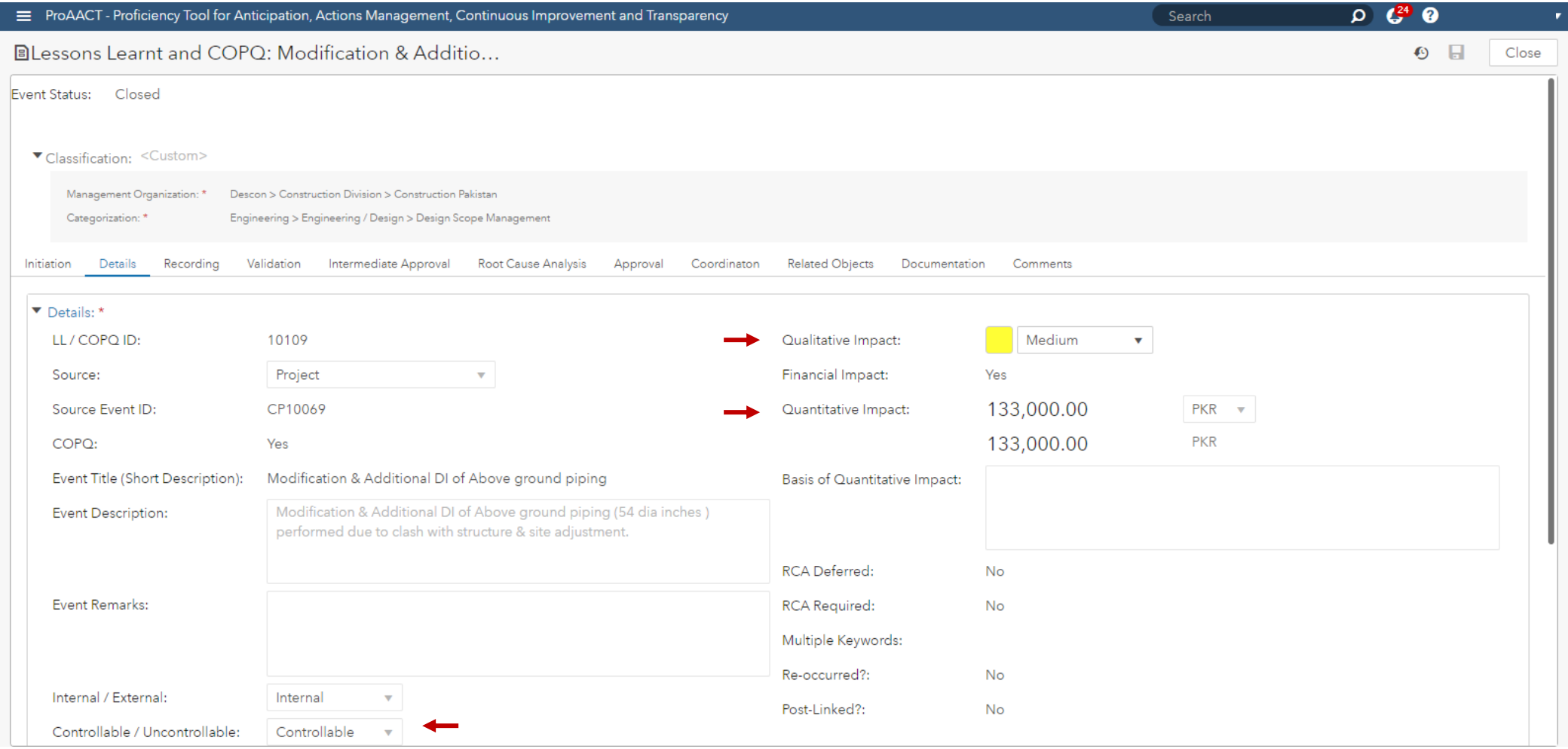
Internal Failure Cost

Inspection Costs

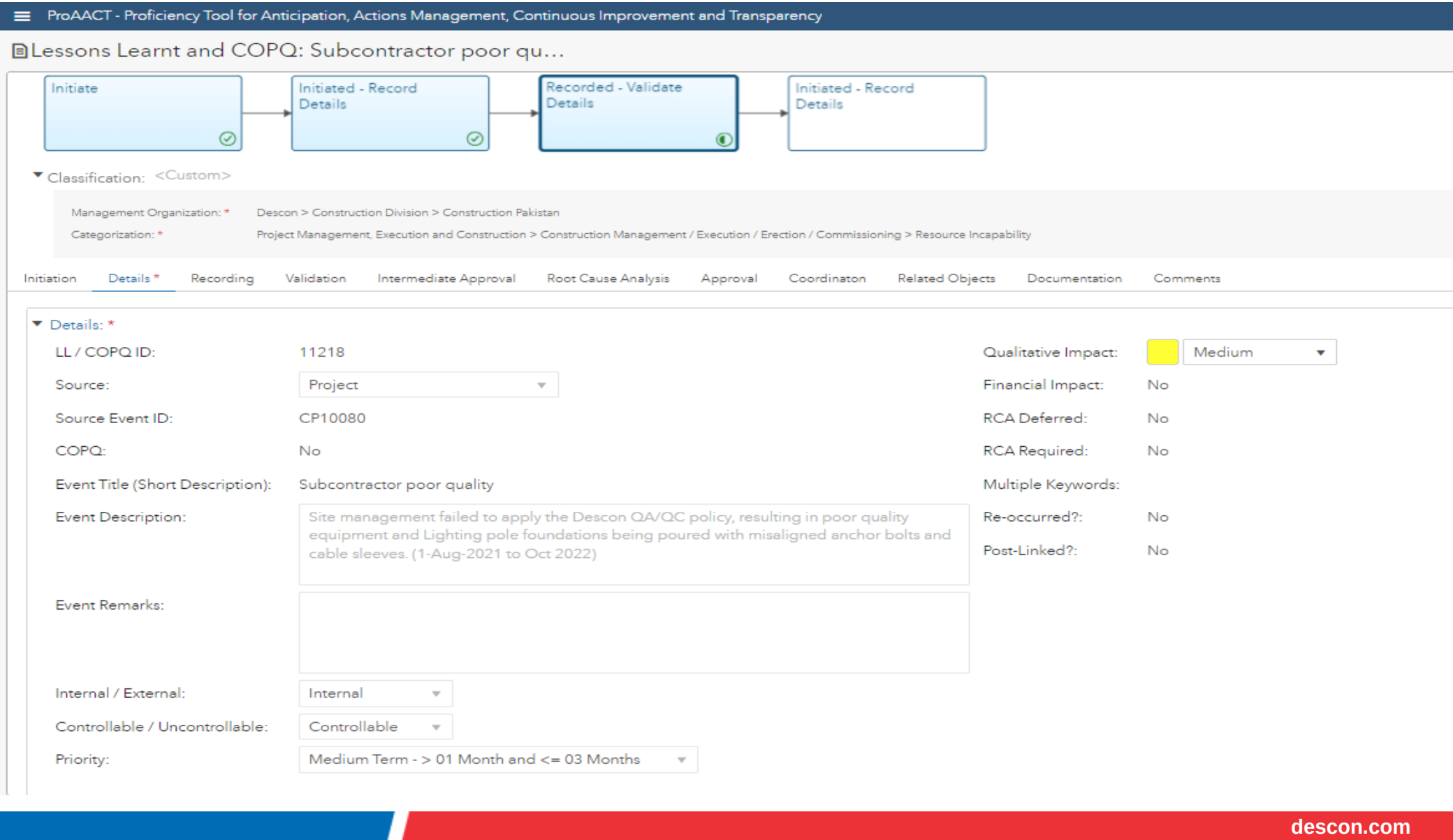


- Increased project costs and reduced profitability
- Delays and extended project timelines
- Damage to reputation and client trust

COPQ – Cost of Poor Quality (Financial Impact)



COPQ – Cost of Poor Quality (Non-Financial Impact)



4 - Green Materials & Sustainable Construction

How can consulting engineers ignite a paradigm shift towards green construction, making sustainability the new standard?

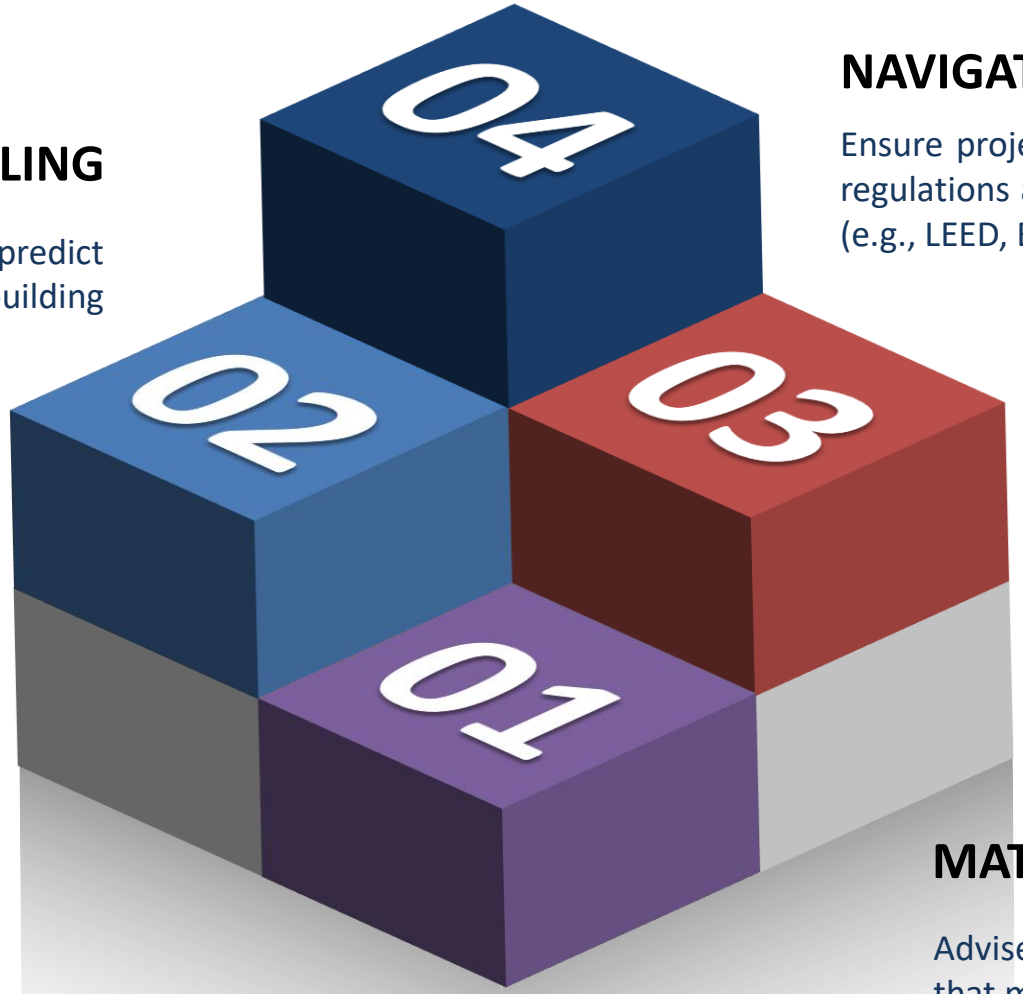
Role of Consulting Engineers in Sustainable Construction

04 ENERGY MODELING

Use advanced software to predict energy usage and optimize building performance.

NAVIGATING STANDARDS 03

Ensure projects comply with environmental regulations and green building certifications (e.g., LEED, BREEAM).



MATERIAL SELECTION 01

Advise on the best green materials that meet project requirements.

02 IMPLEMENTATION AND MANAGEMENT

Ensure all stakeholders are aligned on sustainability goals.
Oversee the use of sustainable techniques and practices on-site.

ASBP 6 Pillars of Green & Sustainable Construction

Source: “ASBP’s Six Pillars of Sustainable Construction.” The Alliance for Sustainable Building Products, asbp.org.uk/six-pillars. Accessed 25 June 2024.

5 – Innovative Technologies in Construction

How can consulting engineers leverage these emerging trends to drive innovation and ensure sustainable, efficient, and safe construction practices?

Innovative Technologies in Construction

Building Information Modeling (BIM)

- 3D/4D/5D Modeling
- Collaborative Design and Coordination

Advanced Materials and Techniques

- Green Building Materials
- 3D Printing

Internet of Things (IoT) and Smart Construction

- Real-Time Monitoring and Control

Robotics and Automation

- Prefabrication and Modular Construction
- Autonomous Vehicles and Equipment

Artificial Intelligence & Innovations

- Smart Project Management
- Automated Design & Planning
- Predictive Analytics & Improved Decision Making

Consulting Engineers:
Catalysts for Innovation in Construction Industry

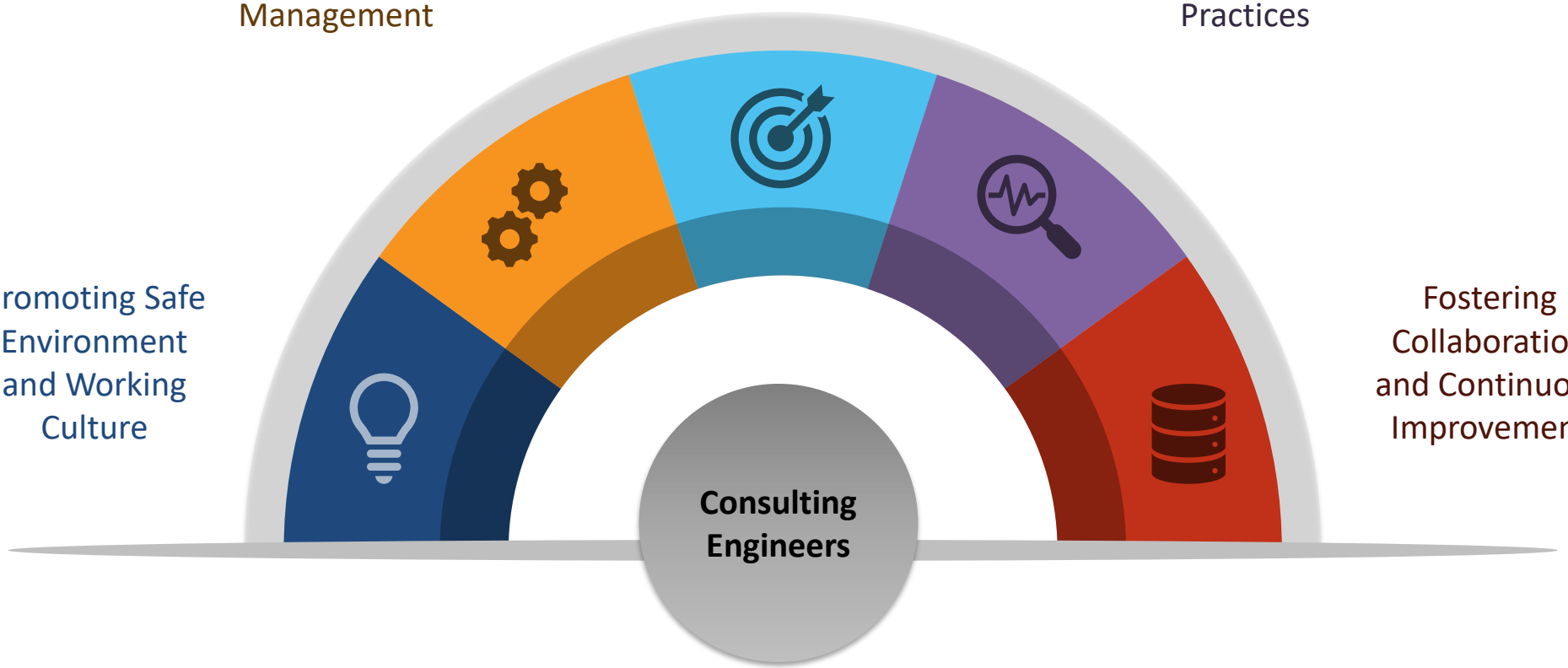
By continuously adapting to new technologies and practices, consulting engineers can not only meet but exceed the expectations of the modern construction industry, ensuring a safer, more efficient, and sustainable built environment.

Final Insights

Mastering QA/QC: Minimizing COPQ and Leveraging Lessons Learned

Ensuring Integration of Risk Management

Promoting Sustainable Practices



Promoting Safe Environment and Working Culture

Fostering Collaboration and Continuous Improvement

Any Questions?

Thank You