Risk Attitudes in the Construction Industry

- Avoidance Does Not Work -

Patrick Weaver PMP, FAICD, FCIOB.
patw@mosaicprojects.com.au

See also: **A Simple View of Complexity in Project Management**
www.mosaicprojects.com.au/Resources_Papers_070.html
The Meaning of Risk in an Uncertain World
www.mosaicprojects.com.au/Resources_Papers_040.html

Introduction

- Structure of Presentation
  - Case Studies
    - Wembley Stadium
    - Terminal 5 – Heathrow
  - Understanding Risk
  - Variability in Estimates
  - Conclusions

Case Study #1 Wembley Stadium

The owner WNSL entered into a 'Guaranteed Maximum Price' contract with 'Multiplex' to design and build the stadium for £326 million.

Case Study #1 Wembley Stadium

- The consequences of Multiplex's 'low bid'
  - £150 million loss
  - Multiple disputes with subcontractors
- The failure of 'contracting out' of all risk
  - WNSL lost £430 million
  - Stadium completed 18 month late
  - Everyone 'walked away' from the fight!

Case Study #1 Wembley Stadium

- The detrimental impact of 'feedback loops' making a bad situation worse:
  - Multiplex's management became focused on 'the fight' to save/recover time and cost
  - The GMP contract "left no flexibility for problem-solving" (WNSL)
- **But the opening was a great success!!**

Case Study #2 BAA 'Terminal 5' (Heathrow)

£4.3 billion. Built on time and on budget. Highly innovative contracting system

Case Study #2
BAA 'Terminal 5' (Heathrow)

- BAA accepted **ALL** construction risks
  - Innovative project wide insurance
  - Paid for builders errors and mistakes
- The BAA 'risk attitude' (alliance contracts)
  - Confront and manage risks early
  - Invest in communication and team building
  - Reward success (but don't punish mistakes)

Case Study #2
BAA 'Terminal 5' (Heathrow)

- Focus on the terminal roof

Case Study #2
BAA 'Terminal 5' (Heathrow)

- Terminal roof identified as a **Major Risk**
  - BAA paid for a prototype built early off site to understand 'the risks' (cost £2.4 million)
  - Improved erection processes were identified (serendipity)
  - Major cost and time savings achieved in the erection of main roof (3 months and £millions)

Case Study #2
BAA 'Terminal 5' (Heathrow)

- During construction BAA worked to mitigate Negative issues and exploit opportunities
- Construction risks were managed proactively
  - But these are tangible
  - The industry understands its risk profile
- **Then there was the opening!!!!**

Case Study #2
BAA 'Terminal 5' (Heathrow)

- **What went wrong?**
  - BAA (builder) has problems with the baggage handling software (control systems)
    - Inadequate testing under full load **? New owners saving costs?**
  - BA (operator)
    - Did not train staff properly
    - Did not test peripheral systems (staff car parking)
    - Did not have fallback plans and spare staff

Case Study #2
BAA 'Terminal 5' (Heathrow)

- **What went wrong and why?**
  - The 'Halo Effect' – great project, nothing can go wrong (but it did)
  - BA management appear risk averse / ignorant
    - Did not plan properly (where were the contingencies?)
    - Ignored warning from staff (not adequately trained)
    - Appeared to focus on 'saving money'
  - The cost to date: over £20 million + Reputation

The Case Studies

- During construction:
  - BAA actively managed its risks
  - WNSL tried to avoid 'all risk'
- At the opening:
  - WNSL celebrated a great stadium (but stadiums are relatively simple)
  - BA and BAA created a disaster through
    - inadequate planning and testing, and
    - inadequate risk management

The Case Studies

- Both are great buildings: but the **Risk Attitudes** of the three organisations heavily influenced outcomes
- One of the key problems with most management cultures is their inability to live with uncertainty (risk agnostics?).
- They expect people working for them to guarantee the future……

Understanding Risk

- PMBOK Definition:
  An uncertain event or condition that, if it occurs, has a positive or negative effect on a project's objectives
- Key elements
  - Uncertainty + Effect
  - Risks = Uncertainties that matter!

Understanding Risk

- Dimensions of uncertainty
  - Positive -v- Negative (manage both)
  - Variability -v- Events (or 'knowns')
  - This paper is focused on variability

Understanding Risk

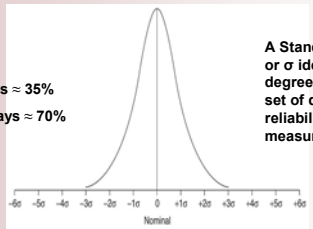
- Understanding and managing variability
  - **Every** process has inherent variability
    - Variability in cost estimating
    - Variability in scheduling (time estimating)
  - **Variability is not a 'risk'!**
  - The uncertainty is how much variability?
  - And the 'risk' is the level at which the variability starts to matter

Understanding Risk

- **Every** process has inherent variability
- **Normally** this follows a normal distribution

1 SD Always ≈ 35%

± 1 SD Always ≈ 70%



A Standard Deviation, or σ identifies the degree of error in a set of data, not the reliability of one measurement!

Managing Variability In Estimates

- Every estimate is wrong!
- But how many managers expect accuracy?
- Identifying the likely range of outcomes
  - Based on the PMBOK
    - ROM = -50% to +100%
    - Detailed cost estimate -10% to + 15%
  - Schedule estimates are significantly less accurate

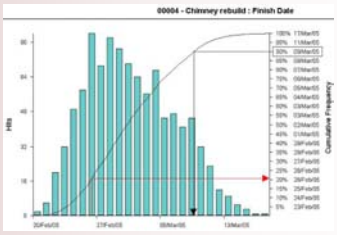
See: ***Float - Is It Real?*** www.mosaicprojects.com.au/Resources_Papers_043.html

Managing Variability In Estimates

- Factors to reduce variability
  - Knowledge of the work being estimated (data)
  - Well defined processes (precision)
  - Time to check evaluate and review (QA)
- Realistic acceptable risk limits
  - +/- 5% is not realistic
  - Proper contingencies are needed

Managing Variability In Estimates

- How 'safe' is acceptable?
  - Too safe and you don't get the job
  - Too optimistic and you lose $$$$$$$$$



Conclusions

- All projects are 'risky' ie, the outcome is uncertain
- Attempts to avoid 'all risk' are impossible and doomed to fail
- Managing risk is safer than ignoring risk
- Balancing risks and rewards is the key to success

Conclusions

- The key is a mature risk attitude
  - At all levels of management
  - But appropriate to the organisation
- 90% of 'risk' is about people
  - People create risks (Stakeholders)
  - People perceive risks (managers)
  - People accept, manage or avoid risks

Questions Please

More risk management papers see:
www.mosaicprojects.com.au/Resources_Papers.html#Risk

Email: patw@mosaicprojects.com.au