ERM: Some practical implications for actuarial functions

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28 March 2011
Agenda

- Typical actuarial systems (a few years back)
- New ERM requirements driving change
- Shifts required to meet new challenges
- Closing thoughts
Typical actuarial systems (a few years back)
Actuarial systems have typically grown organically

This has resulted in a very complex, poorly documented maze of models, tasks and processes

- Model and process risk
- Many manual, repetitive tasks, lots of re-work
- Key-person risk
- Difficulty in on-boarding new team members
- Limited end-to-end understanding of tasks
- Duplication of tasks
- Reduced ability to deliver on requirements and add value to the business
- Time spent on calculating numbers rather than delivering insights and adding value
- Slow and difficult to change
A closer look at Liberty’s actuarial process flows a few years back

- Multiple data sources – non-standardisation, normalisation
- Separate data transformation processes (DCS)
- Multiple modelling systems per data stream
- Little integration of asset and liability data
- Significant spreadsheet use
- No formal systems development life cycle

These systems and processes were operated in a desktop environment with limited IT involvement.
New ERM requirements driving change
Economic capital is central to ERM

**Risk Management**
- How much risk do we want to take?
- What risks are in our business?
- How do we measure risks?
- What is our risk profile?
- How should we allocate our “risk budget” to different types of risk?
- How do we ensure we stay within risk limits?
- What is the most efficient organisation to monitor risks?

**Capital Management**
- How much capital should we hold?
- How can we optimise return on capital?
- Which business activities should we use our capital for?
- How should we distribute capital to business units or product lines?
- How well is capital being used?
- How can we measure performance?

**Economic Capital Requirement**

**Policyholders**

**Shareholders**

[ACTUARIAL SOCIETY OF SOUTH AFRICA]

QUANTIFYING RISK, ENABLING OPPORTUNITY
Regulatory and business demands driving ERM implementation

Objective

- Business requirement for:
  - More active (and proactive) risk and capital management
  - Quantification of risk (e-cap)
  - Risk adjustment of decision making processes (e.g. ALM, pricing, product design)
- Boards requiring better understanding of risks
- SAM/Solvency II compliance

Key Implications for actuarial functions

- Production of timeous and accurate finance, risk and capital MI critical:
  - Hard close (incl. e-cap) at least quarterly, reasonable estimates more frequently
  - Regular risk metrics based on how active risk management is
  - Speed essential
- Integration of risk, capital and finance information
- Flexible analysis & reporting capability (what ifs/stress tests)
- Greater scrutiny and more extensive oversight requiring more robust controls

Actuarial functions will require stronger controls, less manual intervention and more robust IT systems
An ERM solution should consider the entire end-to-end process

Example: Solvency II/SAM process

1. Data sources
   - External and internal data sets required by the calculation and reporting.

2. Validation & preparation
   - Collect and transform the data required by the calculation and the reporting.
   - Quality control, correction and validation.
   - Model point files.

3. Model inputs
   - Aggregation/grouping of assets and liabilities.
   - Economic scenario generation.
   - Experience analysis and assumption setting.

4. Calculation
   - Calculation of technical provisions and capital requirements for all risk classes.
   - Aggregation and consolidation.
   - Balance sheet & income statement projection
   - Analysis and validation of the results.

5. Reporting
   - Internal and external reporting.
   - Validation of the reports.
   - Publication of the external reports to the regulator and the market.

6. Workflow management

7. Data archiving

Integration will be critical to successful implementation.
Shifts required in actuarial function to meet new challenges
Shifts required in actuarial functions in order to meet the new requirements

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<thead>
<tr>
<th></th>
<th>Typical current state</th>
<th>New world</th>
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</thead>
<tbody>
<tr>
<td>Infrastructure</td>
<td>Desktop based</td>
<td>Server based and possibly externally hosted, fully productionised (HA, DR, monitoring)</td>
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<tr>
<td>Models/Applications</td>
<td>In-house developed &amp; multiple systems</td>
<td>Single enterprise application, vendor solutions</td>
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<tr>
<td>Data management</td>
<td>Weak governance, multiple feeds</td>
<td>Single golden data source, data disciplines, results managed as data</td>
</tr>
<tr>
<td>Process management</td>
<td>Often ad-hoc and people dependent or long list of steps in spreadsheet</td>
<td>Automated workflow management system</td>
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<tr>
<td>Documentation</td>
<td>What documentation?</td>
<td>Knowledge management framework; documentation of policies, procedures, methodology…</td>
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<tr>
<td>Spreadsheets</td>
<td>Used rampantly and typically poorly controlled</td>
<td>Largely replaced by database or mainstream modelling solutions; Clear spreadsheet standards and some form of SDLC</td>
</tr>
<tr>
<td>Costs</td>
<td>Shoestring</td>
<td>Larger (hopefully not too much larger!)</td>
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Each organisation will face different challenges in the detail.
### Shifts required in actuarial functions in order to meet the new requirements

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<tbody>
<tr>
<td><strong>Controls</strong>&lt;br&gt;Key people, heavy reliance on top-down macro controls (e.g. AOS)</td>
<td>Fully embedded SDLC, strong documentation, robust testing, detail controls automated</td>
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<tr>
<td><strong>Actuarial organisational structure</strong>&lt;br&gt;Model dev &amp; use combined, models developed separately for prod dev &amp; valuation functions</td>
<td>Integration of model build for all functions (prod dev and valuations), clear separation of model development from production; independent model validation</td>
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<tr>
<td><strong>Segregation of duties</strong>&lt;br&gt;No clear segregation of duties, often sign off on own work</td>
<td>Risk Management function (policy and oversight) separate from business (day to day management) Statutory Actuary?</td>
</tr>
<tr>
<td><strong>IT organisational structure</strong>&lt;br&gt;Actuaries UDI</td>
<td>Specialised IT support for actuarial systems</td>
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<tr>
<td><strong>Actuarial Culture</strong>&lt;br&gt;Actuarial DIY – particularly in interactions with IT&lt;br&gt;“Trust me, I’m an actuary” and actuarial judgement</td>
<td>Specialist IT and actuarial skills leveraging off each other; Transparent, open to challenge, peer review and validation&lt;br&gt;Expert judgement the domain of a wider group of experts</td>
</tr>
<tr>
<td><strong>Risk, Finance and Actuarial</strong>&lt;br&gt;Don’t always get each other</td>
<td>Risk, finance and actuarial interacting very closely</td>
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**Careful change management will be critical.**
Closing thoughts
Closing thoughts

• This is a big change and will require careful change management

• Specific challenges for actuarial communities
  • Re-tooling to get to grips with new methodologies and metrics
  • Greater need for transparency, openness to challenge, review validation and oversight
  • Strengthening communication, change management skills to be able to explain concepts, models, results to much wider and more varied audience
  • Broader competition from wider range of skill sets
  • Materiality – don’t major in minor detail
  • Changing the role of the Statutory Actuary!
  • Actuarial DIY culture

Long-term improved morale with actuaries doing less data manipulation and more analysis and application of judgement.