LEVERAGING RISK REGISTER INFORMATION FOR DEVELOPING RESILIENCE THROUGH RISK INTELLIGENCE

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1 INTRODUCTION

Resilience can be defined as "the intrinsic ability of a system to adjust its functioning prior to, during, or following changes and disturbances, so that it can sustain required operations under both expected and unexpected conditions" (Hollnagel, 2011). Central to this definition is the core ability of an organization to understand, monitor and develop a risk intelligence capacity.

A risk database, or risk register, is a central tool for organisations to use to monitor and reduce risks, both those identified during initial safety assessments and those emerging during operations. The risk register should contain all analysed risks and should prioritise the areas that require managerial attention. When populated with information on each risk, including risk ranking, the risk register can be analysed to present the risk profile for different aspects of the organisation. When reviewed and updated over time, it can also be analysed to present trends within the risk profile and focus management attention on the highest risk activities or facilities. This research presents a concept of extending traditional risk registers through analysis of the information contained within them across an entire company (data-mining) to develop risk intelligence in order to support resilience.

2 SUMMARY OF THE PROPOSAL

The poster will present a concept of building risk intelligence to support resilience in safety critical industries using data from a risk register. The case study presented is from an electricity generation company, who have identified the need to better manage their safety and resilience information and have developed a comprehensive risk register containing information on technical, human, financial, environmental, and regulatory risks across the entire generation business. Electricity generation is an inherently high energy, multiple hazard industry that can potentially be harmful to life, health, assets, and the environment. The presence of this stored energy or hazardous substances, which when released can cause damage, can take many forms including, chemical, mechanical, thermal, electrical, etc. Process safety is concerned with preventing harm to people, the environment and the plant from this uncontrolled release of energy / hazardous substances through a combination of good engineering design / practices, asset and integrity management, and through good operation and maintenance practises (Hopkins, 2009). The company involved in this research operates a number of electricity generation stations and has an on-going programme composed of a multiple of projects to improve process safety.

In order to maintain safe operations, organisations must continuously review and monitor their risks. This means that the results of safety studies must be translated into a format that can be analysed, reviewed and acted upon, and new data about the level of risk continuously collected to keep the safety information up to date. A risk database, or risk register, is a central tool for organisations to use to monitor and reduce risks, both those identified during initial safety assessments and those emerging during operations (Whipple and Pitblado, 2010). The risk register should contain all analysed risks and should prioritise the areas that require managerial attention and typically contains information describing each risk, an assessment of the likelihood and consequences, a ranking according to a risk matrix, the risk owner, and information on the mitigations to be put in place (Filippin and Dreher, 2004). When populated with information on each risk, including risk ranking, the risk register can analysed to present the risk profile for different aspects of the organisation (Filippin and Dreher, 2004). When reviewed and updated over time, it can also be analysed to present trends within the risk profile and focus management attention on the highest risk activities or facilities (Whipple and Pitblado, 2010). In order to successfully develop a risk registry that provides an accurate level of risk within a process, there is a requirement for real time data on risk to be input into a risk registry.

The risk register developed as part of this research allows individual stations to document and monitor their

risks and to report upwards their priority risks (Balfe, Leva, McAleer & Rocke, 2014). However, the benefits are limited when confined to individual stations; this poster explores the potential to use the information captured for developing risk intelligence through data mining of the risk registers and sharing of risk information across sites. This approach can help develop overall resilience by facilitating learning across sites, improving the ability to anticipate risks, and monitoring risk profiles across the business. The poster will present the proposed approach, based on the existing risk registers.

Deliverable proposed: poster

3 RELEVANCE FOR SYMPOSIUM

The risk intelligence developed through mining the data collected in company-wide risk registers can provide advanced support to the organisation to manage resilience. The sharing of information between sites means that different stations can proactively anticipate threats that have not yet manifested symptoms in their station, learning from the experience of others. The information on mitigation actions held within the risk registers help the organisation adapt, using the database to adopt successful mitigations to evolving risks.

4 SIGNIFICANCE/TAKEAWAY:

The research seeks to advance our ability to create and sustain resilience by building on a widely used tool for managing risk. Data mining of risk information contained in risk registers can create risk intelligence that supports the development of system-wide resilience.

5 REFERENCES

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