Part I

Part I – Putting models into context

Part II – Practical examples of model use

1. Focus on exposure
2. Effective links to established business activities
3. Analytical agility
It is essential to have a good understanding of capital consumption in order to steer the business. At the end of the day, what really matters is that we manage all levers to deliver sustainable performance.

The need for effective capital management is even more pronounced in a difficult business environment with challenges like:

- Lower interest rates
- Higher Euro sovereign spreads
- Higher capital requirements
- Tightening regulation
- Low economic growth

Active capital management will be key differentiator going forward.
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Solid data is the necessary condition for reliable risk quantification and portfolio management

- **Accumulation control**: Add up values in hazard zone
- **Visualization**: PML = value x damage ratio (for given severity)
- **Basic cat model**: Calculate multiple PML’s
- **Sophisticated cat model**: Calculate thousands of PML’s
- **Data**: Modelled gross mean loss
  - May 2012 version
  - July 2012 version
Our aim is to bring reliable and efficient portfolio analytics into key business decisions …

- Geo-coded portfolio (all LoBs)
- Emphasis on info quality
- Main historic events (flood) already integrated for as-if analysis
- Adequate protection under consideration

- The tool achieves a good level of accuracy and granularity
- Possible to analyze specific situations (actual example)

For example, we have deployed these tools to adapt our portfolio and moderate the need for reinsurance

- Portfolio cleaning efforts were steered by careful analysis. Cancellation of a few exposures reduced Terror treaty costs
- We convinced reinsurers to include terror in their per risk treaty, which provided us with capacity to maintain and grow a key market segment
- Ultimately, our entity was able to steer its business activity in a manner that balanced commercial and risk considerations
Furthermore, the application of controls on our data enables us to identify operational issues

Operational issues identified:
1. AZ risk definition was not properly applied
2. Accumulation risk was not correctly considered
3. The information requested from inspectors was incomplete

Part II

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We have implemented a Group wide RoRC measure to better understand the profitability of our entities.

<table>
<thead>
<tr>
<th>Entity</th>
<th>NEP</th>
<th>CoR</th>
<th>Risk capital</th>
<th>CIR</th>
<th>ECR</th>
<th>RoRC</th>
<th>Motor</th>
<th>Prop Com</th>
<th>Other Com</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1.500</td>
<td>97%</td>
<td>330</td>
<td>22%</td>
<td>98%</td>
<td>15%</td>
<td>-45%</td>
<td>-25%</td>
<td>-10%</td>
</tr>
<tr>
<td>B</td>
<td>1.500</td>
<td>97%</td>
<td>135</td>
<td>9%</td>
<td>96%</td>
<td>38%</td>
<td>-65%</td>
<td>-10%</td>
<td>-5%</td>
</tr>
</tbody>
</table>

The resulting dialogue has helped us approach other topics that are very important for the Group.

- How do we reflect the Group diversification benefit in our return metrics?
- To what extent should a market risk premium be reflected in pricing?
- A consistent definition of our return requirement on risk capital
- Is RoRC sufficient? What happens if other constraints are considered?
- How should tax effects be considered in specific cases?
- Does our analytical framework incentivise the right management behaviour?
- How must metrics adapt to reflect a management or Legal Entity view?
At the operating entity level, models support the ongoing monitoring of the business …

<table>
<thead>
<tr>
<th>LoBs</th>
<th>Plan</th>
<th>Actual</th>
<th>Difference</th>
<th>Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Accident Year (CY) - Premium Risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household</td>
<td>9,593</td>
<td>6,151</td>
<td>-3,441</td>
<td>14%</td>
</tr>
<tr>
<td>Retail Motor</td>
<td>10,280</td>
<td>23,176</td>
<td>12,896</td>
<td>94%</td>
</tr>
<tr>
<td>Travel</td>
<td>5,367</td>
<td>1,613</td>
<td>-3,754</td>
<td>34%</td>
</tr>
<tr>
<td>Pet</td>
<td>-10,456</td>
<td>-3,903</td>
<td>6,552</td>
<td>57%</td>
</tr>
<tr>
<td>Extended Warranty</td>
<td>2,645</td>
<td>-20,677</td>
<td>23,322</td>
<td>4%</td>
</tr>
<tr>
<td>Legal Protection</td>
<td>-1,402</td>
<td>-7,373</td>
<td>5,971</td>
<td>18%</td>
</tr>
<tr>
<td>Marine</td>
<td>-1,634</td>
<td>-3,508</td>
<td>-1,874</td>
<td>20%</td>
</tr>
<tr>
<td>Liability</td>
<td>17,567</td>
<td>18,637</td>
<td>1,070</td>
<td>55%</td>
</tr>
<tr>
<td>Aviation</td>
<td>1,948</td>
<td>2,253</td>
<td>305</td>
<td>68%</td>
</tr>
<tr>
<td>Engineering</td>
<td>4,700</td>
<td>6,067</td>
<td>1,367</td>
<td>73%</td>
</tr>
<tr>
<td>Commercial Motor</td>
<td>-1,595</td>
<td>-2,943</td>
<td>-1,348</td>
<td>42%</td>
</tr>
<tr>
<td>Professional Indemnity</td>
<td>215</td>
<td>-3,670</td>
<td>-3,885</td>
<td>41%</td>
</tr>
<tr>
<td>Commercial Property</td>
<td>4,836</td>
<td>-2,332</td>
<td>-7,168</td>
<td>31%</td>
</tr>
<tr>
<td>Total CY - trading business</td>
<td>42,064</td>
<td>13,492</td>
<td>-28,572</td>
<td>32%</td>
</tr>
</tbody>
</table>

... and enable management to gain a comprehensive perspective on the sources of loss

- The analysis is used to make informed business decisions, such as defining the structure of the reinsurance program
- It is also useful in educating management and facilitating their acceptance of the modelling work carried out by the actuarial & risk functions
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Developing a suite of analytical solutions makes models versatile and adaptable to business needs

The portfolio model is a universal multi-purpose tool
- Economics of individual transactions and portfolios
- Term and accounting year performance management
- Pricing
- Reserving
- Risk-Based Capital, SST, Solvency II
- Tail analysis
- Risk/reward studies
- Stress scenarios
- Limit utilization
- Value history
- Concentration and correlation analysis
- Planning

Supported by
- Standardized data bases
- Modular modelling platform
- Automated reporting tools

- Managing exposures and providing underwriting guidance
- Speaking the same language in pricing, reserving, monitoring and planning
- Combining management and regulatory views: optimal use test
Flexible reporting allows for an inspection of the portfolio from several angles

- Management Dashboards
- Standard Reports (Quarterly Update)
- Liquidity Projections / ALM
- Concentration
- Back-Testing
- Risk-Reward
- Correlation

There are substantial benefits to be gained by ...

Making sure that exposure data is of the highest quality
Finding practical ways to connect analytics to business decisions
Maintaining a flexible reporting system that adapts to management needs and a changing business environment