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Risk Management Industry update

MAF April 2014

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Agenda

1. Introduction
2. Risk Management ORSA
3. Model Risk Management
4. Risk Appetite

Risk Management ORSA update

The Own Risk & Solvency Assessment

The ORSA is a set of processes constituting a tool for decision-making and strategic analysis.

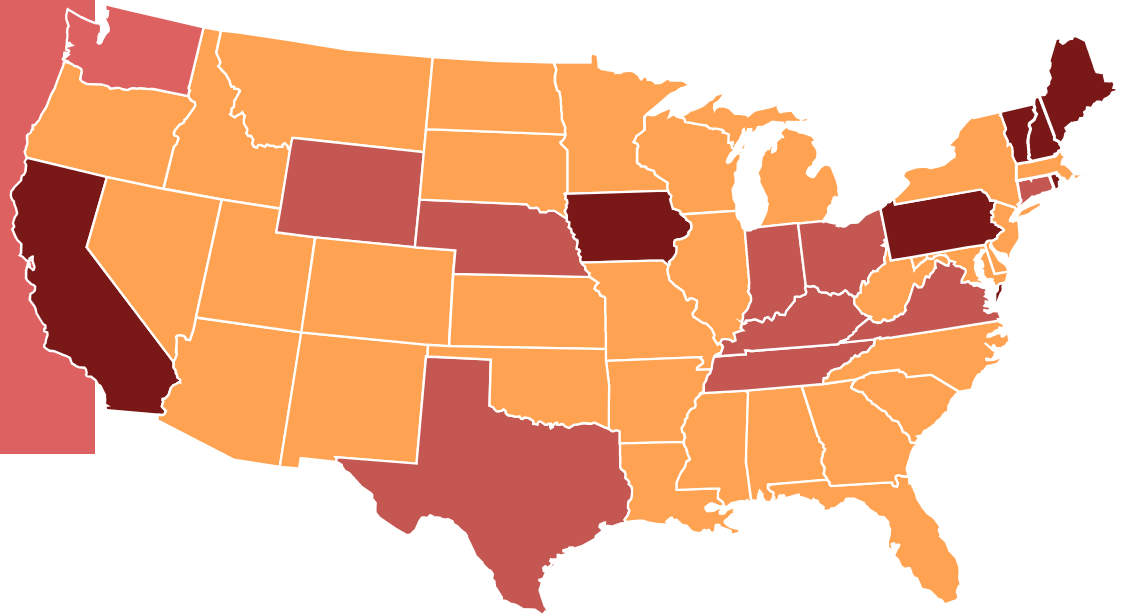
It aims to assess, in a continuous and forward looking way, the overall solvency needs related to the specific risk profile of the insurance company.

It applies to any US insurer which individually writes more than $500m of premium and/or groups which write more than $1b.

NAIC adopted the ORSA Model act in 2012; states are expected to adopt it prior to 2015, when the first filings are expected.

Implementation of ORSA Model Act as of Feb 1 2014

Fully or substantially adopted	**Legislation under consideration**
California	Connecticut
Iowa	Indiana
Maine	Kentucky
New Hampshire	Nebraska
Pennsylvania	Ohio
Rhode Island	Tennessee
Vermont	Texas
	Virginia
	Washington
	Wyoming



Fully or substantially adopted (7)

Legislation under consideration (10)

No action to date (33)

The NAIC expects the US ORSA to play a significant role in US insurance supervision

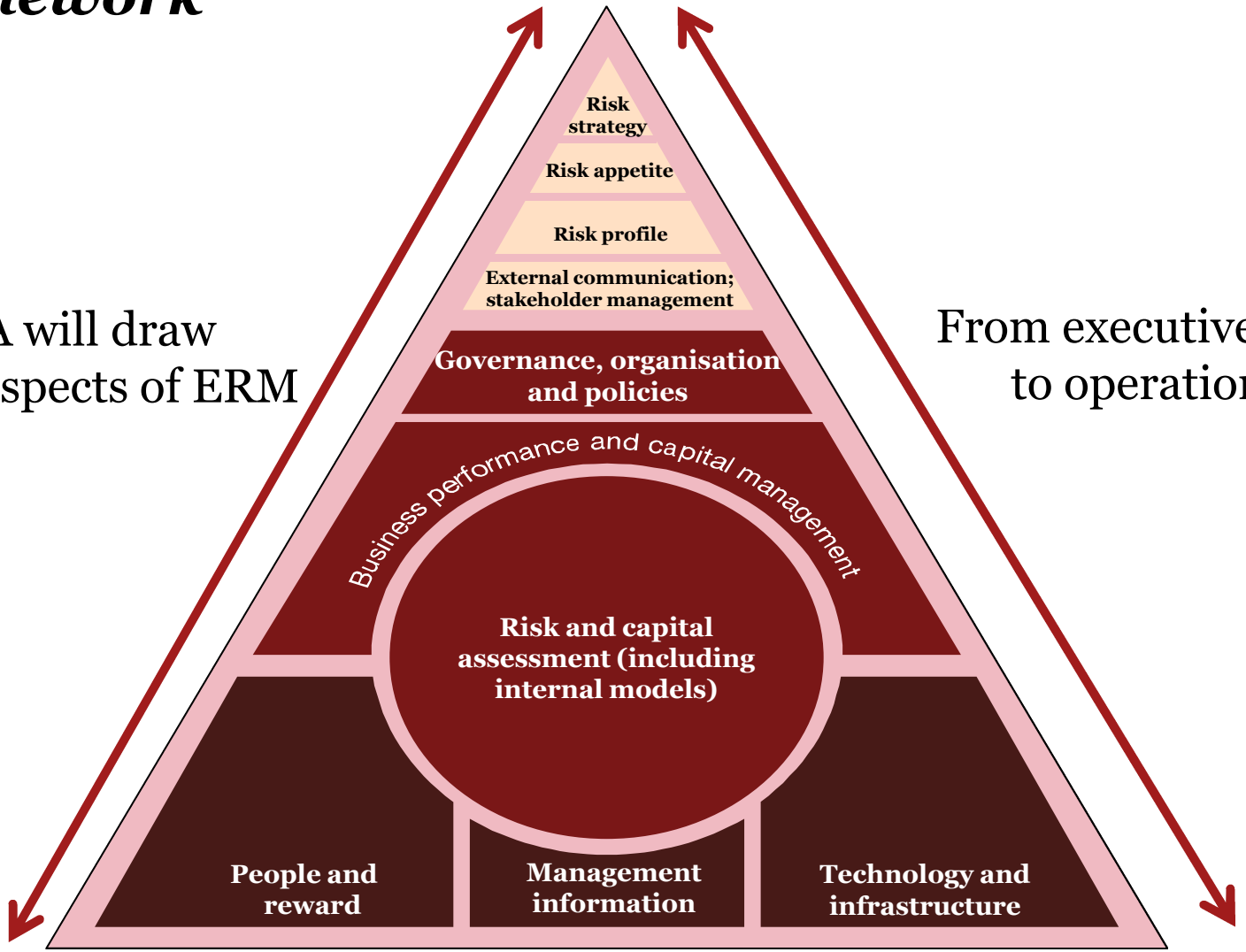
"The ORSA….may help determine the scope, depth and minimum timing of risk-focused analysis and examination procedures…Insurers with ERM frameworks deemed to be robust…may not require the same scope or depth of review, or minimum timing…as those with less robust ERM functions."

NAIC Own Risk and Solvency Assessment (ORSA) Guidance Manual

- **Risk management** – The ORSA will be a tool to help supervisors understand the risks to which insurers are exposed, and how adept insurers are at managing those risks. Regulators plan to assess ERM capability, and to use it to guide their supervisory strategy.
- **Group capital assessment** – NAIC examiners will use the ORSA to understand assessment and management of capital at group level and while the ORSA will not set a group capital requirement, it will provide information to regulators that will help guide supervisory action.
- **Encouraging ERM** – The NAIC expects the ORSA to help foster effective ERM practices at all insurers.

ORSA & the PwC Enterprise Risk Management Framework

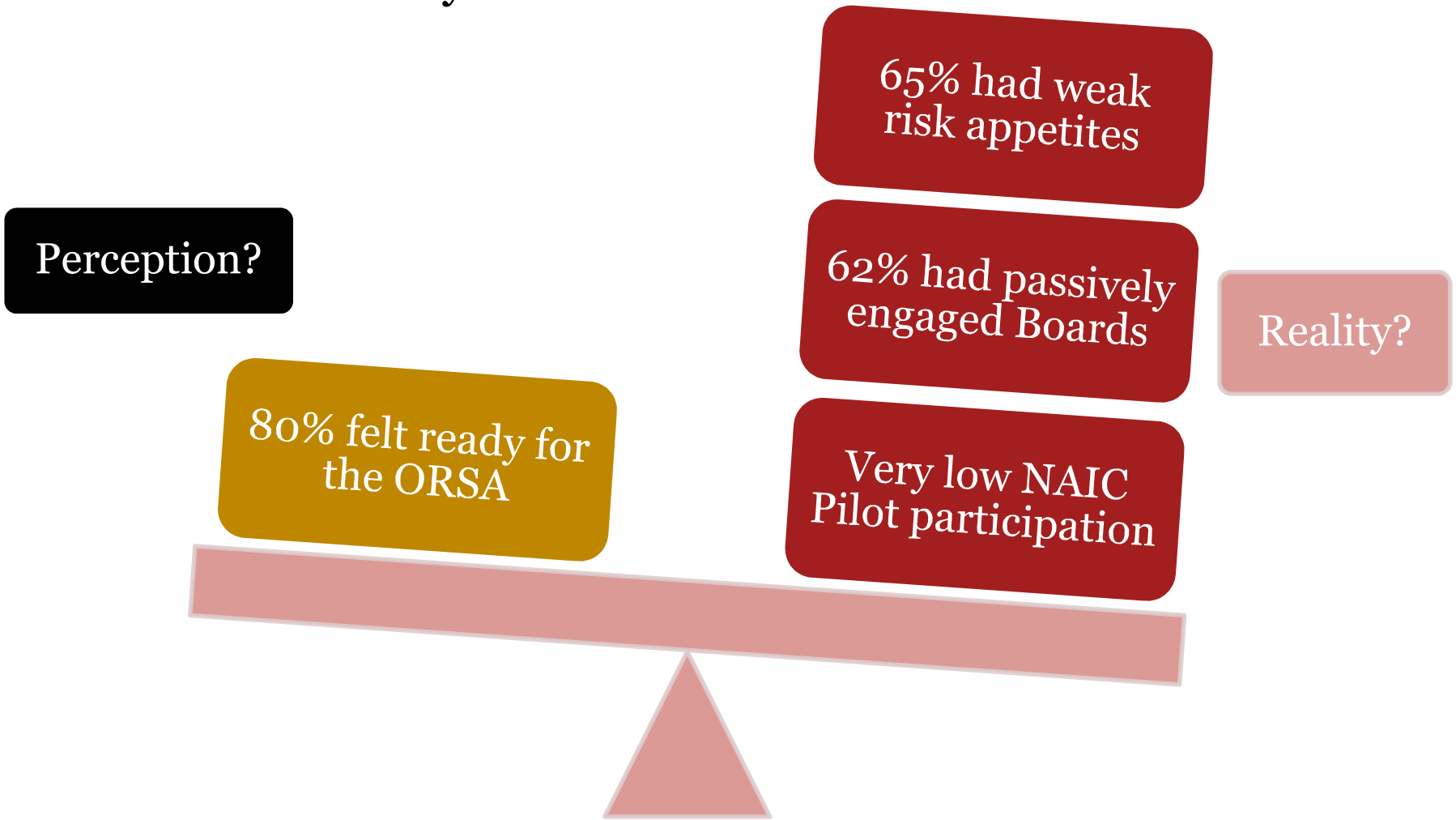
The ORSA will draw upon all aspects of ERM



From executive strategy to operational limits

Is the industry ready?

In our 2012 survey…



ORSA Pilots

One way to obtain feedback on a draft ORSA

	2012	2013
Number of States Participating	12	16
Estimated Number of ORSA Reports Expected to be Filed to Participating States	134	167
% of Total Estimated ORSA Reports Expected to be Filed	50%	64%
Number of Insurer/Groups Participating	14	22

2014 Pilot:

- Email to Chief Financial Regulator of Lead State Regulator to confirm participation by May 1, 2014
- ORSA submission by July 1 , 2014
- Pilot review during July to September 2014

The US ORSA is similar to the European ORSA…
Common pitfalls

The ORSA is viewed as a report

- The ORSA is a process, not a report. To focus on the report is to miss the point of the exercise, which is to develop better processes for decision making and strategic analysis.

The "O" in ORSA is overlooked

- This should be about how the **company manages and views its own risk**. This is not about RBC, rating or even regulatory capital (at least not directly).

A lack of coordination exists between Risk, Actuarial, Finance…

- The burden of risk management in a firm is not undertaken by a single team – so neither should the ORSA. At the very least, having cross-functional representation helps planning and production.

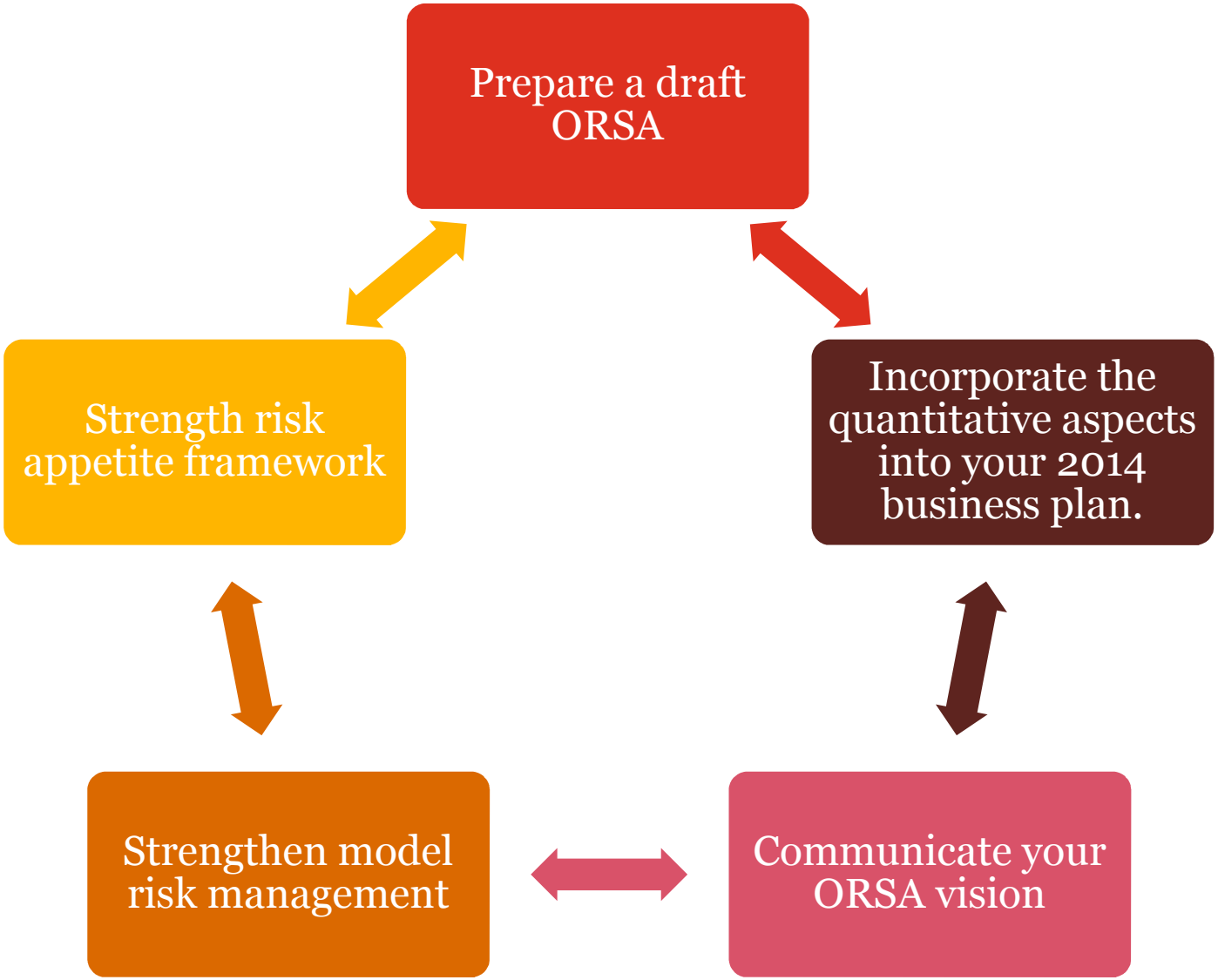
Forgetting about the target audiences

- The ORSA report will be for the Board… but drawn upon by the regulator

Feedback from previous Pilots

General	• Mapping of legal entities to business units • Executive summary (complex insurers) • Glossary of terms and acronyms • Clearly label and define graphics • Heat maps • Flowcharts to describe processes • Other documents available for review
Risk Assessment	• Details of established risk limits • Details of risk mitigation • Changes to risk appetite and tolerance • Risk owners defined • Three to five years of financial data for data elements where trends are important • IT risk • Scenario analysis in addition to single event stresses • Alignment of risk and compensation
Solvency Assessment	• Capital calculations and capital analysis • Comparison of results from multiple models (if applicable) • Overall group capital (international groups) • Risks from inter-company dependencies • Emerging risks • Model validation commented upon

Useful preparation actions in 2014



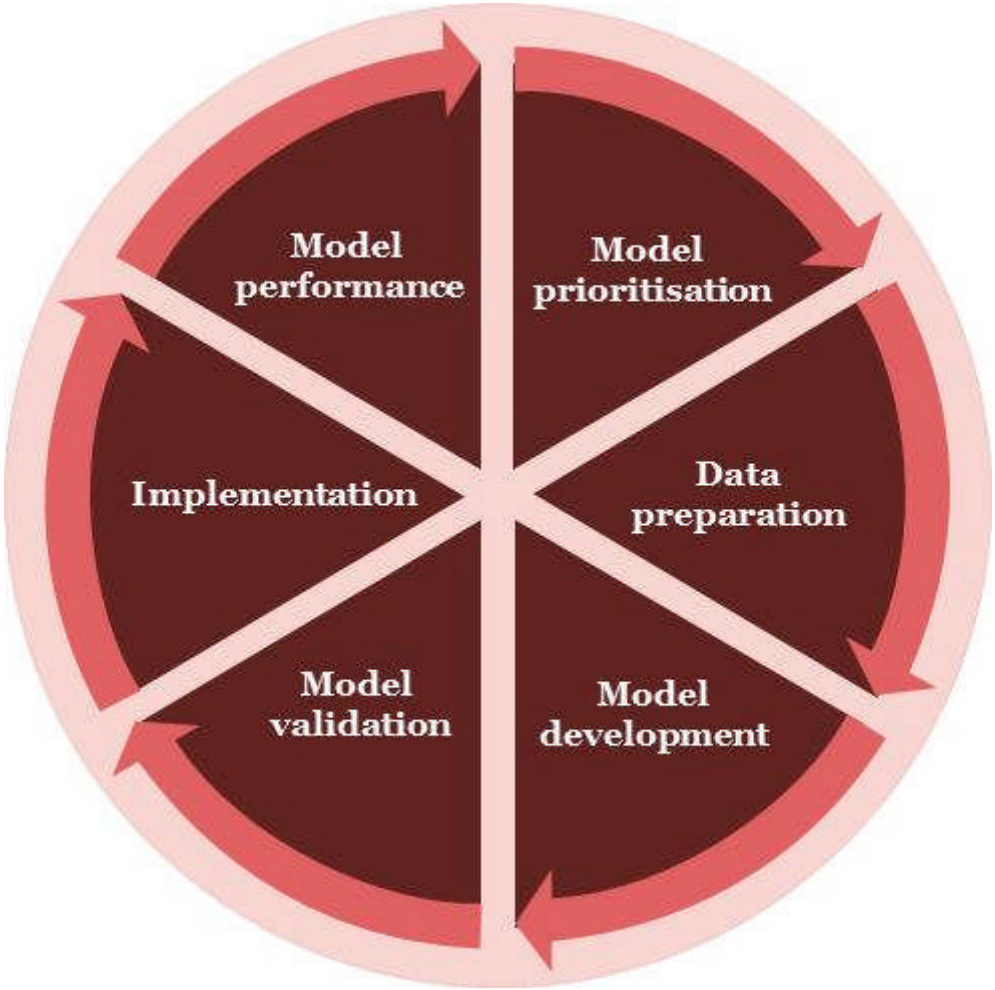
Model Risk Management

Model Risk Management (MRM)

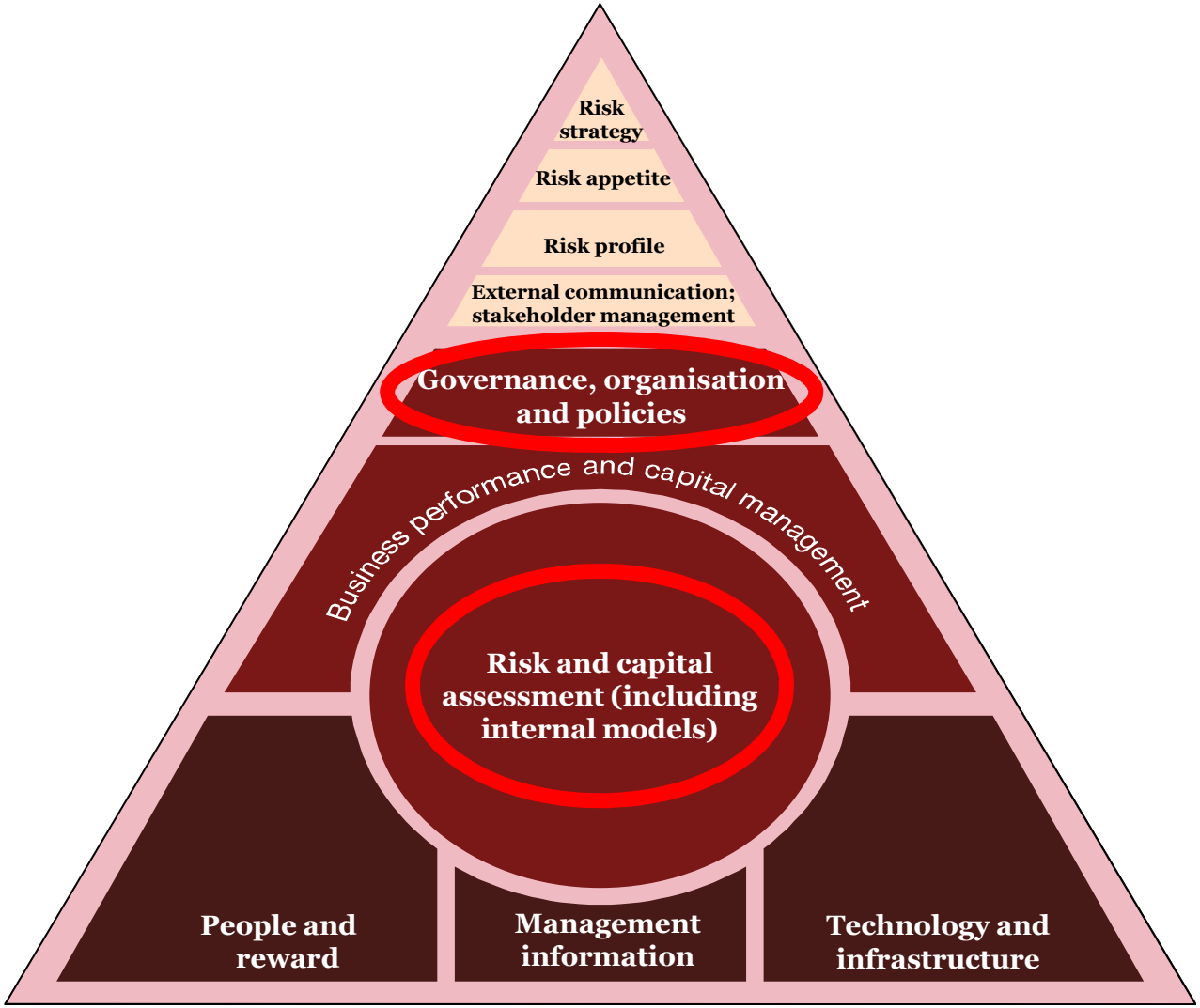
All models are wrong…

…but some are useful

George E. P. Box

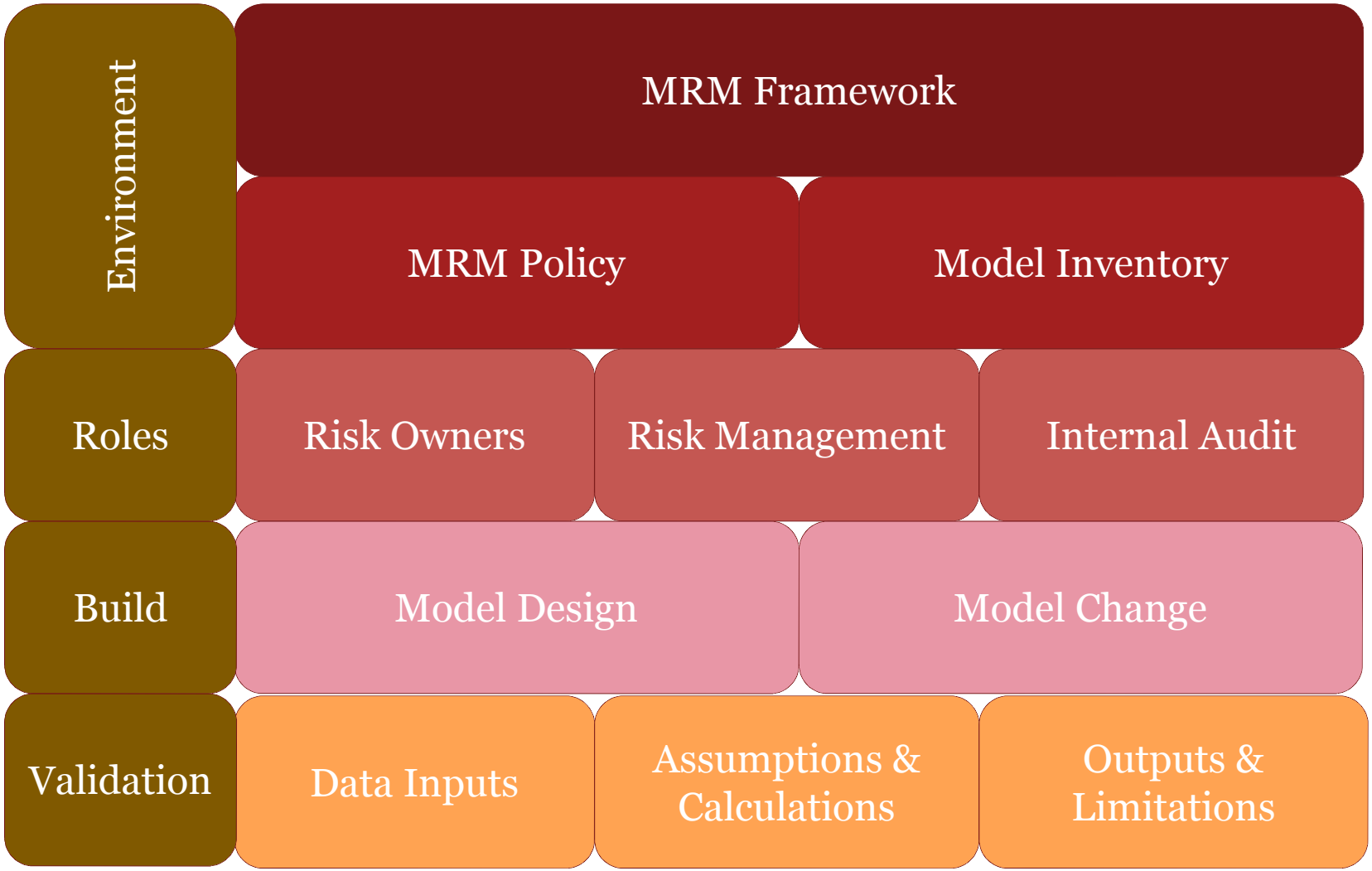


Where does MRM into wider ERM?



Business strategy Business management Business platform

Model Risk Management (MRM)



Model Risk Management

Governance		
Risk appetite for model risk	Model Risk Management Framework	Policies and Procedures

First Line of Defense - *Model Developers; Owners; Users*	Second Line of Defense - *Independent MRM Team; Validation Staff; Senior Management; Board*	Third Line of Defense - *Internal Audit*
• Model Development & Testing • Model Changes • Model Usage Changes • Model Performance	• Model Inventory Management • Independent Model Validation • Annual Model Review Process • Model Risk Monitoring • Model Risk Escalation and Periodic Reporting	• Review MRM Policies • Test Compliance With Policies • Review of Model Validation

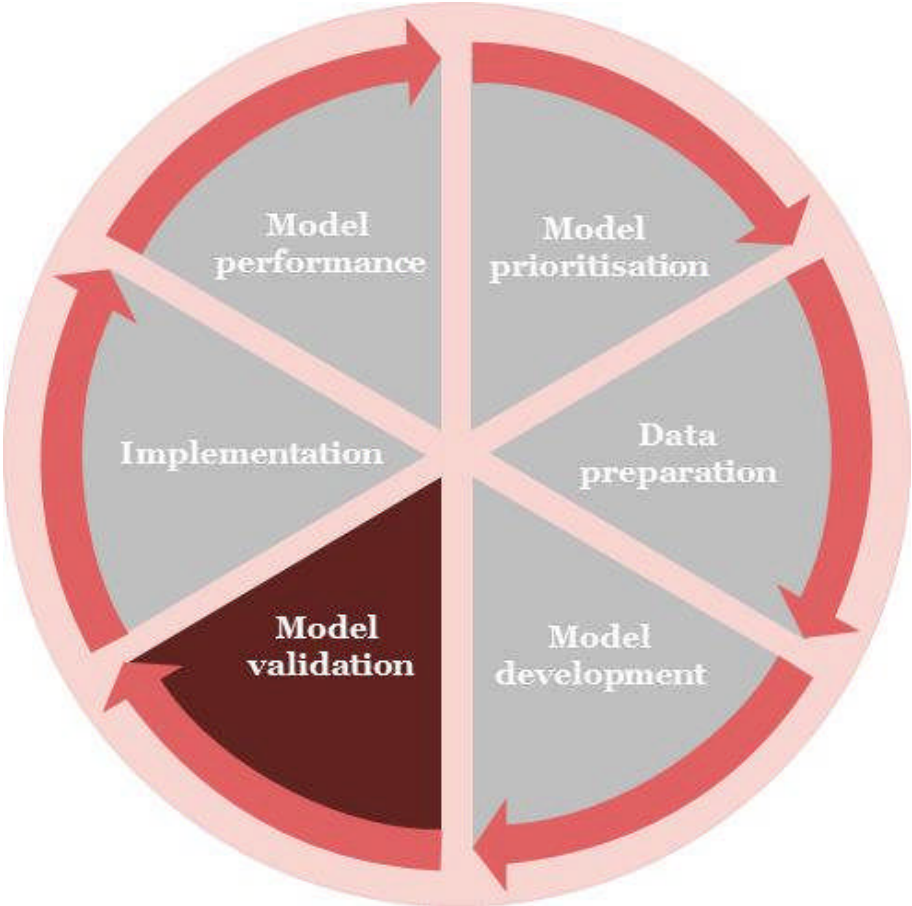
Model Validation

Validation of the models ensures that logic, methods, assumptions, parameters, and data are sound and appropriate for their intended use, allowing increased confidence in the forecasting, valuation, and additional projections derived from those models.

Model validation is a major – but not the only - part of model risk management.

Companies can define their own framework, but it will typically consider:

- Fitness of purpose
- Calculation risk
- Data quality
- Inputs and parameterization
- Methods
- Outputs
- Usage and Limitations



Key learning points from European experiences

Validation should be about more than technical accuracy

- All models have limitations. Validating that the model is fit for use involves much more than testing model calculations.

Validation should be precise

- A strong validation suite will have clearly defined tests with definite pass/fail criteria. The tests will should cover specific risks and model components and able to be mapped back to the overall validation strategy.

Validation should be performed by independent staff

- Independent, not necessarily external, though for smaller companies or niche risks, external assistance may be unavoidable unless careful planning is undertaken

Validation should be an integral part of a wider risk management strategy

- The validation procedures should be one part of a broader Model Risk Management Framework and be supported by a strong governance model, e.g. the three lines of defense.

Risk appetite articulation

What is Risk Appetite?

Amount

- Broadly speaking, risk appetite is the amount of risk that an entity wants to take to execute its strategy, in turn defining risk profile

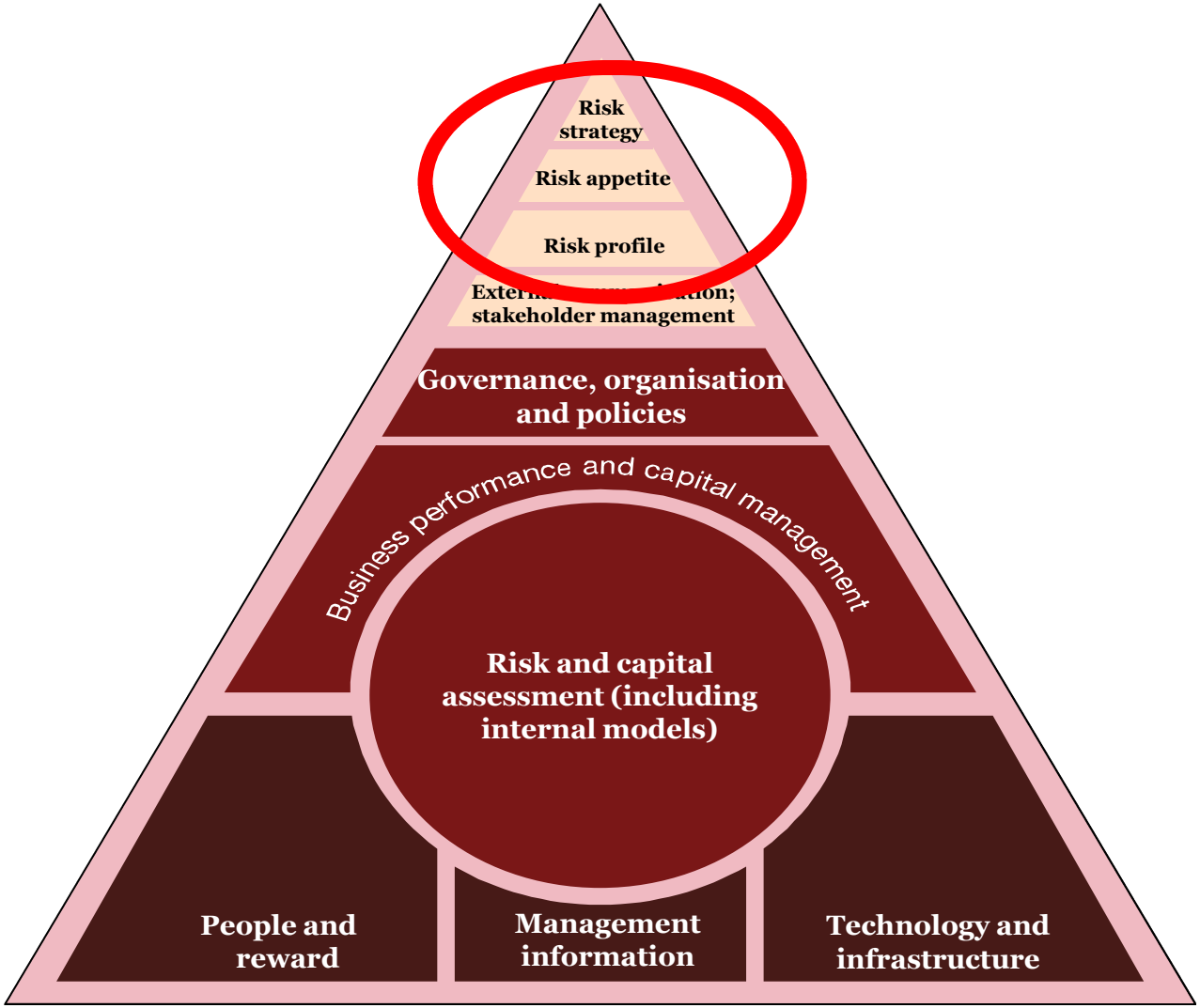
Willingness

- It is an expression of the willingness of an organization to tolerate high (or low) levels of exposure to risk and volatility in order to achieve its strategic objectives.

Responsibility

- Risk appetite is typically set by management and approved by the Board, and should reflect the aspirations and expectations of various stakeholders through a mix of quantitative measures and qualitative statements.

Risk Appetite is core to Risk & Business Strategy



Risk Appetite – Industry developments

Risk Appetite is not new:

- It has been implicitly expressed in qualitative and quantitative ways, such as
  - Maintaining a target credit rating
  - Specific tolerances (e.g. Realistic Disaster Scenarios)
  - Minimum liquidity ratios
  - Counterparty and market risk limits

What is new is the need to:

- Make risk appetite explicit referencing both positive / negative aspects, quantitative (how much risk?) and qualitative (which risks and why?) elements
- Create a reference point for business and investment decisions
- Allocate risk appetite by business unit and risk to embed into decision making processes

Drivers for change:

- Competitive advantage through exploiting appropriate opportunities
- Drive risk-reward returns
- Regulatory change – such as the ORSA

Key learning points from the European experience

This is perhaps more difficult than it looks!

- It is relatively easy to come up with a generic risk appetite statement. It is much harder to make that real for the organization and embed it into decision making.

Quantitative and Qualitative aspects are both required

- Different risks require different approaches

The best risk appetites recognize upside and downside risk

- … and should have clear actions

Risk Appetite, Tolerance and Limits
Working definitions

Risk appetite	The overall risks desired to generate targets for profits and value
	The overall tolerance for risk within the company
	The document setting out the qualitative and quantitative statements of how much risk can be taken
Risk tolerance	The amount of risk a company is prepared to take, set out quantitatively in a risk appetite statement
Risk limits	Controls in the business which prevent managers from taking more risk than the company has appetite for

Common risk appetite and tolerance categories

Primarily quantitative

Earnings

- Return on Equity
  - Core
  - Investment-related
- Earnings volatility
- Book value/share price growth

Capital adequacy

- Regulatory
- Economic
- Rating Agency

Liquidity

Insurance

- Underwriting: Cat
- Underwriting: Non-Cat
- Reserving

Market

- Equity
- Interest Rate
- FX

Credit

- Market related
- Non-market related counterparty:
  - Reinsurance
  - Broker
  - Other

Primarily qualitative

Strategic

Operational

- Process
- Employee
  - Employee Conduct
  - Employee Satisfaction
  - Succession Planning
- Systems and IT
- Business Continuity
- Legal and Regulatory
- Tax
- Reporting
  - Internal
  - External
- Fraud

Economic capital risk appetite and tolerance

Example risk appetite and tolerances

Internally, the Group uses its Zurich Economic Capital Model (Z-ECM), which also forms the basis of the SST model. The Z-ECM targets a total capital level that is calibrated to an "AA" financial strength. Zurich defines the Z-ECM capital required as being the capital required to protect the Group's policyholders in order to meet all of their claims with a confidence level of 99.95 percent over a one-year time horizon. The following tolerances are used:

- >120%: consider increased risk taking or remedial actions
- 100-120%: no action required as within stated objective and equivalent to "AA" rating
- 90-100%: position may be tolerated for a certain time depending on the risk environment
- <90%: Z-ECM ratio below Group risk tolerance level, requiring appropriate remedial actions and implementation of de-risking measures

Zurich 2013 Annual Report

Liquidity risk appetite and tolerance

Example risk appetite and tolerances

Our core liquidity policy is to retain sufficient liquidity, in the form of unencumbered liquid assets and cash, to meet potential funding requirements arising from a range of possible stress events. The primary liquidity stress test is based on a one-year time horizon, a loss event corresponding to 99% Tail VaR, and a three notch ratings downgrade.

Swiss Re 2013 Annual Report

Insurance risk appetite and tolerances

Example risk appetite and tolerances
The Management Board of Allianz SE has implemented a framework of natural catastrophe limits at both operating entity and Group levels in an effort to reduce potential earnings volatility and restrict potential losses from single events as well as on an annual aggregate basis. The limits are defined on a net basis and on an occurrence probability of 0.4% - which corresponds to a frequency of one in 250 years. **Allianz 2013 Annual Report**
We are prepared to lose up to X% of surplus/annual earnings from a single catastrophe event once in every Y years.
1-in-X year PML in a defined geographic area should be less than Y% of available economic capital.
Combined ratio for line of business X should be less than Y.
Reserve deterioration over a one year time horizon will not be greater than X% in Y out of Z years.

Thank you