OPPORTUNITY

Risk Engineering News

QUARTERLY NEWSLETTER– April 2019

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Risk Engineering Society

President's Welcome

Hello colleagues in RISK and welcome to OPPORTUNITY vol. 4.

Thank you to all those who have contributed to this and past Newsletters and also to those that are still working on items for future newsletters.

The Risk Engineering Body Of Knowledge (REBOK) Project Committee met this month to review the plan for 2019. I would like to thank Praneet Mehra for leading the REBOK Steering committee during 2018 and we are looking for a member to take on this lead role for 2019. Please contact res@engineersaustralia.org.au if you are interested or able to assist.

REBOK is consistently evolving and we are anticipating that we will make a formal release with promotion towards the middle of 2019. In the meantime, comments or contributions of RE knowledge are welcome by those visiting the REBOK. Each RES Chapter has a forward program of CPD many of which will have a webinar option so that they can be viewed nationally. This edition of OPPORTUNITY has an overview of the upcoming CPD program (Page 8). Please be patient with us while we deal with the "Uncertainty" of our expertise in delivering these national online and locally hosted events.

The RISK/PCC2019 Sydney conference has some great pre-conference workshop options and many keynote & invited speakers. The detail program is now announced on the conference webpage. To be sure not to miss out on this amazing International RISK conference, register soon as registrations are filling fast.

We welcome Risk Engineering news of interest from our wider membership for publication in the remaining 2019 editions of OPPORTUNITY. 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 page.

Regards
Geoff Hurst FIEAust CPENGNER CHOHSP
President

Risk Engineering Society

ENGINEERS AUSTRALIA

*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.

The Release of The 2nd *Edition of RES Contingency Guideline*

Despite decades of many studies and efforts to predict and/or reduce project cost overruns or schedule delays, major projects around the world continue to be significantly affected. Consistent, effective and efficient engineering approaches to uncertainty and risk assessment help businesses to better understand and quantify the range of possible consequences and the organisation's overall risk exposure. This empowers organisations not only to calculate the required contingency allowances for their desired confidence level but also to proactively manage the treatment and response actions for risks and opportunities, while making informed decisions and optimising their investments.

To address some of these challenges, the RES published the Contingency Guidelines 2nd Edition (2ECG) in Feb 2019. The Contingency Guideline provides a reference document for different practical approaches and guidance for determining, allocating and managing the most appropriate contingency (time and cost allowances) at different stages of the project and program lifecycle.

In addition to positive feedback from a number of government agencies and many subject matter experts, we are proud that our recommended method of First Principles Risk Analysis (FPRA) has now been recommended by the Department of Infrastructure, Regional Development and Cities (DIRDC) for modelling cost contingency calculation, particularly at the key project decision making points e.g. Final Business Case, for any project with value greater than $25m across Australia.

Furthermore, we are delighted that the UK's IRM through its Infrastructure Risk Special Interest Group, endorsed our Guideline, noting "This document provides a detailed review of the methods available for ensuring appropriate contingency allocations on projects, and guidance on how to apply these methods. The management of contingency is vital to ensuring the success of projects, and we support this body of work".

RES in collaboration with the Department of Infrastructure, Regional Development and Cities (DIRDC) is also planning a half a day masterclass workshop as part of our Risk Engineering and Project Controls Conference, 15 May 2019, ICC in Sydney. In addition to the RES Contingency Guideline, the DIRDC's Guidance Note 3A – Probabilistic Contingency Estimation v1 Nov 2019, will be discussed by DIRDC Representative(s). The GN3A is one component of the suite of documents that in aggregate, constitute the Department of Infrastructure, Regional Development and Cities cost estimation guidance.

Under current policy settings a probabilistic cost estimation process must be used for all projects, for which Australian Commonwealth funding is sought, with a total anticipated outturn cost (including contingency) exceeding $25 million. The GN3A establishes the principles for determining an appropriate project contingency allowance using a probabilistic methodology.

Geoff Hurst FIEAust CPENG NER CHOHSP
Risk Engineering Society (RES) National President

Pedram Danesh-Mand FIEAust CPENG NER
Risk Engineering Society (RES) NSW President

Take & Manage Risk To Achieve Project Success (Part 5)

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.

Following on from the September 2018 edition of 'OPPORTUNITY'
Part 5 will cover 'Organisational Trends'.

Artificial Intelligence, Robotics and Big data are growing in their influence and *impacting our societies at an exponential rate. The understanding of the human interface with that complexity, if it is to be effective, needs to change at the same rate; in addition, the humans in the system need to understand the philosophy and concepts of how these complex systems develop and can be operated. It is almost certain that this technological growth will continue in all fields of endeavour for the foreseeable future.*

Organisations and for that matter, the Safety leader, run the risk of drowning in this deluge of data. The OHS Professional should know and advise on what to look for rather than blindly record and measure anything that can be recorded and measured.

To do this effectively it is first necessary to better understand the organisations and/or problem in all its complexity and then deal with it.

In the next issue we will cover **part 6** 'Reflections on Safety"

What Is

Author: David Skegg

Resilience is often defined in the context of how a "system" behaves to recover from an abnormal circumstance, but resilient performance is more than that. A system is said to perform in a manner that is resilient when it can sustain required operations under both expected and unexpected conditions by variation of its functions prior to, or following events (changes, disturbances, and opportunities). Resilience engineering (RE) looks for ways to enhance the ability of systems to succeed under varying conditions.

Resilience is not a single quality as such, and *a system cannot be typified as "resilient" – it is better to describe the system performance as being resilient in a defined context.*

What do you need to have resilient performance?

There are four potentials needed to ensure resilient performance. They are:

- The potential to respond
- The potential to monitor
- The potential to learn
- The potential to anticipate.

The potential to respond

Knowing what to do, or being able to respond to regular and irregular events, changes, disturbances, and opportunities by activating prepared actions or by adjusting the current mode of functioning.

The potential to monitor

Knowing what to look for, or being able to monitor that which is or could seriously affect the system's performance in the near term – positively or negatively. Monitoring must cover the system's own performance as well as what happens in the environment.

The potential to learn

Knowing what has happened and why, and being able to learn from how the system responded to regular and irregular events, in particular to learn the right lessons from the right experience.

The potential to anticipate

Knowing what to expect, and being able to anticipate developments further into the future, such as possible disruptions, novel demands or constraints, new opportunities, or changing operating conditions.

If we accept this, we are left with the question of how to determine if a system will have a resilient performance in the expected and unexpected circumstances?

David Skegg

MSSc Grad Dip(OHM) Grad Cert(TE) Cert Bus Mgt(AMA) CertIV(A&T) CFSIA ChtProf(OHS) JP

An Introduction to Complexity and how it influences Risk Management

The fact is our working world is not getting any simpler, only more and more complex.

For most, this increased working complexity can be felt on an almost daily basis. Continually evolving technologies, product trends, consumer behaviours, data sets and stakeholder relationships all contribute to a working world which is growing ever more dynamic, unpredictable and systemically co-dependant.

Building on this observation, basic complexity theory teaches us that as systemic complexity increases, environmental rationality and predictability decreases - so much so, that at the highest levels of complexity there is wild environmental disorder (chaos). In turn, modern day risk professionals are now faced with a particularly ominous challenge; how to effectively control those disruptive phenomena (risks) known to emerge from within highly inter-connected operating systems, experiencing ever increasing frequencies of change, balancing on the edge of chaos.

Join Warren Black and Geoff Hurst on April 30th and May 7th for a series of RES member webinars discussing the concepts of complexity, systems thinking, disruption, emergence, chaos and what it all means for modern day risk management. Most importantly, join us as we collectively aim to tackle the fundamental question;

"What qualifies as (scientifically) valid risk management within highly complex, operating environments?"

To Register for this Webinar please click:

Session 1 on the 30th of April-Here

Session 2 on the 7th of May -Here

RISK ENGINEERING & PROJECT CONTROLS CONFERENCE 2019

PROJECT CONTROLS CONFERENCE 2019 PROGRAM OVERVIEW

WEDNESDAY 15 MAY 2019 I WORKSHOPS		
Room C3.1	Room C2	Room C3
Morning		
The application and use of NEC contracts in Australia **Steven Evans, CMC Asia Pacific**	AI in Planning & Scheduling of Major Projects **Dan Patterson, InEight**	Digital Engineering and BIM in Transport Projects **Simon Vaux, TfNSW**
Afternoon		
Critical Infrastructure Resilience: Building a More Resilient, More Sustainable Future **Darren Boulet, Department of Justice NSW & Chris Quin, Resilient Projects**	RES Contingency Guideline and DIRDC Probabilistic Estimation Guide Note **Pedram Danesh-Mand, RES** **Ben Du Bois, DIRDC**	Project Controls in Major Projects **Richard Palczynski, Arcadis & Chris Carson, Arcadis**

THURSDAY 16 MAY 2019	
Morning	
Opening Address	Australian Cost Engineering Society & Risk Engineering Society
Welcome Address	Mike McCloskey, KPMG
Keynote Addresses	Simon Vaux, Transport for NSW Melissa Jovic, Transport for NSW Joelle Mitchell, NOPSEMA Jacinta Hargan, KPMG
Panel Discussion	Matthew Felvus, APA Group Peter Tow, Western Sydney University Marc Allen, ARTC Pedram Danesh-Mand, RES
Afternoon	
16 concurrent presentations through 4 streams; Risk Engineering & Culture, Planning & Scheduling, Integrated Project Control, Contract & Commercial Management	
Panel Discussion	Joelle Mitchell, NOPSEMA Jennifer Blyth, Country Fire Authority Susan Jaques, Sage Consulting Solutions Beck Dawson, City of Sydney

FRIDAY 17 MAY 2019	
Morning	
Keynote Addresses	Dan Patterson, InEight Chris Carson, Arcadis Katharina Gerstmann, BECA Richard Palczynski, Arcadis
Panel Discussion	Ian Gray, Department of Transport and Main Roads (DTMR) Steven Kastanias, Calcutta Group Marlies Friese, Sydney Metro Wes Johnston, John Holland
Afternoon	
16 concurrent presentations through 4 streams; Risk Engineering & Culture, Planning & Scheduling, Integrated Project Control, Contract & Commercial Management	
Panel Discussion	Andrew Ferguson, Risk Decisions Glen Love, City of Port Phillip Amina Omarova, Aurecon Ian Thomas, I F Thomas & Associates
Conference Close	**The registration is now open. https://risk-pcc19.com.au/**

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- ENGINEERING HERITAGE AUSTRALIA AWARDS
- MECHANICAL COLLEGE AWARDS
- NATIONAL COMMITTEE ON AUTOMATION, CONTROL & INSTRUMENTATION (NCACI) AWARDS
- NATIONAL COMMITTEE ON COASTAL & OCEAN ENGINEERING (NCCOE) AWARDS
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- WOMEN IN ENGINEERING AWARDS

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RISK ENGINEERING & PROJECT CONTROLS CONFERENCE 2019

ICC | SYDNEY | AUSTRALIA | 15 – 17 MAY 2019

2019 CPD Program

Continuing Professional Development (CPD)

For EA members, RES Technical presentations contribute to your CPD. Ensure you register for the events and sign the attendance register.

State	Proposed Event Title	Event Type	Proposed Date
REBOK	"What Qualifies as (scientifically) Valid risk management within highly complex operating environments?"	Webinars (Two in total)	Session 1-30th April Session 2-7th May
NSW	Risk Engineering and Project Controls Conference (jointly with Australian Cost Engineering Society)	Conference - jointly with Australian Cost Engineering Society	15-17 May, 2019
QLD	Australian Rail Risk Model	Seminar	April
QLD	Recent Developments in Hazard Identification	Seminar	June
WA	Mock – Up workshop HAZOP/ RA, HAZOP Preparation / HAZOP execution.	Workshop	June/July
NSW	Effective and Efficient Risk Treatment Strategies – Q&A Panel Discussion Session	Q&A Panel Discussion Session	30 July
VIC	Construction High Risk Work Compliance	Co-hosted with the Australasian Tunnelling Society, Joint Victorian Chemical Engineering Committee and Civil College.	23 July, 2019
QLD	What's happening in risk engineering research?	Seminar	August
NSW	RES Contingency Guideline Edition 2	Learning Session	24 September
WA	Autonomous Systems: What are the risks		September/October
VIC	Unchecked & Not Scrutinised Equipment in the Market: What are the Risks?	Co-hosted with the Joint Victorian chemical Engineering Committee and Mechanical College.	16 October, 2019
NSW	Decision Trees and its Applications in Risk Engineering Based Decision Making		27 November, 2019
VIC	Risk and the Engineer Entrepreneur	Co-hosted with the Engineers Without Boarders. Joint Victorian Chemical Engineering Committee and Young Engineers Australia	11 December, 2019

ATTEND & GAIN CPD HOURS
ENGINEERS AUSTRALIA

RES COMMITTEE

Geoff Hurst (President)

Brian Truman (Immediate Past President)

David Cox (Treasurer)

Pedram Daneshmand (NSW)

Subhash Dang (ACT)

Timothy Rigby (Victoria)

Kevin Foster (Weston Australia)

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