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Solvency II – Use of External Models and RMS Response

William Mayes
Principal Consultant RMS Consulting


Solvency II: What to Worry About?




2011 is a key year



Failure of internal models will force companies to use standard formula



Appropriate data quality, detailed knowledge, comprehensive documentation and robust processes required to comply



Using standard formula could significantly increase capital requirements

Modeling companies as the builders of the models are best placed to offer users the needed insight into our models and their usage

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Roadblocks for Getting the Catastrophe Element of the Internal Model Approved



How are RMS helping?

1. Additional models and greater alignment with Solvency 2
2. Consulting reviews
3. Education and interpretation
4. Data quality tools and services
5. Life and health modeling

1. Additional Models



Europe Earthquake 2011

- All countries on unified event set with existing countries
- Upgrades to Turkey and Greece models
- Add 4 new countries: Romania, Hungary, Bulgaria and Slovenia



Europe Windstorm Extension 2011

- Latest modeling techniques and integration of more claims and windspeed data
- Adding 3 new countries for greater coverage of risk



Pan-Europe flood 2013

- Cover all 12 countries
- Cross basin & country correlations from one event set
- Precipitation-based model, so includes all off floodplain as well as river-driven flood risk

RMS' Models available to support Solvency II

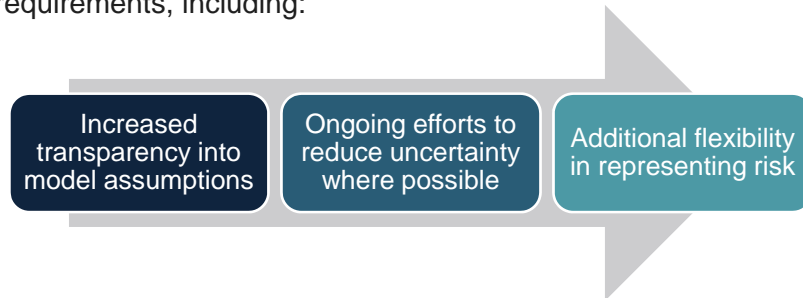
RMS will have a near complete suite of models to support the SII process in FY11

	Austria (AT)	Belgium (BE)	Bulgaria (BG)	Cyprus (CY)	Czech Republic (CZ)	Denmark (DK)	France (FR)	Germany (DE)	Greece (GR)	Guadeloupe (GU)	Hungary (HU)	Ireland (IE)	Iceland (IS)	Italy (IT)	Luxembourg (LU)	Martinique (MA)	Netherlands (NL)	Norway (NO)	Poland (PL)	Portugal (PT)	Reunion (RE)	Romania (RO)	Spain (ES)	Switzerland (CH)	Sweden (SE)	Slovenia (SI)	Slovakia (SK)	San Martin (SM)	Turkey (TR)	United Kingdom (UK)
FL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EQ	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
HL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

- ✓ Cat Scenarios included in QIS5
- RMS Model Available in 2010
- RMS Model Available in 2011
- RMS Model Available in 2013

Greater Solvency 2 Alignment

- RMS is developing analytical capabilities to support Solvency II requirements, including:



- We are also working on a major upgrade of the standard Risklink software that will facilitate Solvency II-related capabilities
- Key to developing these capabilities is partnership with clients

2. Consulting Reviews



Examples of Client Issues

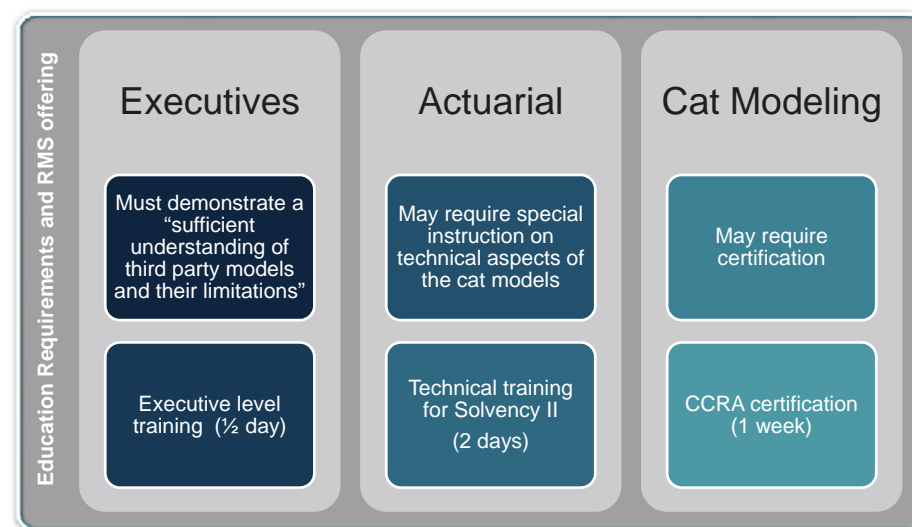
Type of Client	Problem	Findings	Action Plan
Full service commercial insurer	Needed to redesign process to satisfy regulator and board concerns and meet Solvency II requirements	No consistent methodologies for incorporating data quality, non-modelled loss, model uncertainty or marginal risk into decision making	Redesign multiple aspects of overall process including information and reporting for both underwriting and portfolio management
Multinational reinsurer	Attempted to update its catastrophe management process but was unsure of its suitability for renewals	IT resources are inadequate; planned development would not meet required deadlines	Refocus on tactical issues; provide alternative tools; create reports with company-wide adoption
Direct insurance writer with a binders book	Recognized a general need for improvement; regulatory bodies indicate their overall process may be poor	Analytics and resources did not support advanced decision-making	Outsource daily model runs; halve reporting times; design tools for internal capacity trading
Growing direct writer with large EQ and HU concentrations	Needed to improve data, were being penalised by reinsurers due to poor data quality	Data translation process was inconsistent; poor communication between modellers and data providers	Resolve data problems with standardized process and audit; RMS review used with rating agencies
Experienced retrocessionaire	Required verification of processes for investors	Internal pricing calculations were error-prone	Correct pricing templates; develop robust simulation methodology; create report for investors

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3. Education And Interpretation

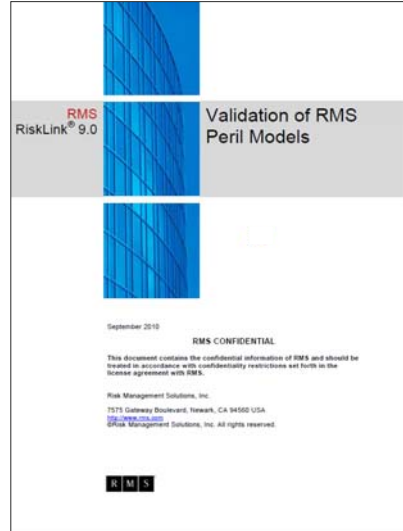
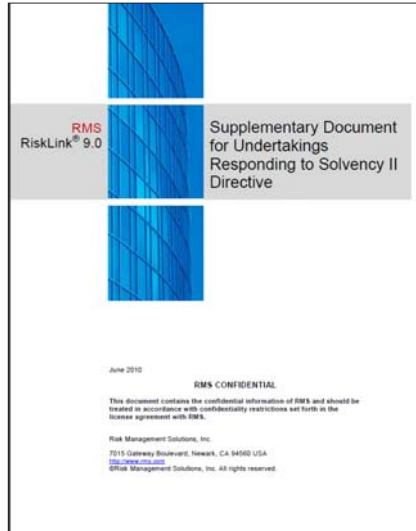


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Published RMS Documentation for Solvency II



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4. Data Quality

#	Occupancy Description	Construction Description	Num Stories	Year Built	AAL
1	Professional, Technical & Business Services	Masonry	105	1931	465%
2	General Commercial	Masonry	1	Unknown	225%
3	Permanent Dwelling (single family housing)	Reinforced Concrete	Unknown	Unknown	35%
4	Professional, Technical & Business Services	Reinforced Concrete	102	Unknown	-23%
5	General Commercial	Unknown	1	1996	102%
6	Telephone & Telegraph	Unknown	Unknown	1931	132%
7	Entertainment & Recreation	Unknown	1	Unknown	124%
8	Unknown	Unknown	Unknown	Unknown	76%
9	General Commercial	Unknown	102	1931	8%



350 5th Ave, New York, NY 10018

Actually:

- General Commercial
- Steel Frame
- 102 stories
- Built 1931

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Data Quality Solutions

Stages that problems occur



Data
Evaluation and
Enhancement

Running
Models

Solutions

Solution	Benefits
Dedicated resources or outsource cleansing	Place process in the hands of experts
	Free resource to focus on decision support
	Establish a consistent approach

Solution	Benefits
Applied data quality analytics	Better quantify <u>impact</u> of poor data quality
	Prioritize locations to improve with effort / \$
	Evolve underwriting guidelines

Solution	Benefits
Outsourced analytics or process automation	Free resource to focus on interpretation of results
	Reduce risk of human error
	Improve auditability of process

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5. Life and Health

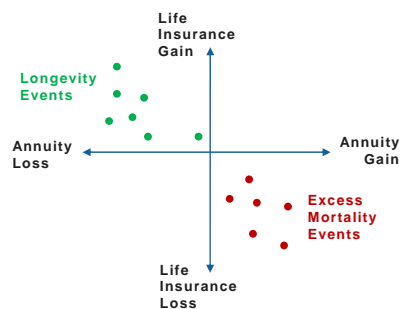
■ Excess Mortality

- Solvency II excess mortality test to compare standard formulae and RMS
- Contribution of sources of excess mortality (influenza, other infectious diseases)



■ Longevity

- Longevity Scenarios
- Measures differences for reserves and annuity liability
- Explore Solvency II diversification credits



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Summary

- 2011 Will be a Key Year
- Cat models are complicated, and detailed knowledge will be required by users
- RMS offers a suite of solutions to help with the catastrophe model component of your internal model submissions
 1. Additional models and greater alignment with Solvency 2
 2. Consulting reviews
 3. Education/ Interpretation
 4. Exposure Data – “Complete, Accurate, Appropriate”
 5. Life and Health