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GIRO Conference and Exhibition September 2012
Solvency II IMAP Working Party

Practical Issues in Solvency II

Internal Model Approval Process (IMAP)

for General Insurance Actuaries

Our Brief

- The internal model approval process (IMAP) for Solvency II presents a number of practical issues for GI actuaries
- In particular, the Level 1 Framework specifies ‘six tests’ that any internal model must meet for the supervisor to give approval
- But how is the market approaching these requirements in practice?
- This update discusses this issue using evidence gathered from our work in 2010, 2011 and 2012.

Agenda

- Chair
- Introduction
- Areas of work this year
  - Use Test
  - Expert Judgement
  - Model Validation
- Conclusions
- Over to you – for questions and comments

Our focus - Bridging EIOPA requirements and business/ modelling reality

Key Questions

How are the requirements being interpreted by experienced modellers?

How is the industry approaching the tests?

Topics

Use Test

Validation

External Models

Calibration

Documentation

Risk Ranking

Profit & Loss Attribution

Expert Judgement

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Use Test

Use Test Requirements

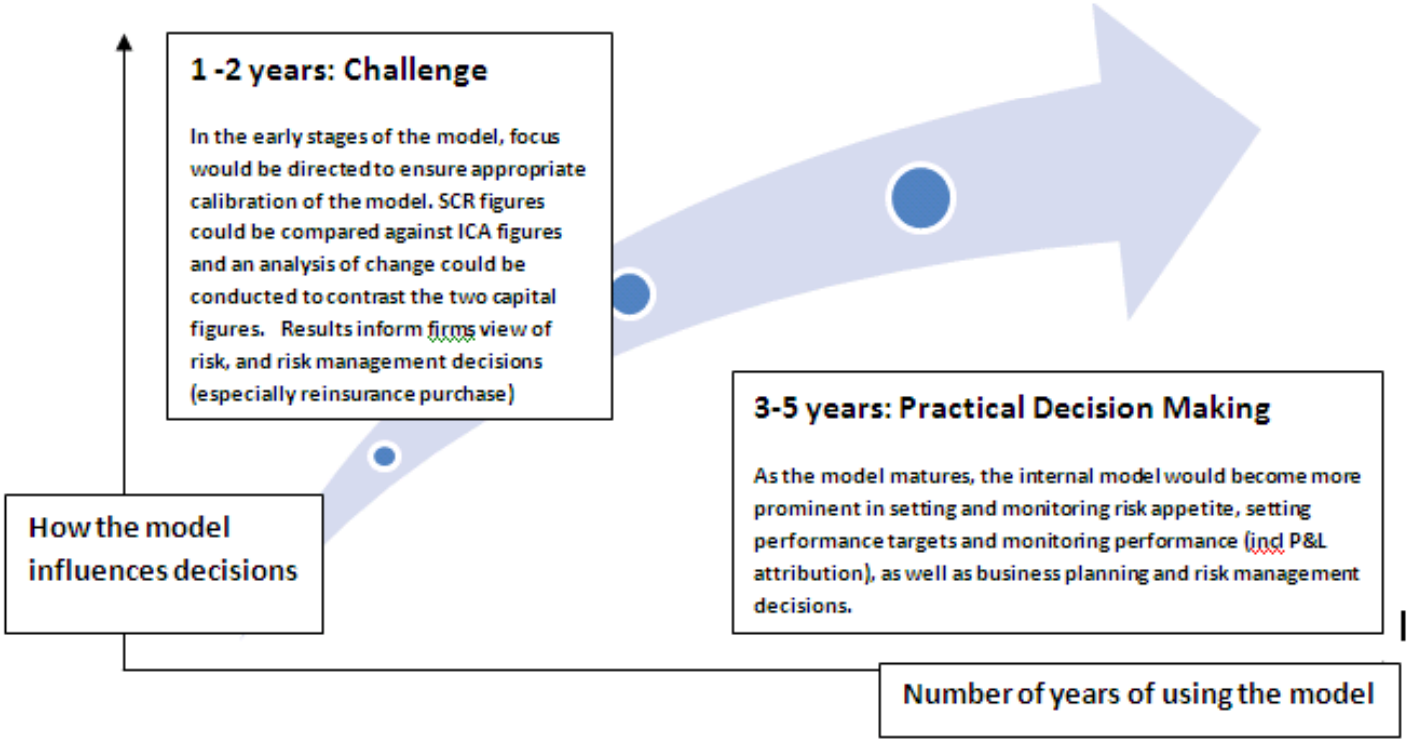
The Use Test is described in Article 120 of the Framework Directive. In particular, firms are required to evidence use of the model in:

- "their risk-management system ... and their decision-making processes;
- their economic and solvency capital assessment and allocation processes".

Practical Solutions
Maturity Curve and the Use Test

Key challenge for firms facing the Use Test is deciding on what is an appropriate level of use given the development of their model. In this light, we present in the diagram below an example of what the maturity – use trade-off may look like:

Please note that this is a generalisation and specific firms could well follow a different progression than that outlined here.



Use Test

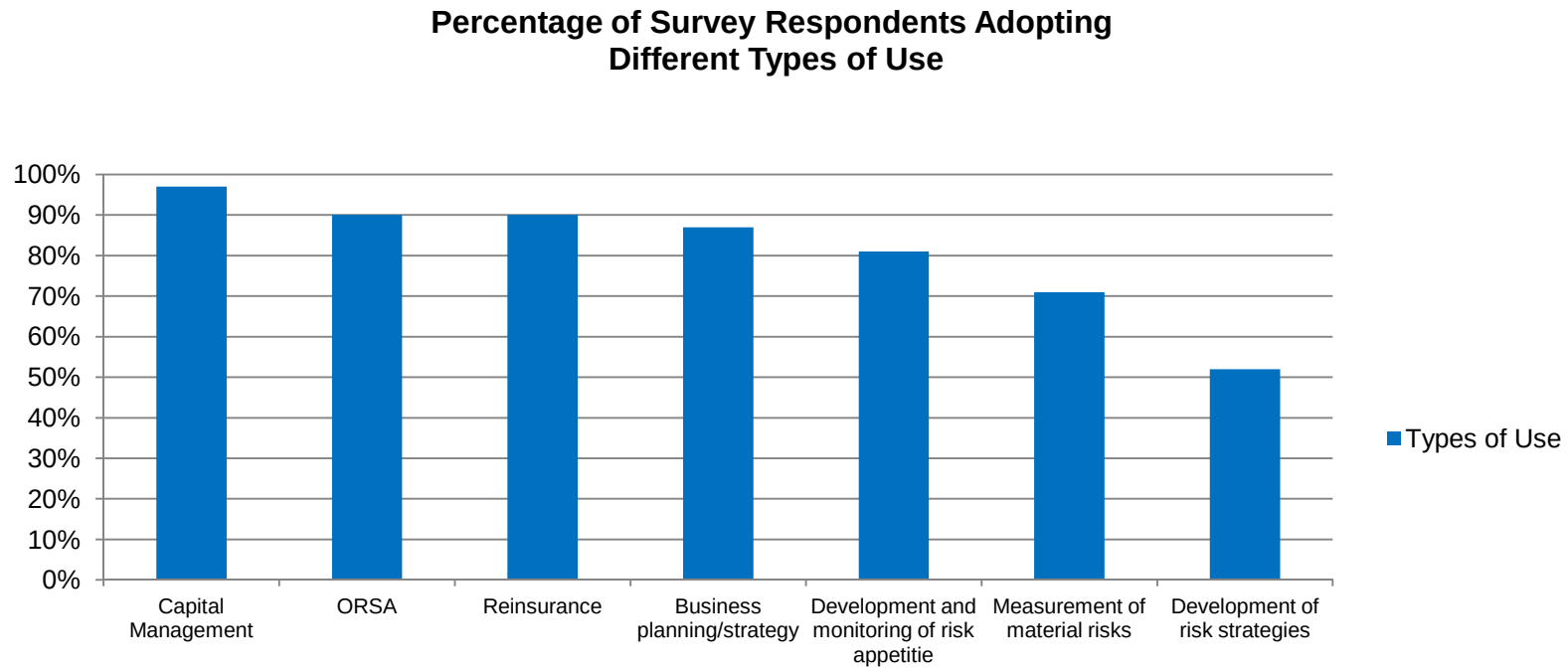
Embedding the model as a key tool in management decision making

Stakeholder	Benefit
Risk Management	*Capital management, ORSA, risk appetite setting / monitoring, reinsurance, and investment decisions*
Actuaries	*Reserve uncertainty, pricing*
Board members	*Business planning and strategy, development of risk strategies and understanding material risks*
Underwriters	*Setting and monitoring performance of business units and classes against targets* *Identifying opportunities for more efficient use of capital (e.g. portfolio optimisation)* *Understand underlying risk profile of the business*
Reinsurance	*Facilitate better and more efficient reinsurance arrangements*
CEO	*Use model to explain variability in key drivers such as profits and losses, and the associated return on capital, in current and future years*

Use Test

Forms of use

- The graph below shows the most popular forms of use that firms are planning to adopt, which was obtained from our survey:



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Expert Judgement

Expert Judgement

Challenge: What is an expert?

Key Questions

1) How do you define/demonstrate the **suitability** of an expert?
2) In which **areas** are expert judgements to be made?
3) How do you review/**validate** any expert judgements that have been made and what types of **governance** need to be placed around the expert judgement process?

Suitability of an 'Expert'

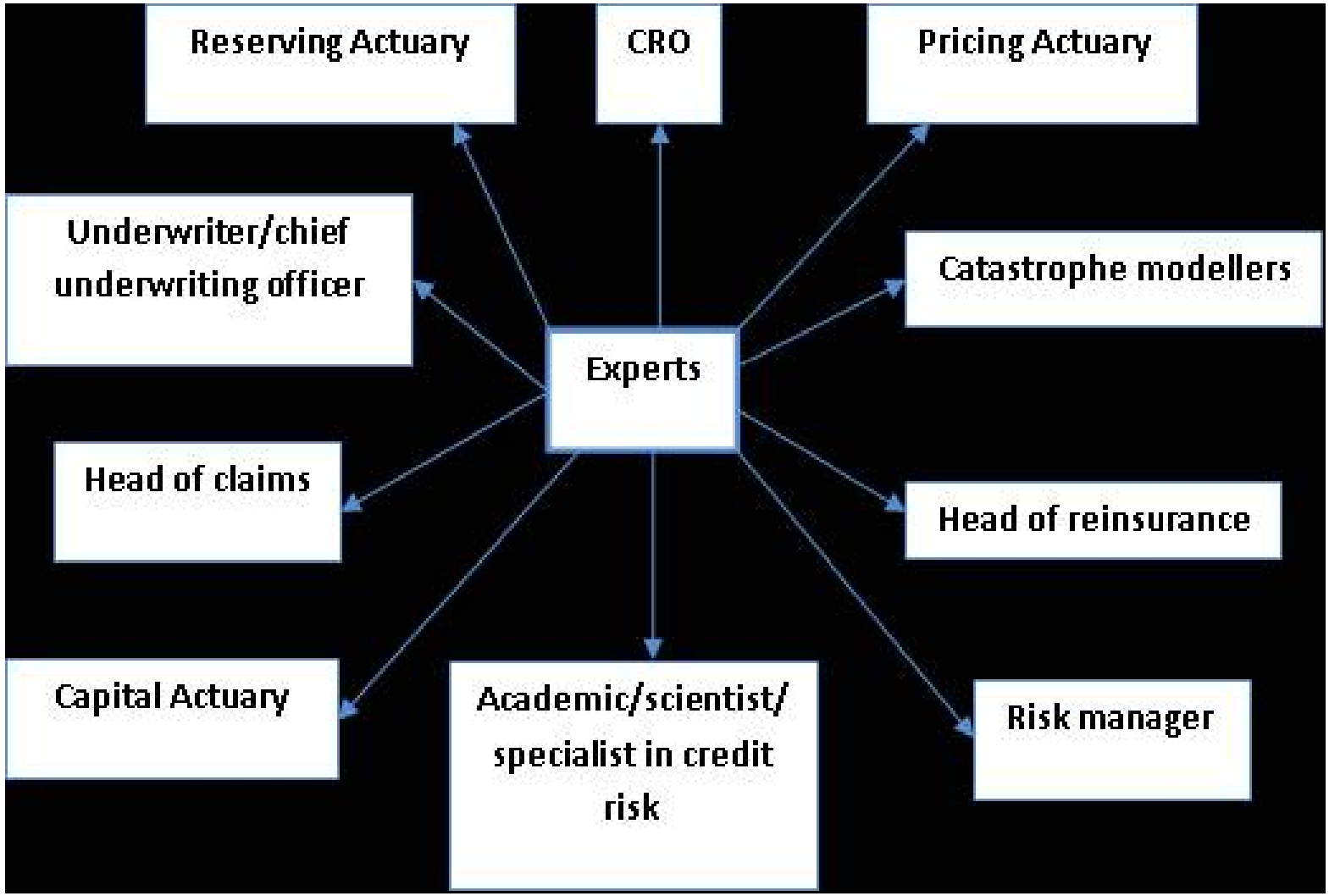
The current draft of the Level 2 text says that expert judgements should be based on the expertise of persons with:

- **relevant knowledge,**
- **expertise, and**
- **understanding**

of the risks inherent in the insurance/reinsurance business.

Expert Judgement

Possible experts



Expert Judgement Validation

There are a number of approaches that could be used to validate expert judgements. These include:

•Benchmarking (comparing to relevant external information)

•Challenge by an expert panel or by industry groups (though taking care to avoid systematic risks or “herd” behaviour)

•Back-testing (comparison to emerging experience), and

•Sensitivity analysis (i.e. varying the expert judgement and assess the resulting impact on the area for which the judgement is being made).

•Independent expert reports or peer reviews

Expert Judgement
Governance & Reporting

Expert Judgement Governance policy to include details of:

- Who can **make** expert judgements
- Who should **review** expert judgements
- **Documentation** requirements
- **Reporting**/Communication of expert judgements
  - Details of material judgements, and
  - Uncertainty/sensitivity

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Model Validation

Model Validation
Key Challenges

- How to define the purpose and scope of the validation?
- How to apply the concept of materiality within the validation work, in order to deliver value to users of the model?
- How to formalise the technical analysis?

Model Validation Objectives

> The model validation process shall include an effective statistical process for validating the internal model which enables the insurance and reinsurance undertakings to demonstrate to their supervisory authorities that the resulting capital requirements are **appropriate**.
>
> **Level 1, Art. 124**

What do we mean by appropriate?

- Does the model reflect all available information about the 1 in 200 year position?
- Are methods, assumptions and results rationalised in view of this information? Are the methods implemented accurately?
- In view of ‘independent knowledgeable third party’ are methods and assumptions reasonable?
- Is model consistent with business plan, technical provisions and other models used in decision making?
- Are purpose and limitations of model clear to users of the model?
- Does the model comply with tests and standards?

Model Validation
A full scope ...

Risks

- NL Insurance
- Reserve
- Premium
- Cat
- Market
- Credit
- Operational
- Aggregation & Dependencies
- Other

Components

- Uses
- Results (i.e. SCR and other metrics)
- Calculation Kernel
- Parameterisation
- Data & Inputs
- Methods & Assumptions
- Governance & Control
- Catastrophe Models
- ESG's
- Pricing and/or Technical Provisions Model
- Documentation
- IT Systems

Compliance

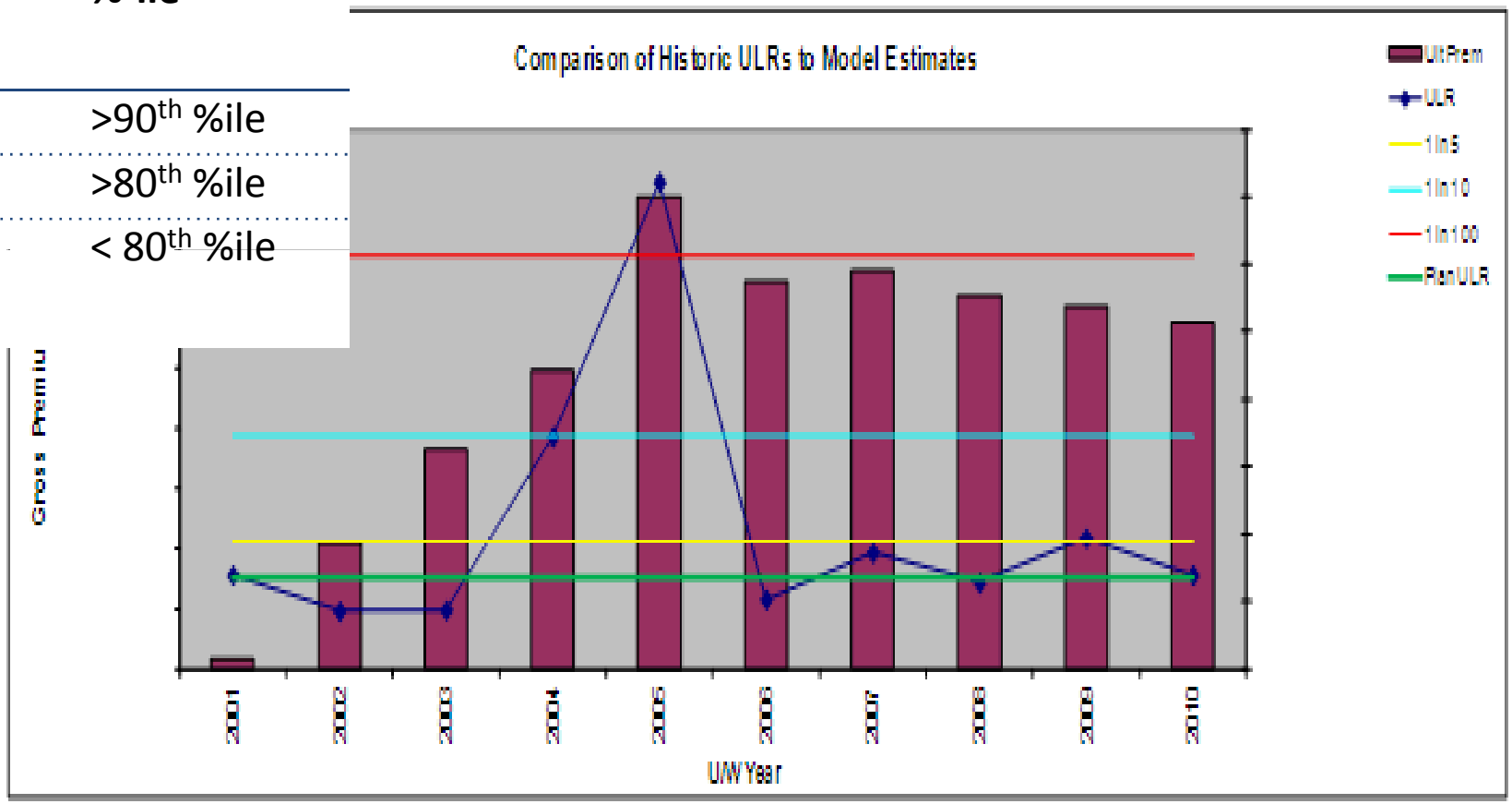
- Use
- Governance
- SQS
- Calibration
- Validation
- Profit & Loss Attribution
- External Models

Model Validation – Worked Example
Can we formalise a cycle of tools and triggers?

Expectations

# data points	%-ile
<=1	>90th %ile
<=2	>80th %ile
<=8	< 80th %ile

Results



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Over to you ...

Over to you ....

Use

- How much is enough?

Expert Judgement

- As a profession, what do we need to do differently under SII?

Validation

- What tests should a model pass, or fail, in your view?
- What level of formality is practical?

Next Steps

- Discussion paper – email us at giroimap@gmail.com
- Plans for 2013
- New members welcome

Questions or comments?

Expressions of individual views by members of The Actuarial Profession and its staff are encouraged.

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