



Actuarial Processes and Controls

Presentation to the Society of Actuaries in Ireland

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Alexander Hotel, 24 April 2007

ADVISORY

Introduction

Agenda

- Introduction
- Background to SOX , FSA and local actuarial developments
- Risks associated with actuarial reported figures
- What is best practice?
- Conclusion and Q&A

'30s
Wall Street crash

'70s
Pergammon, Lonrho

1990
Thatcher boom

2000
**Internet, globalisation,
complexity, Enron, Parmalat etc**

SEC

SSAPs

Ryan, Cadbury, ASB

**Sarbanes Oxley, Revised
Combined Code, IAASA**

Background SOX

Dishonest corporate leaders
will be exposed and punished
George Bush



Paul Sarbanes

We have new legislation in the US,
the Sarbanes Oxley Act, which has
some consequences over here as
well as over there. With their usual
generosity of spirit, the Americans
have ensured that a number of
provisions apply to overseas
companies as well as their own
Howard Davies

As a general rule of thumb,
any bill that passes the United
States Senate 97-0 is probably
a horrible idea
US CEO



Mike Oxley

One thing I can say about the
Sarbanes Oxley Act is that
when your name is attached
to a law, you have a big
incentive to make sure it
works
Michael Oxley

Background SOX



- The Act attempts to rebuild trust and restore confidence in capital markets by (amongst others)
 - creating a Public Company Accounting Oversight Board (PCAOB)
 - reinforcing auditor independence
 - enhancing corporate responsibility and the Audit committee role
 - upgrading financial disclosure
 - creating criminal penalties and enhancing white collar crime penalties

.....and Section 404 Management's Internal Control Report

Section 404 Management's Internal Control Report

- Issuers have to include in each annual report a management report on internal control over financial reporting that contains the following elements
 - A statement of management's responsibility for establishing and maintaining adequate internal controls over financial reporting for the company
 - A statement to identify the framework used by management to evaluate the effectiveness of internal control
 - Management's assessment of the effectiveness of internal control over financial reporting as of the end of the issuer's most recent fiscal year that includes a statement as to whether or not the issuer's internal control over financial reporting is effective
 - A statement that the issuer's independent auditor has issued an attestation report on management's assessment of internal control over financial reporting

Background

SOX 404 –Insurance Case Study

Extracts from status update: Progress – Actuarial Test of Effectiveness

Overview

- The actuarial processes in BBB are extremely complicated and involve many judgemental areas in which there are wide range of possible and permissible outcomes.....

Deficiencies identified to date

- Actuarial – as summarised on page x, in January y issues were reported, any one of which, if unremediated, could lead to a potential significant deficiency....

Timing of our remaining procedures

- Actuarial – Dept Z; a new control structure was put in place in the Z area during our review, which needs to be embedded and operational before we could perform our review....

Potential deficiencies identified

- See table on page [] To be updated when work is complete.

Departures from group guidance

- As previously agreed with the central SOX team, management have self certified the effectiveness of internal controls over financial reporting in the actuarial area.....

Comments on management's testing

- Actuarial - As management performed self certification, it was necessary to spend a significant amount of time discussing the processes with the staff within Business Units. Risks and issues for consideration during 2006

Issues that arose from our TOE work

- Provision of training to staff
- US GAAP knowledge

Background

SOX 404 – Life Insurance Case Study

Extracts from status update (cont): Summary of material open issues - Actuarial

Potential Significant Deficiency			Agreed Management Action	Current status	Issues remains open / Issue Closed
Open issues from Test of Design phase	Inadequate docs	Lack of final basis note evidence for ROI and US GAAP	<ul style="list-style-type: none"> Management agreed to remedy for 2005 Year End 	<ul style="list-style-type: none"> The team are reliant on downwards communication for this control and no communication structure had been finalised by the 2005 YE, although this is planned to be addressed for YE 2006 	<ul style="list-style-type: none"> Open
	Inadequate controls or docs of User Developed Apps	No periodic review of the logic / formula used in the spreadsheets used for US GAAP and ROI GAAP reporting	<ul style="list-style-type: none"> It is understood that the SRP scheduled for 2006 will cover this area. 	<ul style="list-style-type: none"> See left 	<ul style="list-style-type: none"> Open
Open issues from Test of Operational Effective			US GAAP model	<ul style="list-style-type: none"> The lack of clear documentation and understanding of the model remains a key risk which does not appear to be fully controlled 	
	Inadequate controls over data	Actuarial data feeds	<ul style="list-style-type: none"> At present there appears to be a gap between the IT process and the actuarial processes 		<ul style="list-style-type: none"> Open

Background

SOX 404 – Life Insurance Case Study

Extracts from status update: Appendix 1 Issues from TOE identified - Actuarial

During our review of management’s documentation and testing we have identified no potential material weaknesses, and [to discuss] potential issues that could potentially give rise to a significant deficiency if not remediated (these are referred to previously on page x).

We also identified 294 areas where documentation or controls could be improved. It is not felt that these could lead to a significant deficiency as the over-riding detective controls in place are strong enough to prevent this. However for completeness they are identified here. 152 items are where documentation and actual practice diverge – we have satisfied ourselves as to the efficacy of actual practice. Of the 33 Operating Effectiveness issues, 17 are in respect of missing evidence of control performance - we have satisfied ourselves that these controls are taking place. Other issues have been raised with management and been remediated, or remediation plans are in place for 2006.

The table below summaries the nature of the areas for improvement identified. Note, we have not repeated issues identified by management.

Process	Number of inconsequential Design deficiencies identified during the Test of Design phase	Number of inconsequential Operating effectiveness deficiencies identified during the Test of Operating Effectiveness phase	Number of inconsequential Documentation deficiencies identified	Total number of inconsequential deficiencies identified
Actuarial – a	30	9	27	66
Actuarial - b	14+	6+	24+	44+
Actuarial – c	24	4	9	37
Actuarial –Consolidation	11	3	27	41
Actuarial - d	28	10	60	98
Actuarial – e	2	1	5	8
	109	33	152	294

- APER principle 7:
 - An approved person ... must take reasonable steps to ensure that the business for which he is responsible has operating procedures and systems which include well-defined steps for complying with the detail of relevant requirements and standards of the regulatory system and for ensuring that the business is run prudently.
- PRU1.4.29:
 - ... internal controls should normally be concerned with ... ensuring the reliability and completeness of all accounting, financial and management information
- SYSC 3.1.1 (R)
 - A firm must take reasonable care to establish and maintain such systems and controls as are appropriate to its business

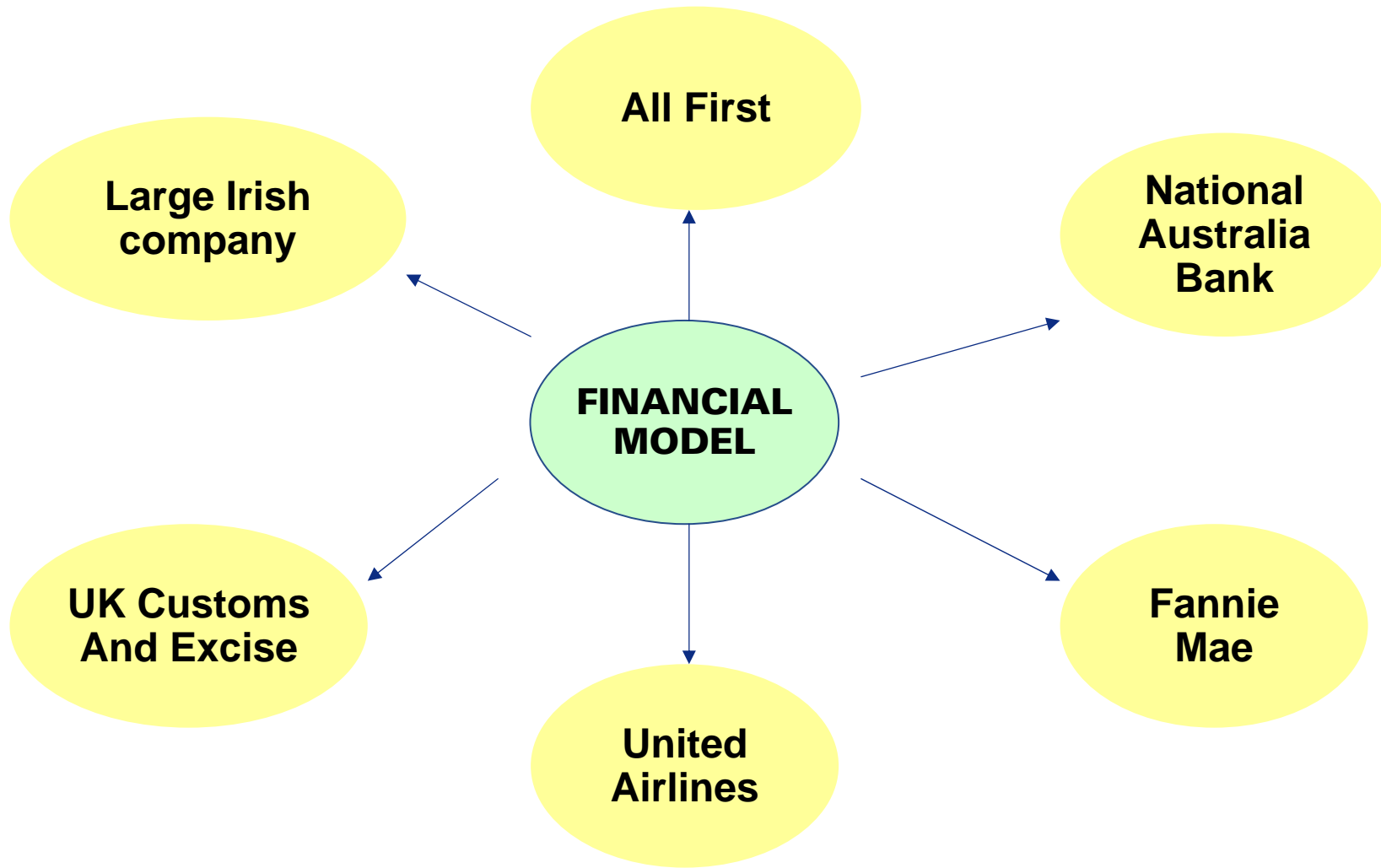
Principles based approach to implementation (compared to SOX framework)

Background

Other Drivers

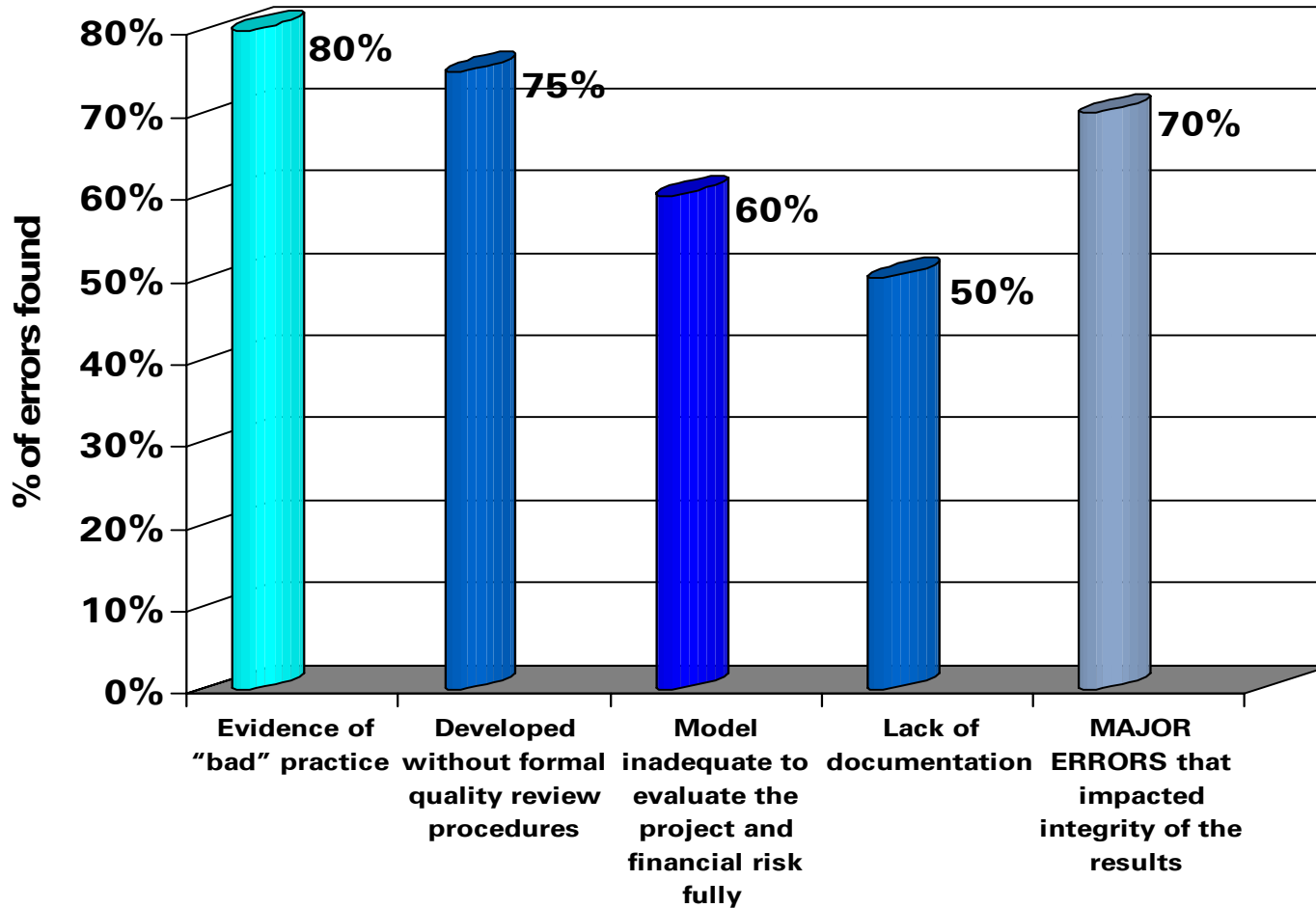
- Development of 'SOX-lite' initiatives for public interest entities
 - Further US Regulatory led change (NAIC)
 - EU Corporate Governance developments
- IAASA – final form
- Scope of external audit for life companies to be extended (and interaction of role of the Appointed Actuary)
- Regulatory environment
 - Current regime
 - Solvency II and implications for 'capital add-ons' on assessing governance and risk framework in an organisation
- Peer Review
 - Informally being carried out
 - Pension Scheme actuaries – ASP-Pen 10
- Cultural differences

Risks associated with financial models

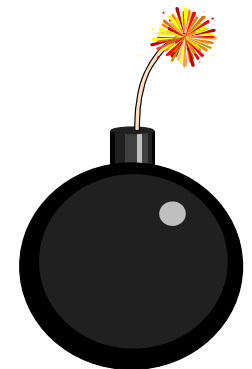


For more stories, see www.eusprig.org

KPMG Survey Errors in Models



x A key finding of a KPMG survey was that over 70% of models presented for review had major errors impacting on the integrity of the results.

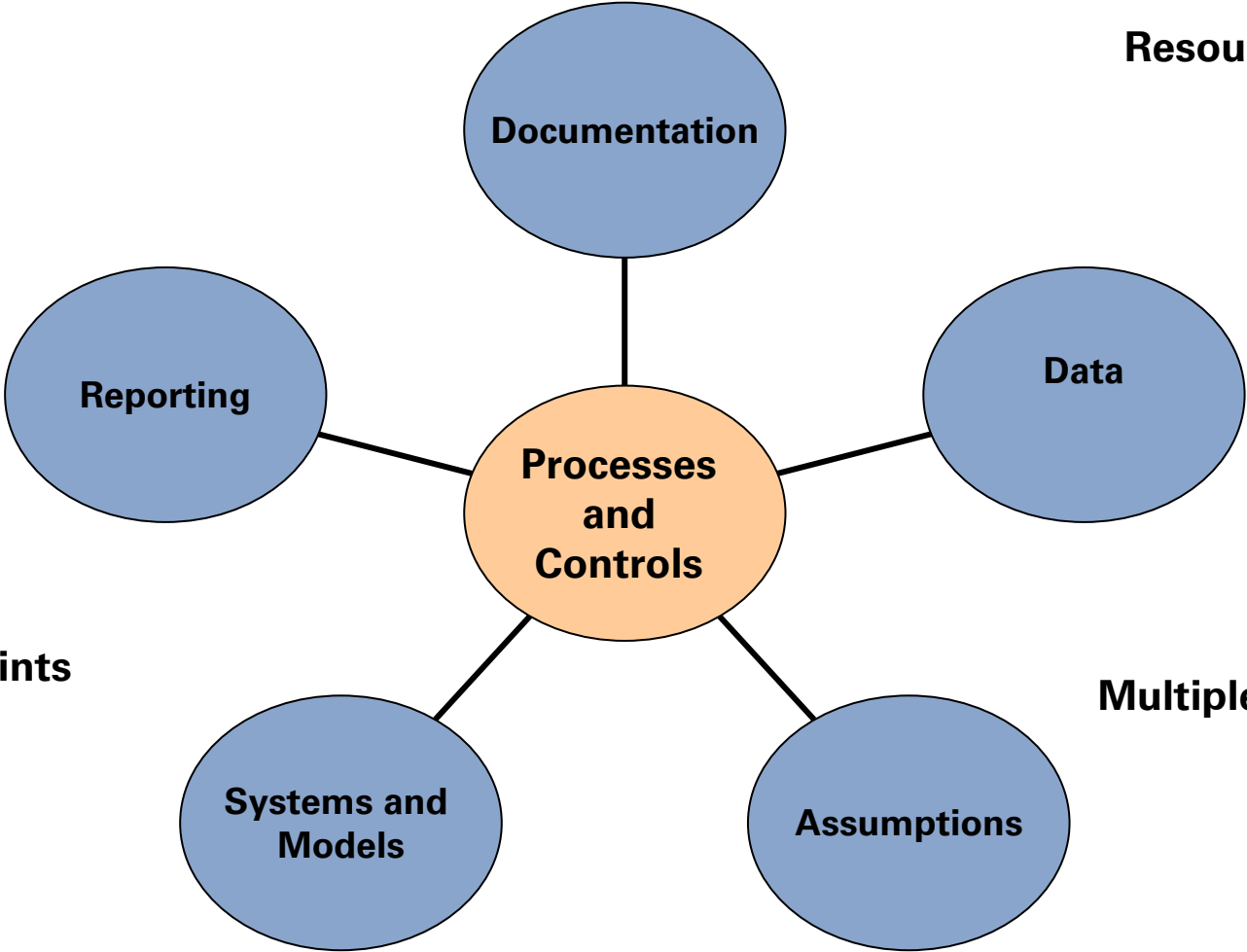


Risks associated with actuarial reported figures

Key areas of focus

Deadlines

Resources



System constraints

Multiple priorities

Risks associated with actuarial reported figures

Our observations from my team's work over the past 9 months

- Documentation
 - Poor documents to support some key judgments
 - Methodology updates and changes not fully documented – incomplete email trail
 - Decisions signed off on by Board based on estimates where final figures materially different
- Data
 - FRS17 exercise; changeover in pension actuary.....
 - Data extraction omitted some data not picked up for a couple of weeks
 - Miscommunication between TPA and Company in split of data for IFRS purposes between Insurance and Investment business

Risks associated with actuarial reported figures

Our observations from my team's work over the past 9 months (cont)

- Assumptions

- Data duplication in experience investigation, lapse experience appeared better than it was
- Lack of support for assumptions

- Models

- Incorrect reinsurance rates
- Incorrect model code set up in new software to allow for select/ ultimate mortality rates
- Incorrect input assumptions in model
- Change in model effect significantly different at YE due to limited analysis at time of change so significant time spent verifying change was correct

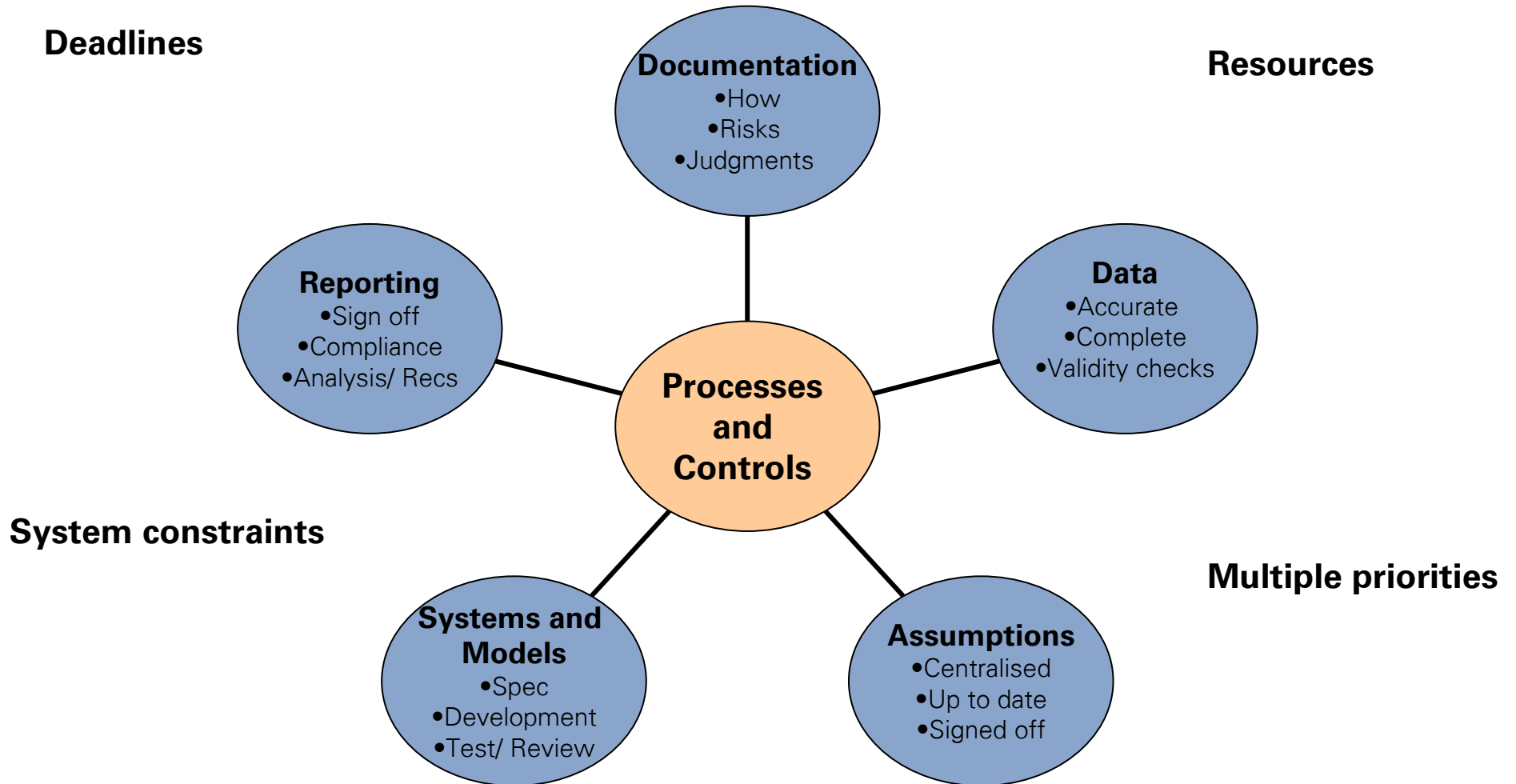
Risks associated with actuarial reported figures

Our observations from my team's work over the past 9 months (cont)

- Spreadsheets
 - Consolidation summing errors/ extraction errors
 - IFRS adjustments – hard coding, factors not updated
 - Estimates not updated with actual information
 - Errors in manual reserve calculations e.g. hard code not updated from last year
 - Adding figures in €'000s to figures in €'s!
- Reporting
 - Incorrect accounting information used in analysis of surplus
 - Commentary out of date
 - Lack of challenge to numbers provided by overseas subsidiaries to local entity
 - 'Stopped digging' in reconciliation early in the process but late unreconciled appeared
 - Turnover etc – lack of familiarity with processes etc so work not completed

Good Practice

Key areas of focus



Good Practice Documentation

- 3 specific types of documentation:
 - Procedures/ manuals - ‘how to run something’/ reproducibility of tasks
 - Usually out of date => can’t repeat task
 - Processes/ controls – risks, reliability of process, judgments involved, level of oversight
 - Not done, reliance on external audit
 - Judgments e.g. if it’s necessary to justify an opinion it must be documented
 - Typically more detail required than currently provided
 - Audit trail/ consistency of judgment

Good Practice Data

- Level of review
 - '4-eye' review
 - 2nd person oversees manual non automated processing
- Data Integrity Checking
 - Few produce actual report
- Extraction process
 - Reasonableness checking of data extract vs previous year
 - Reconciliations between data extract and independent reports from Admin system
 - Reconcile data totals to source data (numbers, premiums, age etc etc)
- Sign off – responsibility – IT/ Actuarial?

Good Practice Assumptions

- Sign off Basis Document
- Assumption setting methodology documented
- Audit trail to experience investigations (timely)
 - Data standards around data feeding into the experience investigations
 - Controls over any calculations etc
- Cross reference/ checklist to Standards/ Guidance etc
- Input assumptions
 - Checking
 - Manual input vs automated
 - Transparency

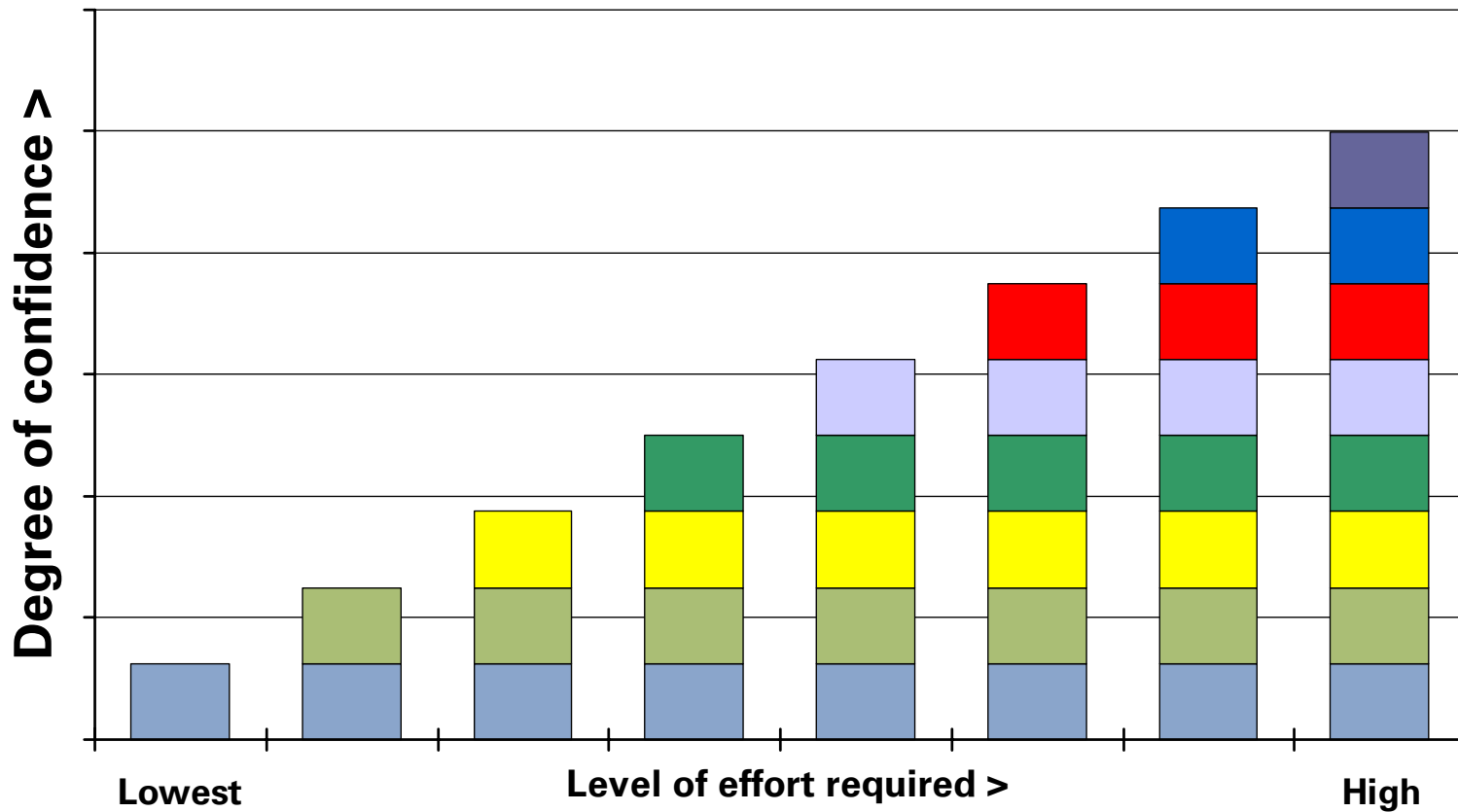
Good Practice

Systems and Models

- Documentation, testing and sign off of new/ updated valuation models
 - Evidence that system is reliable and be capable of reliable repetitive operation – difficult to treat systems as reliable if they are regarded as ‘black box’
 - Backups pre change
 - Independent test that actual effect close to expected
 - Regression test
- IT change management procedures
- Periodic testing of models to confirm design and output still appropriate and accurate
- Operational controls
 - Completeness checking of model output e.g. log files, skipped policies
 - Results checking
 - Regular backups
 - Version controls

Good Practice

Reliance on Systems - review of models



Important that thresholds are established for determining scale of review depending on the level of reliance.

- Structural review
- High level reasonableness review
- Test results with known data
- Limited review of key areas
- Logical accuracy review
- Accounting, tax and other technical review
- Test case scenarios
- Replication of model

Good Practice Systems and Models

- UDA i.e. spreadsheets
 - Inventory of spreadsheets
 - Evaluate use and complexity of spreadsheets
 - Determine necessary level of controls for “key” spreadsheets
 - Access controlled
 - Cover sheet documenting purpose and operation of spreadsheet
 - Control sheet tracking all changes made to spreadsheet
 - Formulae cell/ ranges protected (where appropriate)
 - Cell types highlighted differently e.g. inputs/ outputs
 - Understand use of linking
 - Built in checks
 - Formalised periodic spreadsheet review process

Good Practice Reporting

- Internal peer review (outside of team?) on different aspects e.g. Basis
- Analysis of surplus
- Reviews and reconciliations of results
- Consistency and visibility of checking
- Commentary
 - General Insurance guidance on reports

Conclusions

- Entities (without SOX or other regulatory drivers) behind in terms of best practice
- Some do some things very well though few do all well
- Resource constraints that limit ability to complete tasks effectively e.g. '4-eye' review/ documentation
- Who is going to force change on actuaries?
 - Incremental improvement on back of (internal/ external) peer review/ independent reviews/ audit
 - Solvency II through either Pillar I Internal Model requirements or Pillar II risk management and governance framework (with the regulatory overhang of capital additions)
- Why might you want to step change?
 - Efficiencies in the longer term
 - Reporting time pressures e.g. Fast Close

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