OPPORTUNITY

Risk Engineering News

Quarterly Newsletter

March 2018 — Volume 3 Edition 1

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Risk Engineering Society

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President's Update

Hello colleagues in RISK and welcome to OPPORTUNITY vol. 3. Thank you to all those who have contributed to this Newsletter.

Last month the REBOK Project and the RES CPD program kicked off and included our first of 16 planned REBOK webinars. Thank you to the EA team and the NSW committee for making this event happen.

The webinars will be charge-free for non-host state participants through to July 2018. A new "extra value" pricing structure will be launched in July that will include access to all RES CPD events and REBOK. Access to the REBOK website will also be made available in July.

The RISK Sydney conference planning team has firmed up arrangements with the EA conference team and we will now be hosting RISK 2019 in May in Sydney alongside PCC 2019. Details will be announced in the first quarter of 2018. RES is participating in AusEngCon 2018 being held in Sydney, September 17 - 19.

The International Congress on Engineering and Food is being promoted in this edition as it is hoped that RES can put together a session in this international forum. Those interested should contact me and I will be most interested to hear how you may like to contribute or be involved in promoting Risk Engineering in the food industry.

We look forward to continuing to receive news of interest from our wider membership for publication in future quarterly editions of OPPORTUNITY. Also, please visit or post discussions on the RES LinkedIn Group.

If you are not connected to the RES Group here is the link to the discussion: https://www.linkedin.com/groups/3751665

Regards,

Geoff Hurst (President)

QUARTERLY NEWSLETTER

The Risk Engineering Society is a Technical Society of Engineers Australia.

For Engineers Australia members, please remember to nominate your membership of RES when you renew your membership. NB: Non EA members can also join RES.

Risk Engineering Society

ENGINEERS AUSTRALIA

Take and manage risk to achieve project success

Good risk management can make an invaluable contribution to the success of construction and engineering projects. Gareth Byatt* outlines some good practices in project risk management.

Uncertainty is inherent to all construction and engineering projects. There is uncertainty in design, schedule, budget, the supply chain, the weather and many other elements. All projects require risk to be taken and uncertainty to be managed, some more so than others. How a project team takes risk and manages uncertainty can make the difference between a successful project and one that fails to achieve its objectives.

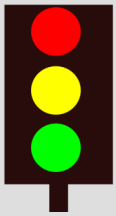
This article focuses on four of the seven key project risk management elements that can help you achieve project success, as described in Figure 1 below. The remaining three elements will be covered in the next edition of 'OPPORTUNITY'.

Figure 1: A 7-step approach to managing project risk

1. Ensure you have a good project team culture in place

For risk management to be effective, you need a positive team environment and culture (including with your supply chain) to exist. In a positive environment, project leaders regularly review and act upon the most important project risks (positive and negative) and they set an example of the right "tone from the top". When project leaders discuss risk with their team and visibly act to manage risk, the team's attitudes and behaviours to risk should be aligned with the project objectives. The project team are willing to articulate and communicate its risks and to ask for help when they need it, rather than keeping quiet until it is too late.

When you have the right team culture towards risk, your reporting about project status will be appropriate.



For example, your reporting trend will highlight "areas of Amber" early enough, instead of reporting a sudden performance drop, as in a "Green-Green-Green-Green-Amber-Red" reporting scenario.

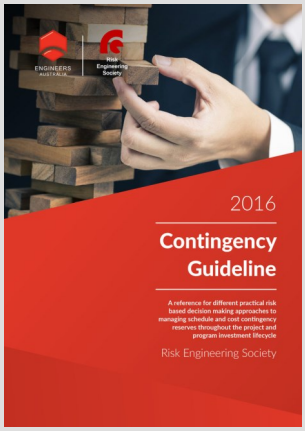
A good mindset to have is to always think "What if?" to situations that you face, both for now and tomorrow and for the future. Thinking about ways that planned work may take place will help you to form a rounded view of options available to you.

If you do not have a good team culture, and leadership from the top, carrying out the rest of the six steps articulated below will have limited effect.

2. Plan your approach, then work the Plan

It is advisable for a project team to create and embed into project activities a project Risk Management Plan (RMP), or a "Risk section" of a Project Management Plan. Good guidance exists to help you write such a plan (from international standards such as ISO 31000, the PMI Standard for Project Risk Management and industry-specific guidelines such as the Engineers Australia RES contingency guideline). Whatever the nature of your project, documenting and agreeing how you manage risk will help everyone on the team to be on the same page.

An RMP should cover four main areas:



i. It should describe how all disciplines and teams on your project will manage risk in a coordinated way.

ii. It should describe roles and responsibilities for taking and managing risk, and the governance structure to review deliverables at key project phases and milestone reviews.

iii. It should describe the Risk tools and techniques you will all use, and how they will be embedded into the rhythm of the project team's activities. Risk tools and techniques may include:

   a. Scenario planning to enable the team to understand how different outcomes could occur;

   b. Structured Risk workshops, planned into the schedule at key milestones (the way they are run will alter as the project progresses);

   c. A laminated "Risk card", which summarises the RMP;

   d. An IT tool (ideally a database rather than Excel) to capture risks;

   e. Tools such as schedule risk, quality risk, and quantitative risk analysis for evaluating cost and schedule risk.

iv. It should describe how you will measure your success in managing risk, and leverage lessons learned from other projects and your wider business.

3. Agree your risk appetite

Risk appetite is a technique common in industries such as finance. Projects can benefit from using it. With this technique we define our appetite for different aspects of risk – for example, our appetite for financial, safety, quality, and community risk. Specific risk appetite metrics can be agreed and tolerances defined within which you want to operate. When risk appetite is designed well with buy-in from project leaders and the team, it guides decision-making on the project, actions that are taken and resources to apply to them. When it is monitored properly, trends indicate whether you are adhering within your tolerances, and if not, what to do about it.

When a good team environment and culture exists, and your appetite for risk is appropriate, understood and shared, taking risk and managing uncertainty should be ingrained into everyday project activities.

4. Prioritise your risks

Prioritisation of risks can be challenging. You need to agree and focus on the risks that matter most, which will change over time.

Many of us are familiar with an "impact x likelihood = rating" method to prioritise risks into a "risk matrix and heat map" and/or a risk register. Using a risk matrix – the structure of which is influenced by your risk appetite – to prioritise risks, and displaying these risks in a heat map, is a common approach. Whilst this is fine, consider when you evaluate risks the immediacy of the risk to you, and how important a risk is to other risks. Could it set off a chain of events that mean that it is a higher priority than it's placing on a risk matrix suggests? Quantitative Risk Analysis (QRA) methods are valuable additional tools to help you understand your biggest risks. Using QRA requires a skilled and trained person to do it, otherwise it will not deliver the right value. If you need assistance with it, be sure to obtain advice / help.

How many risks should one person own? Team members should have a manageable number of risks to own – perhaps a maximum of ten per person (it depends on the project).

Avoid filling up a risk register with hundreds of detailed risks.

The remaining three key project management elements to be discussed in the next edition include;

- *Controls play a vital role*
- *Manage risk in your everyday project activities*
- *Measure, learn and improve*

* Gareth Byatt is an Independent Risk Consultant and owner of Risk Insight Consulting. He is based in Sydney, Australia, and has 20 years experience in risk and project management.

Question & Answer Segment

Do you have a question that you would like answered? Please email us at res@engineersaustralia.org.au

Question: What is the application of Cognitive biases in risk management?

Responded by Pedram Danesh-Mand, APAC Technical Director—Risk Management, Aquenta/Jabobs

Answer: A cognitive bias generally refers to the systematic pattern of deviation from norm or rationality in judgment, whereby inferences about other people and situations may be drawn in an illogical fashion. Cognitive biases may lead to more effective actions in a given context which enable faster decisions when timeliness is more valuable than accuracy, as illustrated in heuristics.

Psychological and cognitive biases have been explained and developed by a number of studies, e.g. Kahneman and Tversky, since 1979. Psychological factors will cause people to make decisions based on delusional optimism rather than on a rational weighting of gains, losses and probabilities.

Hidden biases often colour or distort the perception of the risk and its consequences. Many researches lead to the conclusion that people are generally too confident in their ability to solve complex issues, despite evidence to the contrary. Hence, every project and all of the participants in the project are susceptible to different types of biases.

Some factors which may increase the likelihood of cognitive biases during risk workshops and its following contingency assessment include:

- optimistic single value estimates and timelines
- pressure to meet predetermined targets, due to technical, political, social and other objectives
- schedule restraints due to the Merge Bias Effect (MBE)

⇒ project plans have an additional level of complexity over cost estimates – schedule logic. In complex projects, parallel strands of logic converge at milestones or activities. The probability of achieving those milestones by the planned date is the product of the probability of each of the logic strands being completed by the planned date.

⇒ the MBE is one of the main reasons why it is so challenging to accelerate projects or make up for lost time. It is also a reason why projects, particularly complex projects, tend to be unrealistically optimistic when using deterministic scheduling techniques. Simplifying schedules or focusing only on the critical path removes the constraint of the MBE.

- exclusion of some contingent risks from time and cost estimations.

To increase the quality of risk management and the accuracy of contingency calculations, it is critical to be aware, plan for and mitigate the possible impacts of cognitive biases within the organisation and project team. The most common biases for the purpose of risk and contingency calculation are:

- Anchoring bias
- Availability heuristic
- Group thinking
- Blind-spot bias
- Confirmation bias
- Overconfidence
- Optimism bias
- Recency bias

Further details about this topic and some practical tips and notes to minimise and manage these cognitive biases will be available in the 2nd Edition of RES Contingency Guideline – to be released for public consultation later this year. If you are interested in getting involved, please keep in touch:

res@engineersaustralia.org.au

REFLECTIONS ON SAFETY

By Geoff Hurst with acknowledgement to

Professor Erik Hollnagel and David Skegg

Managing or dealing with Safety is a problem for most organisations and Safety becomes a bigger problem when things go horribly wrong. Fortunately for us "Most things go right most of the time, however sometimes things go wrong". Our people make adjustments to the way they work everyday to help the smooth functioning of the workplace and these adjustments largely go unnoticed. These daily workplace adjustments are however noticed when things go wrong. In fact these adjustments become the focus after a loss event rather than us focusing on the underlying reasons as to why work is done that way everyday.

The series titled: ***"Reflections on Safety"*** will feature in editions of the OPPORTUNITY newsletter and will provide a modern and emerging perspective on Safety and Safety Governance that is intended to be refreshing for those who grapple with the complexity that compliance with Safety tends to bring.

We will look at the complexity of the modern organisation and how complexity has eluded scrutiny by safety practitioners and business managers. We tend to "follow the crowd" and the "flavour of the month" down a futile compliance or awareness based path.

The series will consider why organisations have found it hard to comply and how compliance is only a small part of the story. Having defined the problem of safety from a different perspective, we will explore what leaders and leading organisations are doing to manage safety more effectively. We will then explore how current trends in the business climate impact safety and what can be done to manage the uncertainty associated with safety risks.

Finally we will look at how organisations and leading managers can better deal with, understand and manage modern day complexity to improve OHS outcomes.

ICEF13 INTERNATIONAL CONGRESS ON ENGINEERING AND FOOD | *Engineering Innovations for Food Supply Chains*

INTERNATIONAL CONGRESS ON ENGINEERING AND FOOD | 23 - 26 SEPTEMBER 2019 | MELBOURNE

The International Congress on Engineering and Food (ICEF) is a quadrennial event, which has been established as the major event in Food Engineering and related fields over the last 50 years.

The congress will highlight opportunities for engineering innovations across the food supply chains to add value and enable the sustainable manufacture of healthier food products for the global markets. Other relevant topics featured in congress the program include food security, novel food processing technologies, food systems engineering and modelling, food properties and packaging, nutrition and health, food education, food engineering innovations in Australasia, and many more.

The Congress is presented by the International Association for Engineering and Food (IAEF) with support from Engineers Australia and the Australian Food Engineering Association (AFEA) and the Australian Institute of Food Science and Technology (AIFST)."

http://icef13.com/

http://icef13.com/call-for-sessions/

The International Congress on Engineering and Food is being promoted in this edition as it is hoped that RES can put together a session in this international forum. For those interested, please contact Geoff Hurst as he will be interested to hear how you may like to contribute or be involved in promoting Risk Engineering in the food industry.

Interested in contributing to future editions of OPPORTUNITY—Risk Engineering News?

Please submit your article via email to:

res@engineersaustralia.org.au

CUT OFF FOR NEXT EDITION:

18 MAY 2018

Risk Engineering Society CPD Program 2018

RESERVE THESE DATES IN YOUR CALENDAR!

- 21 March— VIC—***Bushfire Risk Control*** (Co-hosted with the Society of Fire Safety)
- 22 May—NSW— TBA
- 23 May—VIC—***Innovation and Compliance in Asset Management*** (Co-hosted with CLM)
- 24 May—VIC—***Challenges in Managing Gas Systems*** (Co-hosted with WIE)
- 17-19 September—NSW—***Australian Engineering Conference 2018*** (AUSENGCON 2018) - https://ausengcon.com.au/
- 23-26 September 2019—***International Congress on Engineering and Food*** (ICEF13) - http://icef13.com/

REBOK

There will be approximately 4 CPD events in each Chapter during 2018 and it is intended that each of these will be broadcast as a webinar, making all 16 CPD events available to all RES members nationally.

Please join in and provide feedback on your ideas for improvement in delivery of this initiative. The webinars will be charge-free for non-host state participants through to July.

ICEF13 INTERNATIONAL CONGRESS ON ENGINEERING AND FOOD | *Engineering Innovations for Food Supply Chains*

AEC AUSTRALIAN ENGINEERING CONFERENCE 2018 ICC SYDNEY 17 - 19 SEPTEMBER 2018

ATTEND & GAIN CPD HOURS ENGINEERS AUSTRALIA

Risk Engineering Society

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Website: https://www.engineersaustralia.org.au/risk-engineering-society