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GIRO40

8 – 11 October, Edinburgh



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Would you fly Air Actuary?

IFoA Working Party:

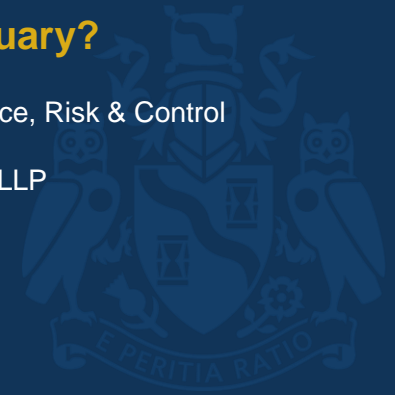
Spreadsheet Models: Governance, Risk & Control

David Edison, Moore Stephens LLP

Steve Hill, LCP

Richard Kelsey, Equity Group

Dr Heidi Whitlow, GAD





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Introduction

David Edison

Mentorship
 Thought leadership
 Progress
 Community
 Seasonal Meetings
 Education
 Working parties
 Volunteering
 Research
 Shaping the future
 Networking
 Professional support
 Enterprise and risk
 Learned society
 Opportunity
 International profile
 Journals
 Support

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Introduction

- Spreadsheet models are great
- FSA's internal model approval findings:
 - “End User Computing tools, especially spreadsheets, were in common use in most internal models, and nearly all the data reviews identified issues with them. In most cases, the issue was inadequate compliance with existing EUC policies and standards. Firms often did not have an inventory of critical spreadsheets classified by use, by the impact on the internal model, and by complexity....”
 - “...Where End User Computing tools, such as spreadsheets, are material to the internal model data flow, we will be looking for appropriate controls for data quality such as reasonableness checks, input validations, peer reviews, logical access management, change and release management, disaster recovery, and documentation.”
 - “Automation of spreadsheets reduces the risk of manual error, but can also introduce different problems such as reduced oversight, inadequate transparency about the extent of linking and proliferation of nested linked spreadsheets. Linked spreadsheets typically pass only single numerical values, without an indication of the date of last update, creating the risk of passing stale data around the system.”

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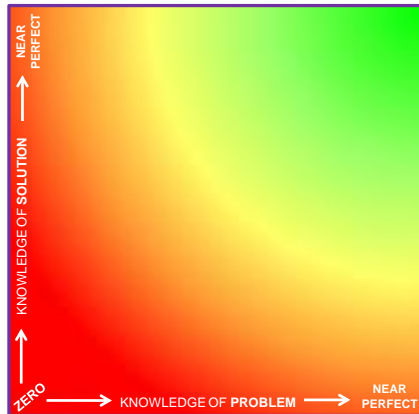
Introduction

- Many spreadsheets have problems
- Would you fly if there might be a problem with your plane?
- Firms have documentation and process for model operation, but don't always follow it
- If you knew your plane hadn't been checked, would you fly?

Introduction

- We have the ability to build models
- With ability comes responsibility
- Regulators are finding faults in our models
- How often do we reluctantly check, only to find a problem?
- If we don't sort the problem ourselves, the regulator is going to do it for us
- So, how can we improve our models?

Introduction – the problem / solution chart



- Understand
- Model types and risks
- Reducing the risks
- Not just spreadsheets
- Not just internal models
- Not just actuaries

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Model types and risks

Richard Kelsey

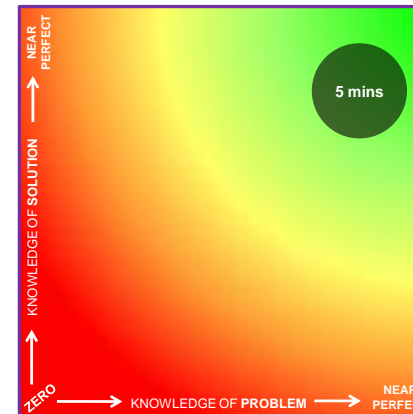
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Model types and risks: introduction

- For this discussion we assume a spreadsheet environment, though relevant to almost all similar modelling environments
- Much of an actuary's work is fully or partly bespoke
- Many tasks are short in duration and small enough to make project management 'overkill'
- Other projects are more complex – useful to plan or sketch
- Reserving or capital modelling tasks – part process, part project
- Following charts show broad, preliminary indication of potential level of risk

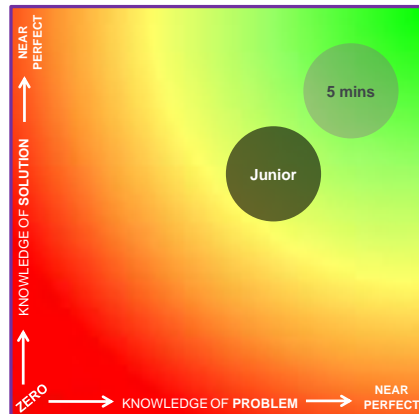
Model types and risks: the 5 minute job



Self Build, Self Use

- Key features:
 - Identified, simple outcome
 - Know roughly how to do it
 - Less than 2 hours to produce
 - Checked and tested 'as it is built'
- Key risks:
 - Copy and paste data errors
 - Parameter data entry error
 - Logic/flow error
- Minimum standard:
 - Logic flow: left to right / top to bottom
 - Distinguish Parameters from 'Formulae'
 - Data Summary/Checks
 - 3 sentences: 'what model does'

Model types and risks: delegated to junior



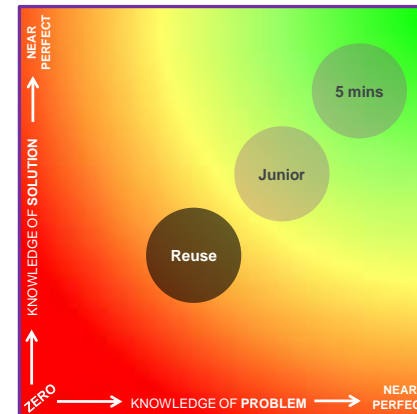
Done by colleague

- Additional issues:
 - Outcome not clear to builder
 - Builder may not know how to do it
 - “Chinese whispers”
 - Documentation
 - simple spec
 - logic explanation
 - check/tests

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Model types and risks: re-use earlier model



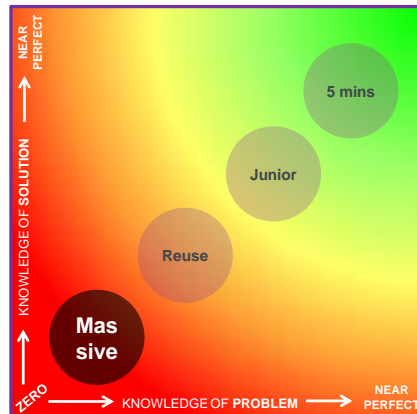
Recycling

- Additional issues:
 - Is it actually still relevant?
 - Almost no checking (it worked last time)
 - Forgotten logic / flow
 - Is the old documentation good enough?
 - Identify changes made – what and why
 - How to check changes and document

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Model types and risks: the massive project

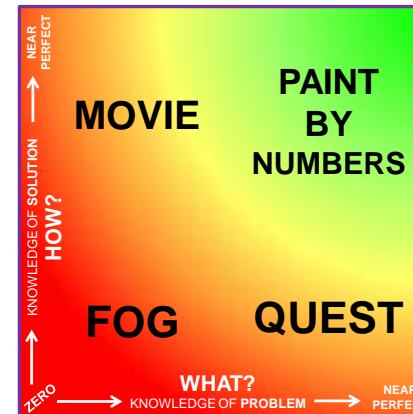


- Additional issues:
 - How big?
 - Project planning and structure?
 - Executive sign off?
 - Multiple sub-modules – each module:
 - has separate inputs, logic, outputs
 - has interfaces – working and compatible?
 - checked as standalone and combined

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Model types and risks: types of project



- PROJECT DEFINITIONS FROM EDDIE OBENG: <http://www.leadershipthoughts.com/knowledge-articles/4-types-of-project/>
- 4 types of project:
 - Quest
 - Painting By Numbers
 - Fog
 - Movie
- Risk varies by type of project
- Projects change to painting by numbers as they progress
- Break down into bitesize chunks
- Project manage it - don't wing it

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Understanding and controlling the risks

Steve Hill & Heidi Whitlow

Understanding and controlling the risks

- Making an honest assessment
- Mitigating some of the development risk
- Maintaining models & planning to retire

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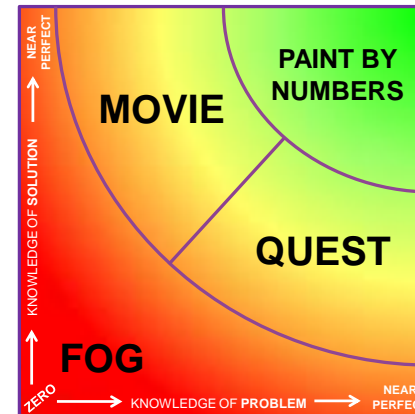
Making an honest assessment – Problem & Solution

- How well do we understand the problem?
 - Can we explain the problem without referring to the solution?
- How confident are we in our proposed solution?
 - Can we confidence rate the solution before it's built?
- Rating the problem and the solution
 - How is the undertaking best characterised <where on the chart>?

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Making an honest assessment – Problem & Solution



Initial assessment

- Where does our problem and solution analysis land us?
- Does the characterisation fit our instinctive feel for where it should be?
- Could we improve its position?

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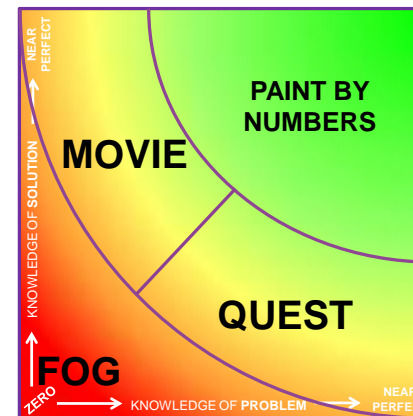
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Make an honest assessment - Implementation

- Project responsibilities and approach
 - Is our project management effort proportional?
 - How do we test and assess our models?
- Technology & People
 - Are we using the best tools for the job?
 - Do we have access to the right people?
- Past experience
 - Are there any lessons to be learned?

The **quality** of the model is directly related to the **quality** of the implementation.

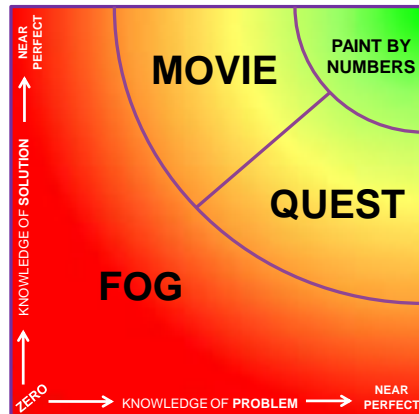
Make an honest assessment - Implementation



Positive assessment

- Paint By Numbers area expands to cover a greater number of projects
- While Fog reduces in size
- Overall reduction in risk by way of good implementation practices

Make an honest assessment - Implementation



Negative assessment

- Paint By Numbers area shrinks
- While Fog increases in size
- Overall increase in risk even for the more simple, easy to define endeavours

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Mitigating some of the development risk

- Model design & principles
 - Set some guiding principles
 - 'Just enough' design
- Testing
 - What, when & who?
 - Independence
- General good practices
 - Good developer practices
 - Multi disciplinary teams

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Maintaining models & planning to retire

- Relevance of model
 - Fit for original purpose
- Creeping obsolescence
 - Knowing when to retire your model
- Succession planning
 - Consider a replacement while the current model is still around



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Conclusion

David Edison
What have we learnt?

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Conclusions – what have we learnt?

- Spreadsheets ~~are~~ ^{can be} great
- Step back and think
 - Understand the problem
 - Understand the solution
 - Understand the path
- We don't know everything
- Not just about ability – also process and checking
- Get it right first time and make sure it stays right

Conclusions – what have we learnt?

- Self regulate
 - We need to take responsibility or somebody else will
- Not a checklist
 - Just a process suggestion
 - These activities scale up as well as down
 - Not all activities are needed for every model build
 - Consider each activity
- Governance and control tools for spreadsheets have a place

Conclusions – what have we learnt?

- Be proportionate
 - Be mindful of regulators' comments
 - But model needs to work
 - We still need to be right
 - Even if we were only flying for 30 seconds, we still have to check our plane



Expressions of individual views by members of the Institute and Faculty of Actuaries and its staff are encouraged.

The views expressed in this presentation are those of the presenter.