



Solvency II Update

Dublin – 6 July 2010



MAZARS ACTUARIES AND CONSULTANTS LLP

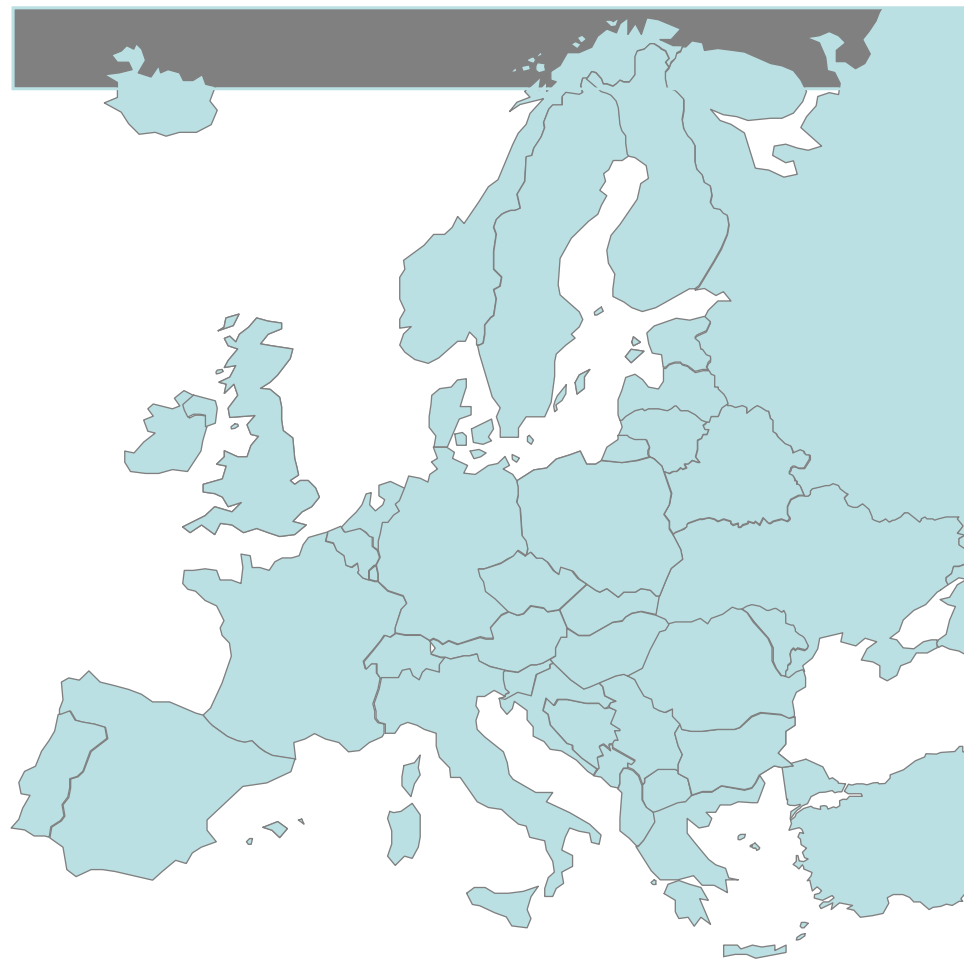
- Current position and the key milestones over the next couple of years?
- Quantitative Impact Studies (QISs) past and present
- Internal Models and Model Validation
- Documentation
- Captives
- The Actuarial Function
- Own Risk and Solvency Analysis (ORSA)



Solvency II Update – Current Position & Key Milestones

Solvency II update - Scope and Structure of Solvency 2

- ▶ Unified prudential regulation of insurers and reinsurers
- ▶ Beyond quantitative measures
- ▶ Overall risk management
- ▶ Overhaul of European supervisory structure
- ▶ Transparency and market discipline
- ▶ Increase policyholder protection and minimise regulatory burden
- ▶ Non-zero failure regime
- ▶ Three pillar structure, based on Basel II and CRD
- ▶ Link to IASB work on insurance contracts?
- ▶ Employs Lamfalussy arrangements



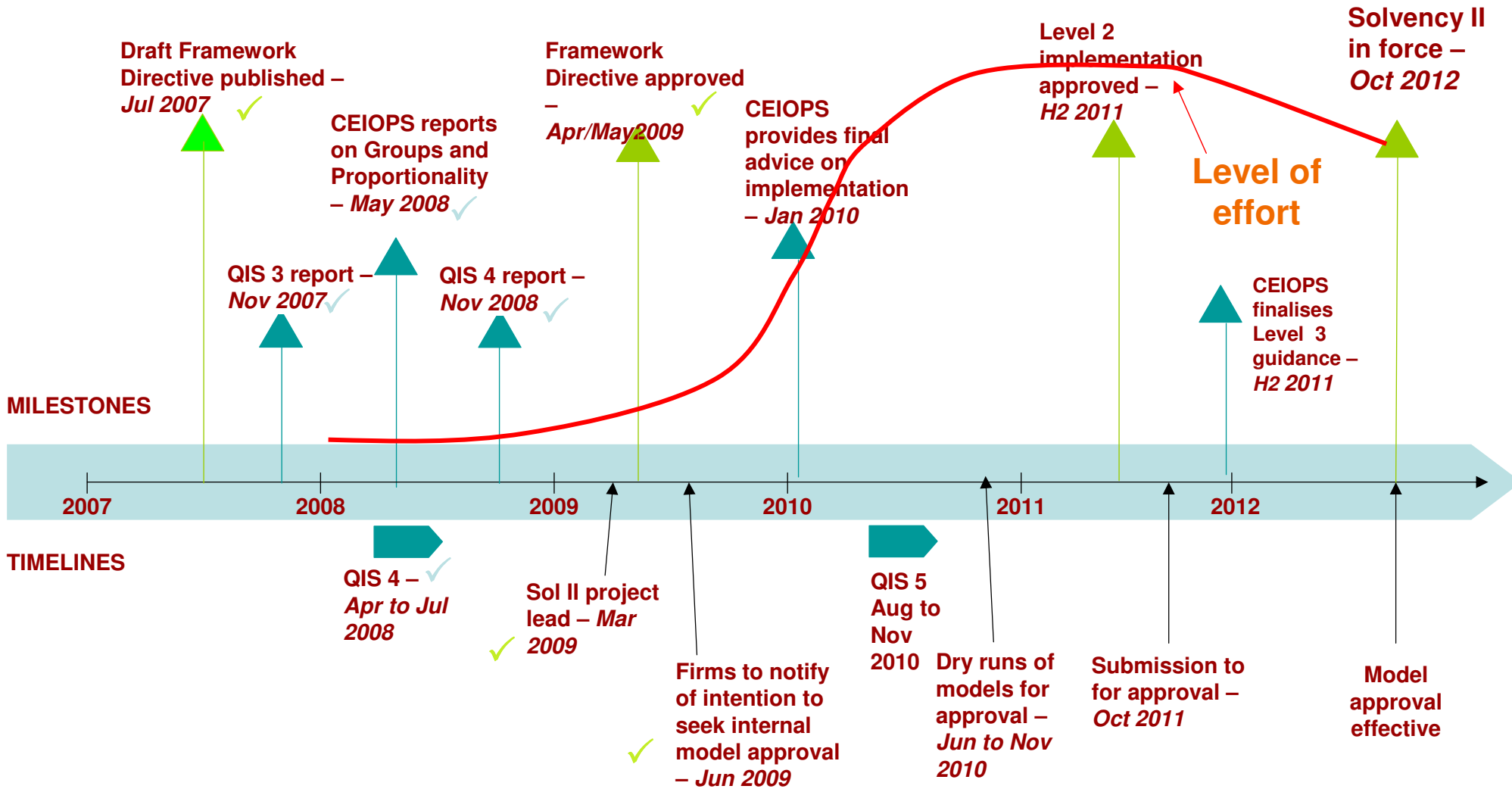


Solvency II

Three Pillars of Corporate Governance

Pillar 1		Pillar 2	Pillar 3
<i>Adequate Financial Resources</i>		<i>Systems Governance</i>	<i>Reporting Requirements</i>
Quantitative Requirements		Qualitative Requirements	Disclosure
<p>Balance Sheet Evaluation</p> <p>Reserves</p> <p>Minimum Capital Requirements (MCR)</p> <p>Solvency Capital Requirements (SCR)</p>		<p>Corporate Governance</p> <p>Risk Management</p> <p>Documentation, Systems and Controls</p> <p>Stress Testing</p> <p>ORSA</p> <p>Supervisory Review Process</p>	<p>Disclosure Requirements</p> <p>Transparency on Risk Appetite & Risk Strategy</p>

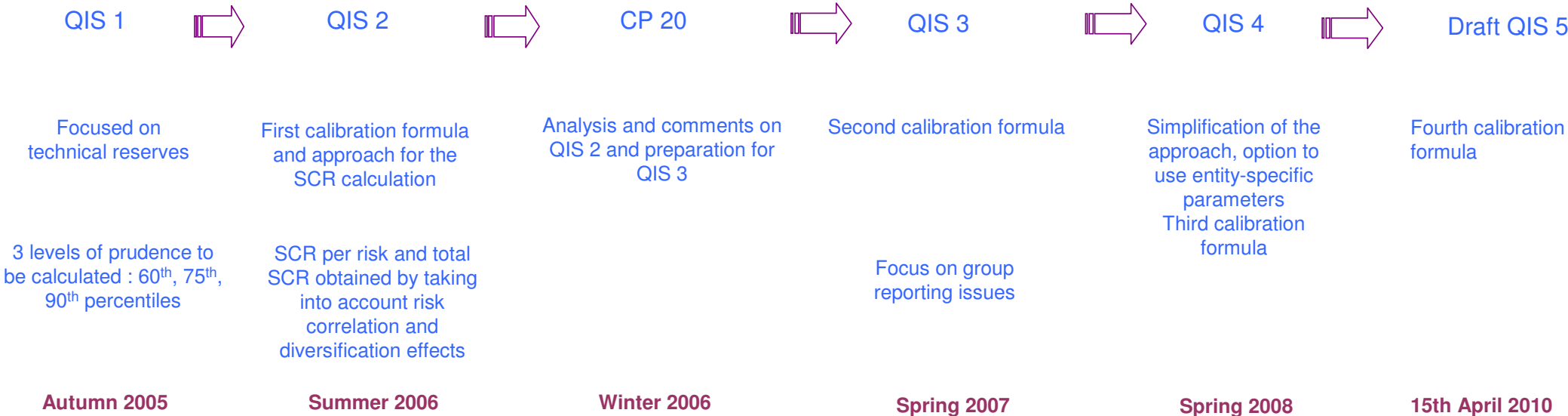
Solvency II update - Timeline



A photograph of a rock climber in a blue jacket and helmet, climbing a rock face, positioned in the top right corner of the slide.

Solvency II Update – Quantitative Impact Studies

Solvency II update - Quantitative Impact Studies



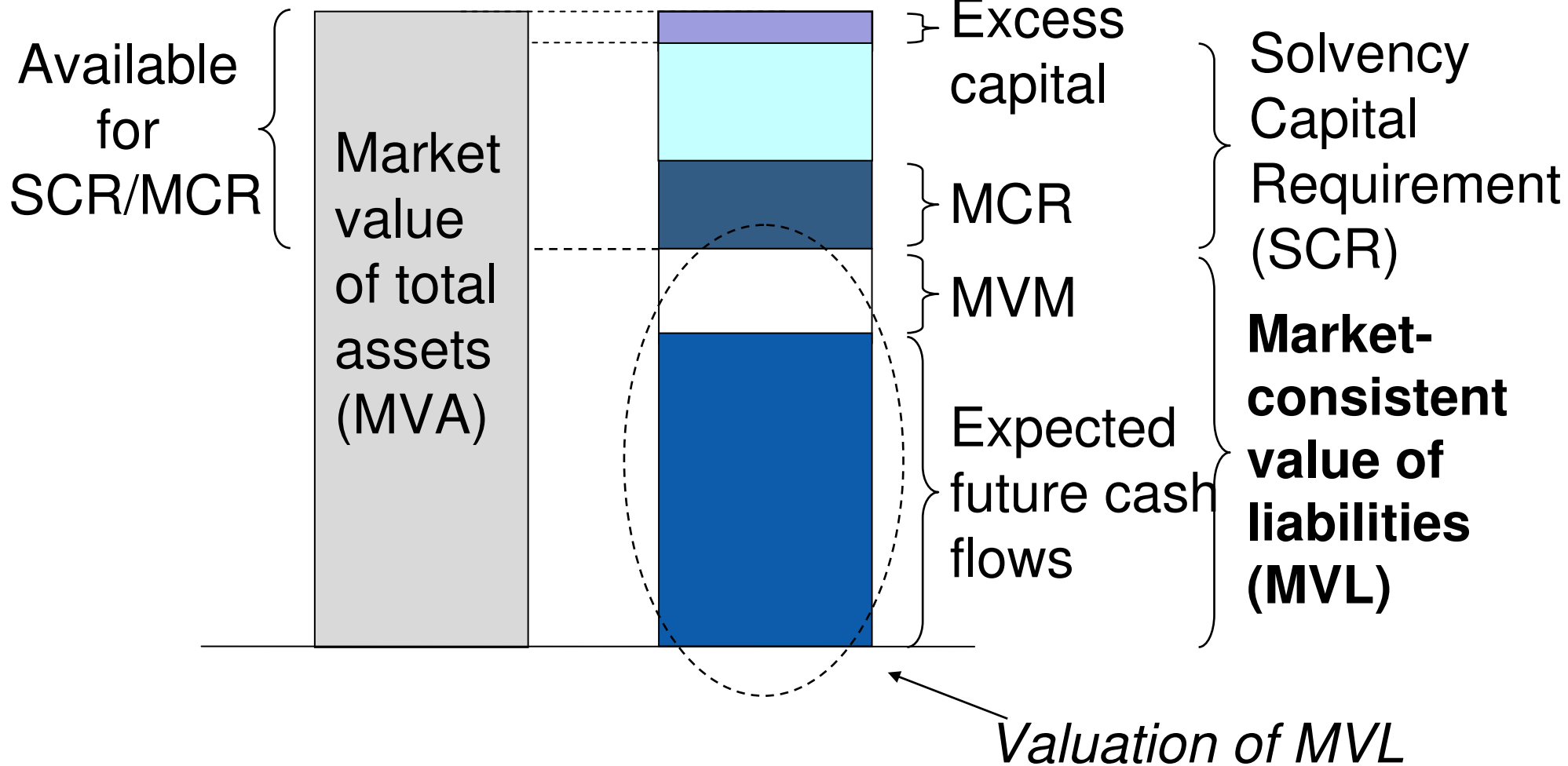
- Next step: Final technical specifications for QIS 5 was due to be published on 1 July 2010 with study being run between August and November 2010



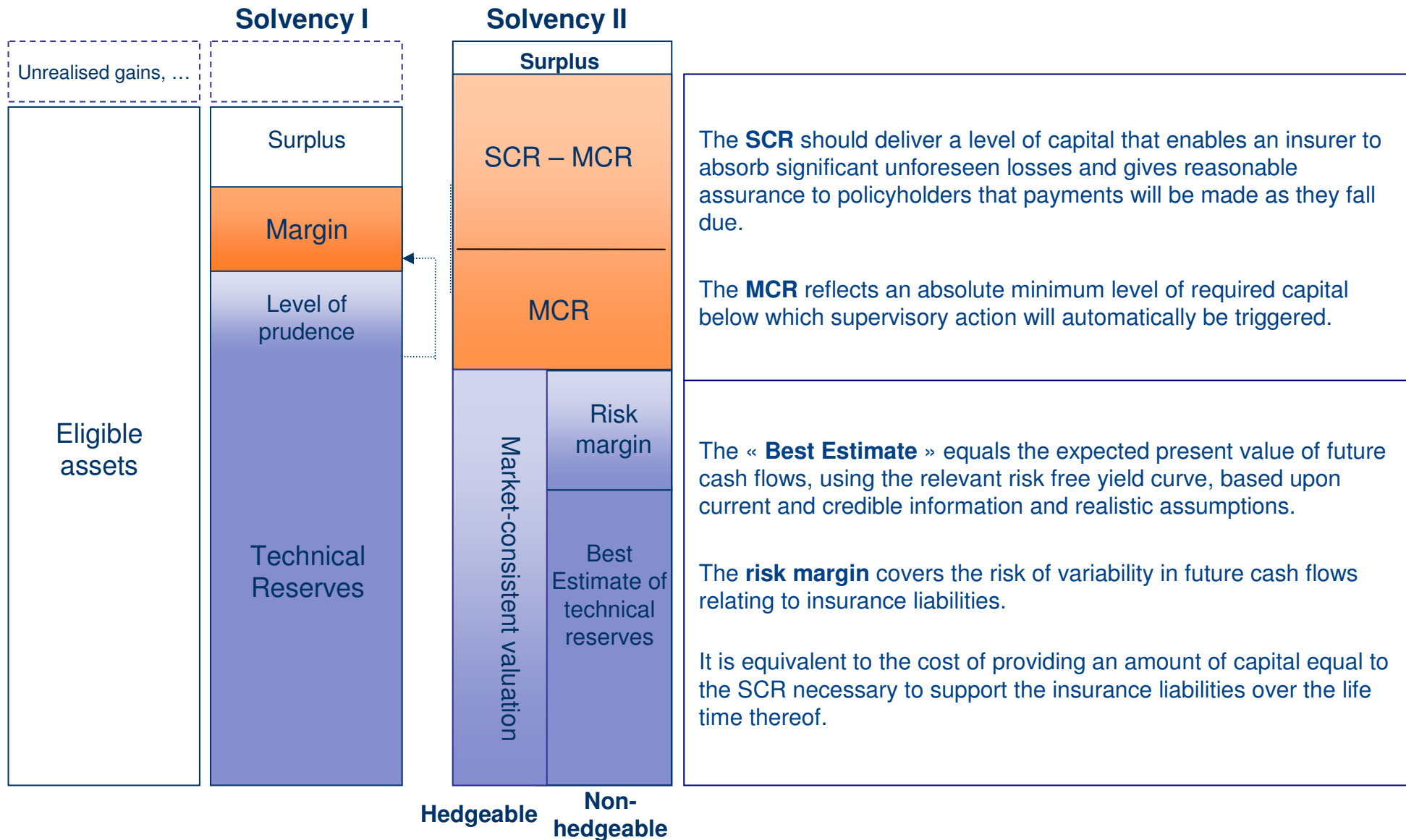
- QIS are a good opportunity for entities to kick off their Solvency 2 project:
 - ▶ At an organisational level
 - *Launch of a «Solvency 2» project, setting up of a solvency committee*
 - *Implementation of a global and consistent approach.*
 - *Early identification of areas where internal processes, procedures and infrastructure need improvement*
 - ▶ At a technical level
 - *Quantification of levels of prudence in reserves*
 - *Risk study and mapping*
 - *Improved risk measurement tools*
 - *Optimisation of capital, asset allocation*
 - ▶ At a financial level
 - *Further perspective on risk management tools: reinsurance, ALM, derivatives,...*
 - *Sources of capital: securitisation, super-subordinated securities*



ASSETS LIABILITIES

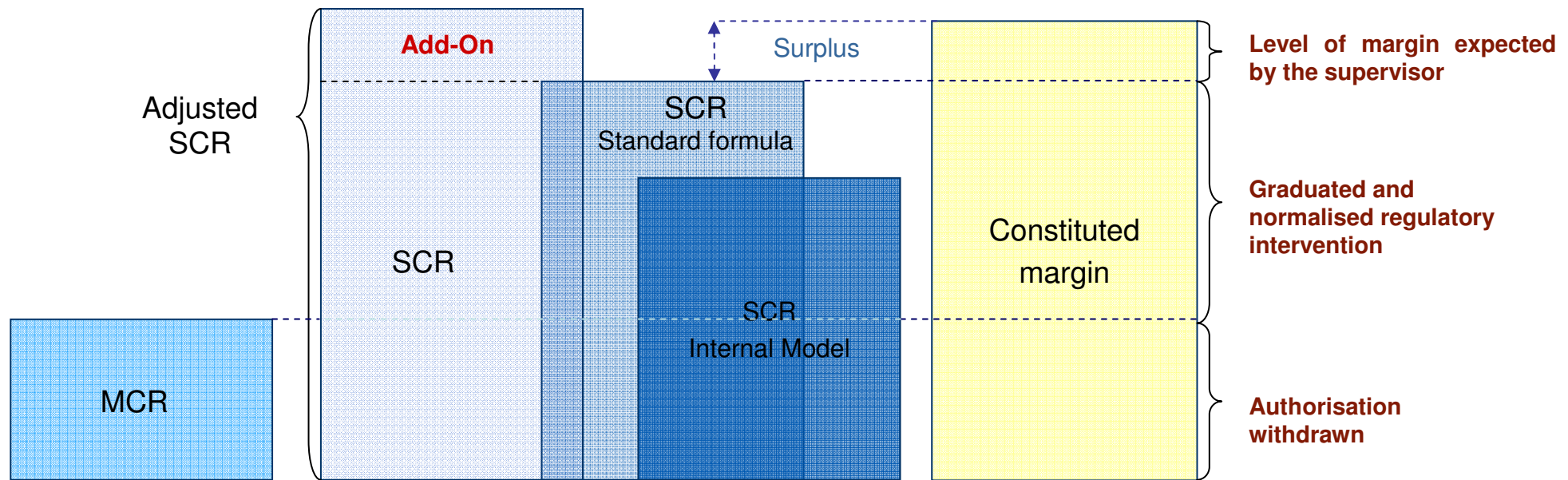


Solvency II update - Solvency II Balance Sheet





Two capital requirement levels



MCR : Minimum Capital Requirement

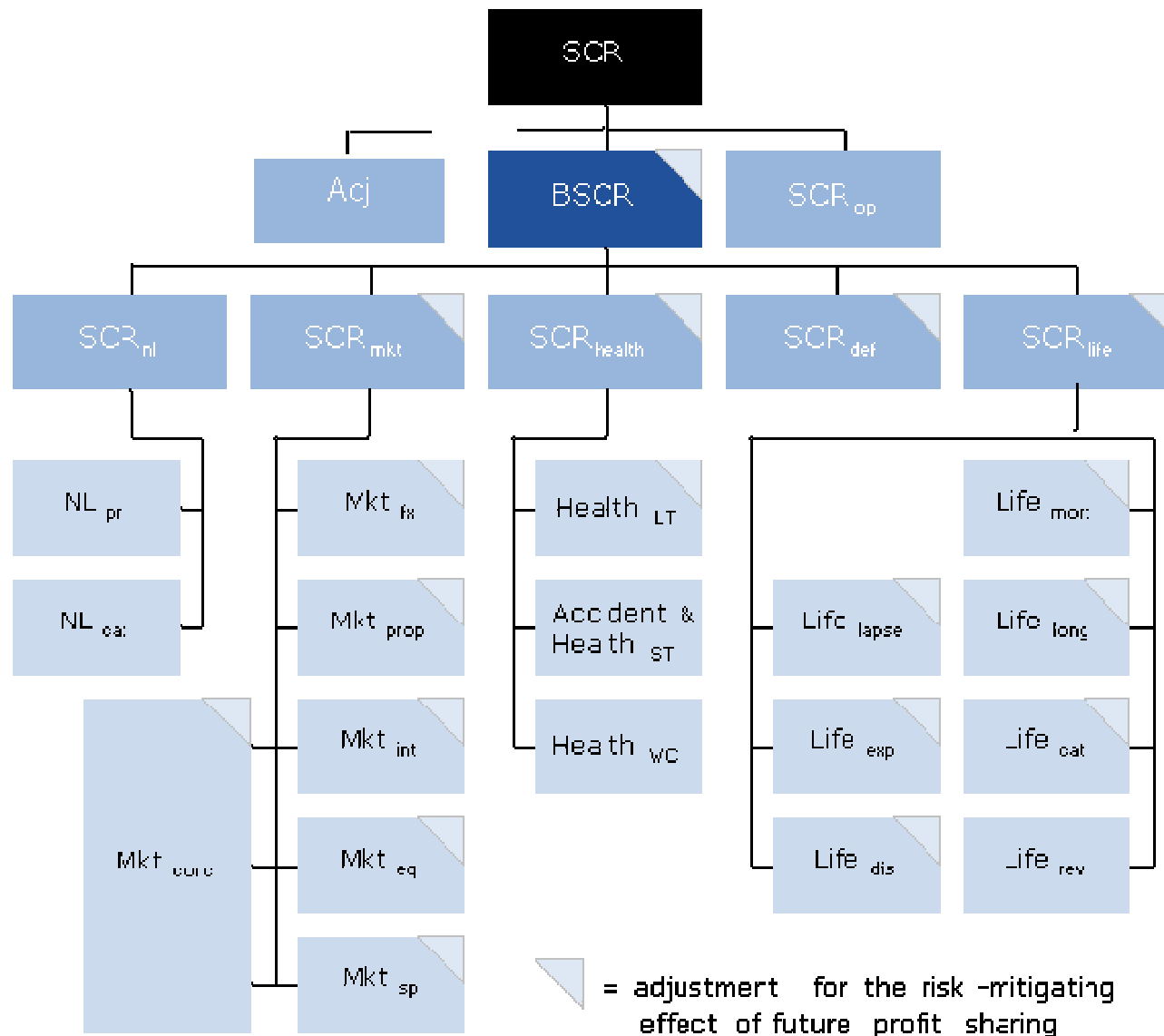
- More complex formula than Solvency 1
- Between two percentages of the SCR
- Ultimate regulatory sanction to be applied if breached

SCR : Solvency Capital Requirement

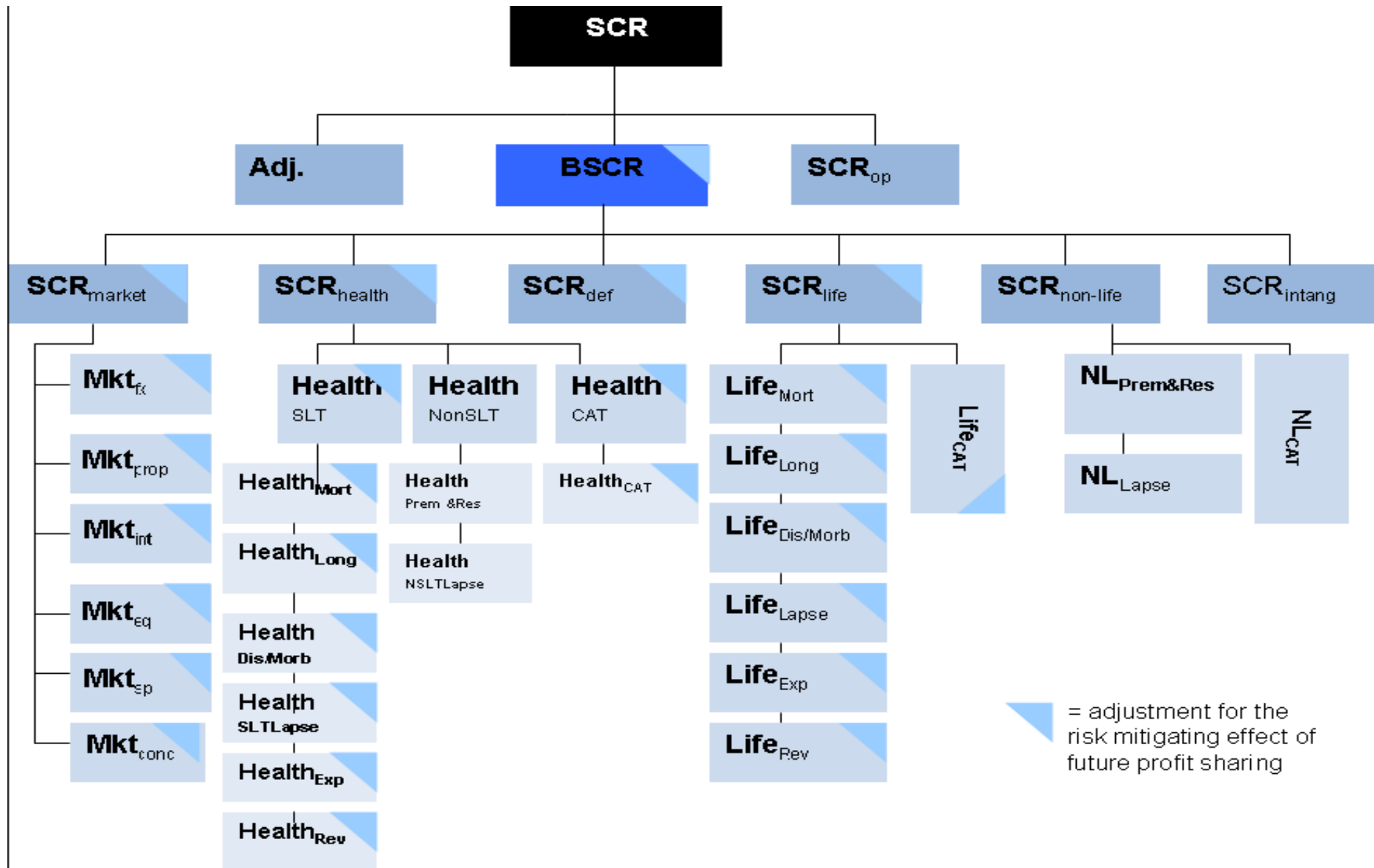
- Standard formula (European coefficients), or
- Internal models, or
- Partial models plus elements of standard formula
- Graduated regulatory measures

Adjusted SCR

- Add-on: the supervisory authorities can, following review of the insurer's own risk assessment, require the firm to hold additional capital
- Some actions can be taken to reduce the level of Add-Ons

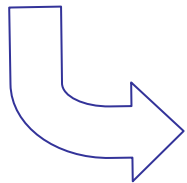


Solvency II update – Draft QIS 5 Framework



Solvency II update - SCR General formula

SCR = Overall Standard Capital Requirement = BSCR + SCR_{op}



$$BSCR = \sqrt{\sum_{ij} Corr_{ij} \times SCR_i \times SCR_j} + SCR_{intangibles}$$

<i>CorrSCR=</i>	<i>SCR_{mkt}</i>	<i>SCR_{def}</i>	<i>SCR_{life}</i>	<i>SCR_{health}</i>	<i>SCR_{nl}</i>
<i>SCR_{mkt}</i>	1	0.25	0.25	0.25	0.25
<i>SCR_{def}</i>	0.25	1	0.25	0.25	0.5
<i>SCR_{life}</i>	0.25	0.25	1	0.25	0
<i>SCR_{health}</i>	0.25	0.25	0.25	1	0
<i>SCR_{nl}</i>	0.25	0.5	0	0	1

SCR_{op} = Capital charge for operational risk

SCR_{intangibles} = Capital charge for intangible assets = factorIA * fair_value_intangible assets,

where factorIA = 80%



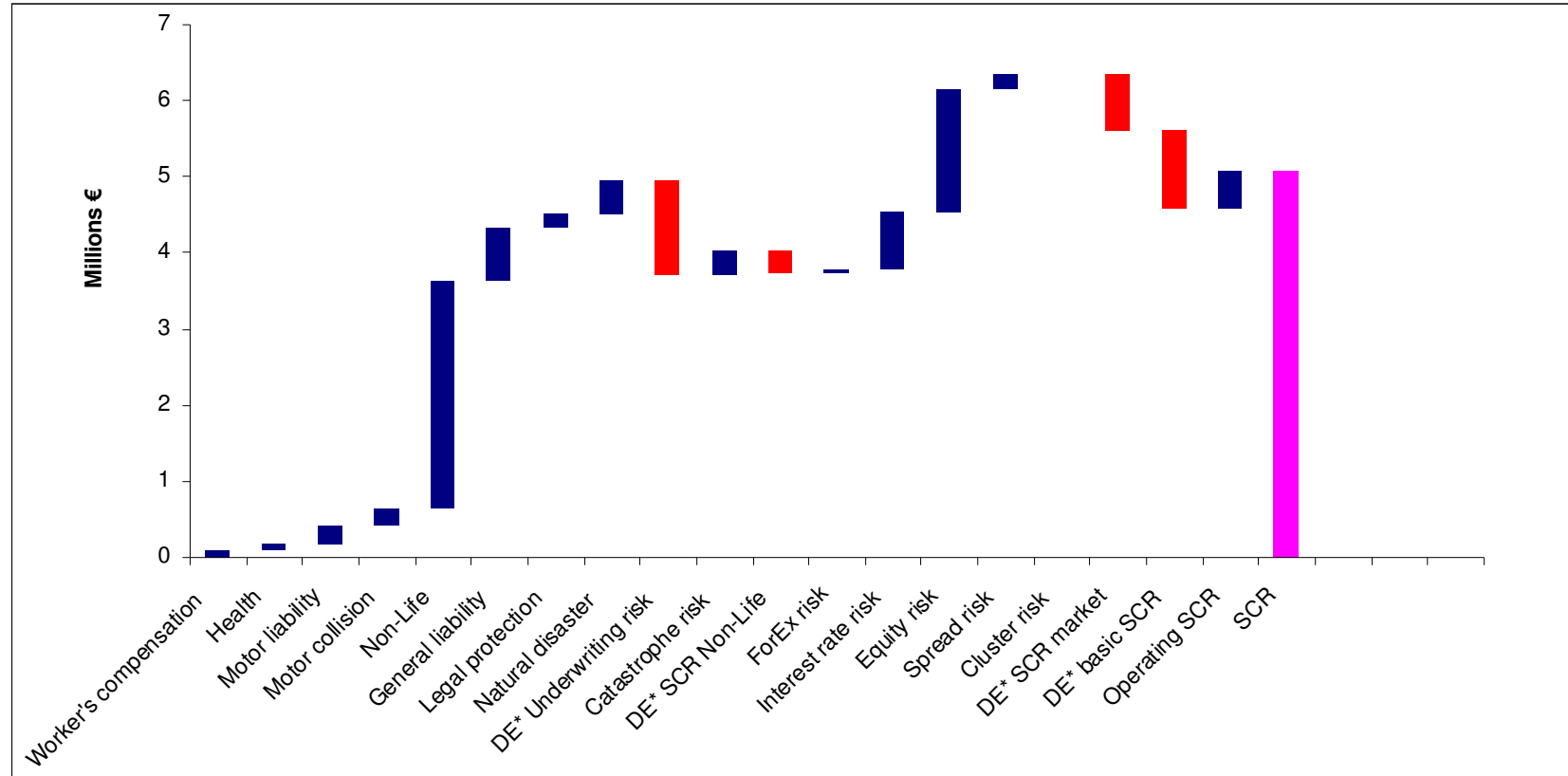
- An AM Best survey has summarised the main causes of insolvencies in the United States between 1969 and 1998:

Main causes of insolvency	Nuber of Compnies impacted	in %	
Insufficient reserves / Inadequate pricing Too rapid growth Catastrophic losses	143 86 36	22.4% 13.5% 5.6%	Underwriting risks 41.5%
Overstated assets Failure of reinsurance cover	40 22	6.3% 3.4%	
Subsidiaries and other related entities Significant change in core businss Alleged Fraud Miscellaneous Unidentified causes	26 28 44 44 169	4.1% 4.4% 6.9% 6.9% 26.5%	
Total	638	100%	

Illustration : Example of risks leading to insolvency

Source : AM Best

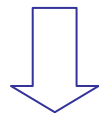
Solvency II update – SCR Components Example



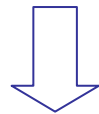
Calculation of the SCR – Concentration Risk

- The definition of market risk concentrations is restricted to the risk regarding the accumulation of exposures with the same counterparty. It does not include other types of concentrations (e.g. geographical area, industry sector etc.)
- To determine the loading needed to cover the concentration risk, calculate the surplus exposure of each security risk (e.g. shares, bonds).

$$XS_i = \max \left\{ 0; \frac{E_i}{Assets_{xl}} - CT \right\}$$



$$Conc_i = Assets_{xl} \cdot XS_i \cdot g_i$$



$$Mkt_{conc} = \sqrt{\sum_i (Conc_i^2 + \sum_j 0.25 * Conc_i * Conc_j)}$$

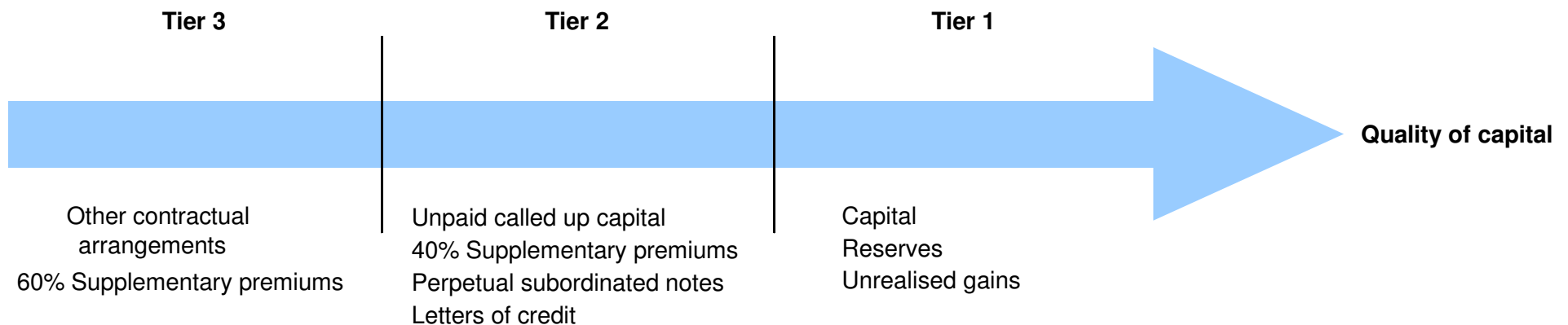
Rating _i	CT
AA-AAA	3.00%
A	3.00%
BBB	1.50%
BB or lower	1.50%

Rating	Credit Quality Step	g_i
AAA	1	0.12
AA	2	0.21
A	3	0.27
BB or lower, unrated	4 – 6, -	0.73



- The principles of eligibility and of classification of capital – “own funds” are defined in the Directive.
- Each element has a different capacity to absorb losses.
- These elements of capital are classified in three levels or « tiers » based on some qualitative considerations (nature of elements and capacity to absorb losses).

Nature Quality	Basic capital	Ancillary capital
High	Tier 1	Tier 2
Medium	Tier 2	Tier 3
Low	Tier 3	-





- **The following elements constitute basic capital:**
 - ▶ The surplus of assets over liabilities, as evaluated in conformity with the Directive (at “market value”);
 - ▶ Subordinated liabilities;
 - ▶ Reduced by the amount of any investment in own shares.

- **Ancillary capital is composed of other elements that can be used to cover losses. This includes the following elements, as far as they are not part of basic capital:**
 - ▶ Unpaid called up capital;
 - ▶ Letters of credit or guarantees;
 - ▶ Any other legally binding commitments e.g. calls for supplementary contributions (mutual or mutual-type associations)

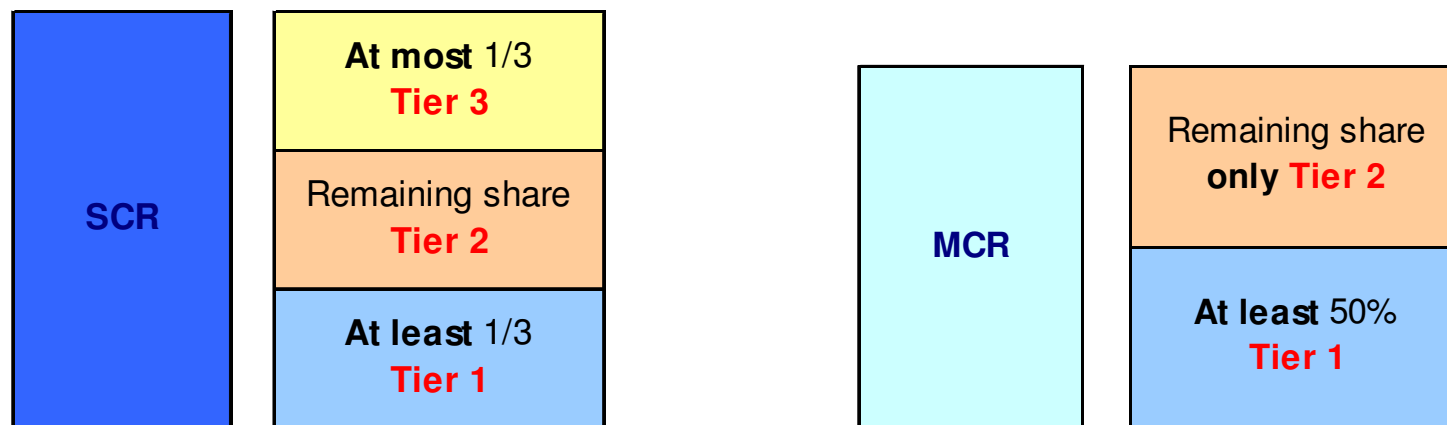
When an item of ancillary capital is paid up, it stops being ancillary capital and becomes part of basic capital.

The amount of the ancillary capital to be taken into consideration is subject to prior supervisory approval.

- **Authorities will base their approval on an assessment of the following:**
 - ▶ The status of the relevant counterparty, with regard to its ability and willingness to pay;
 - ▶ The recoverability of the funds, taking into account the legal form of the item in question and any conditions which might prevent the funds being successfully paid up;
 - ▶ Any relevant information on the outcome of similar calls for ancillary capital in the past.

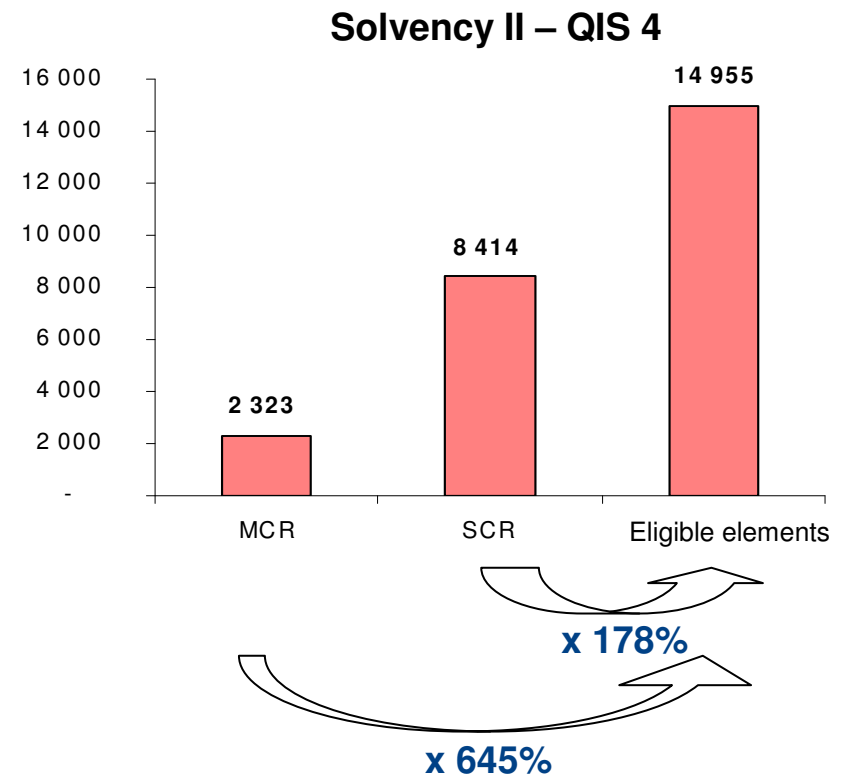
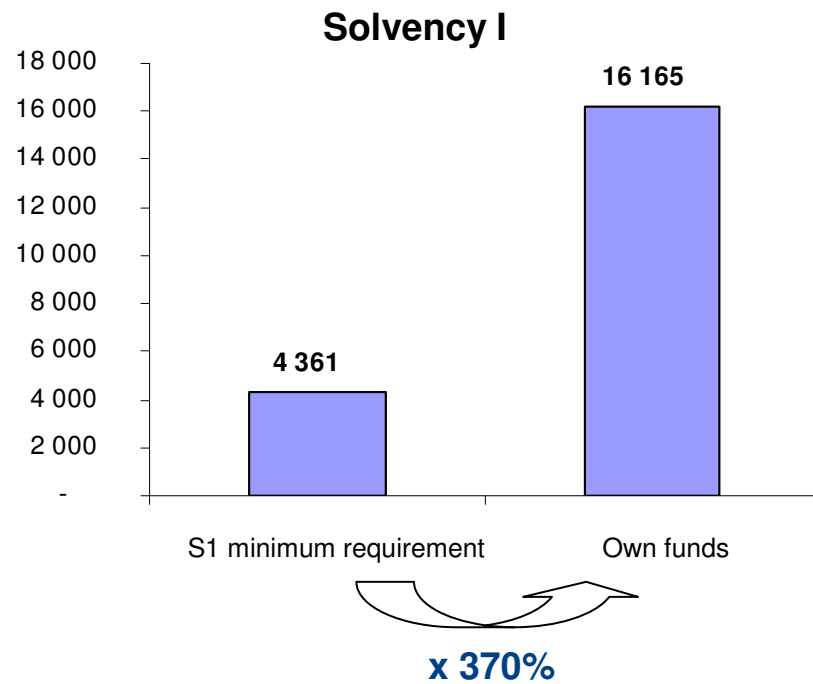


- The use of some tiers of capital is restricted for solvency purposes:



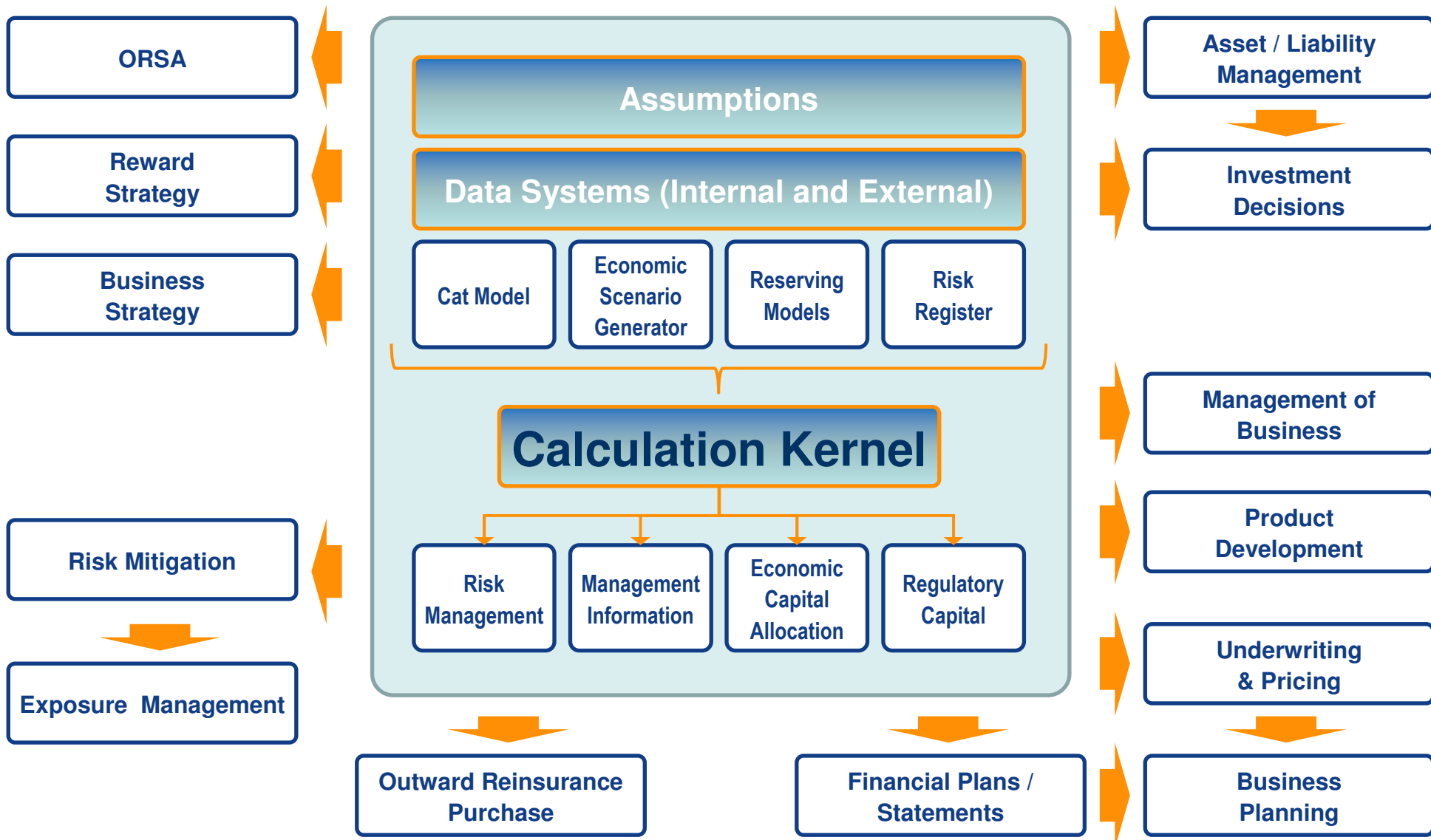
- No tier 3 items can be used to cover the MCR
- Hybrid instruments may be tier 1 capital but they should not account for more than 20% of tier 1 capital

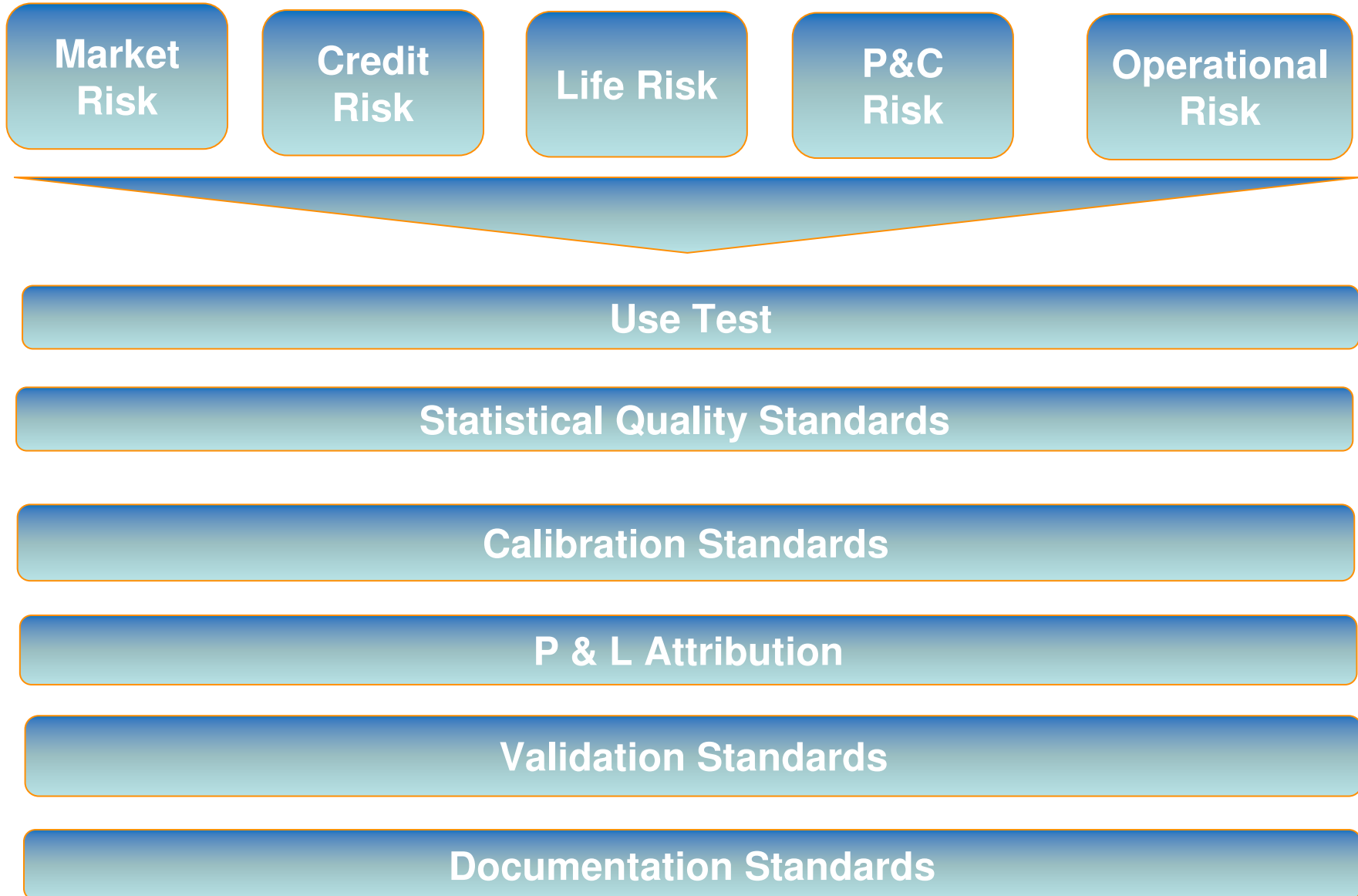
- French non-life company





Solvency II Update – Internal Models and MIMAP







- Gaining approval to use internal model to calculate SCR not a trivial process
 - ▶ undertakings should develop models that inform significant risk management and business decisions

- Six Tests:
 - ▶ Use test
 - ▶ Statistical quality
 - ▶ Calibration
 - ▶ P&L attribution
 - ▶ Validation
 - ▶ Documentation

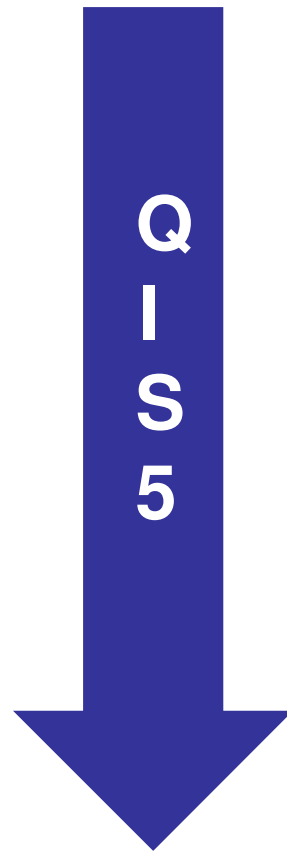
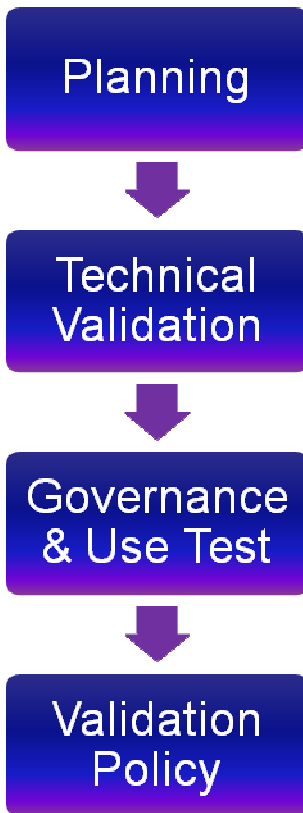
- Validation of all quantitative and qualitative processes of internal model

- Validation is a set of tools and processes
 - Must document how validation will take place and why it is an appropriate approach



A bespoke approach that complements the 'Dry Run' process

MIMAP



Benefits of our process:

- A proven process
- Uses skills and experience of the Technical Governance Panel (TGP)
- Meets clients' specific requirements
- Supported by technical models
- Based on practical experience



Planning



Technical
Validation

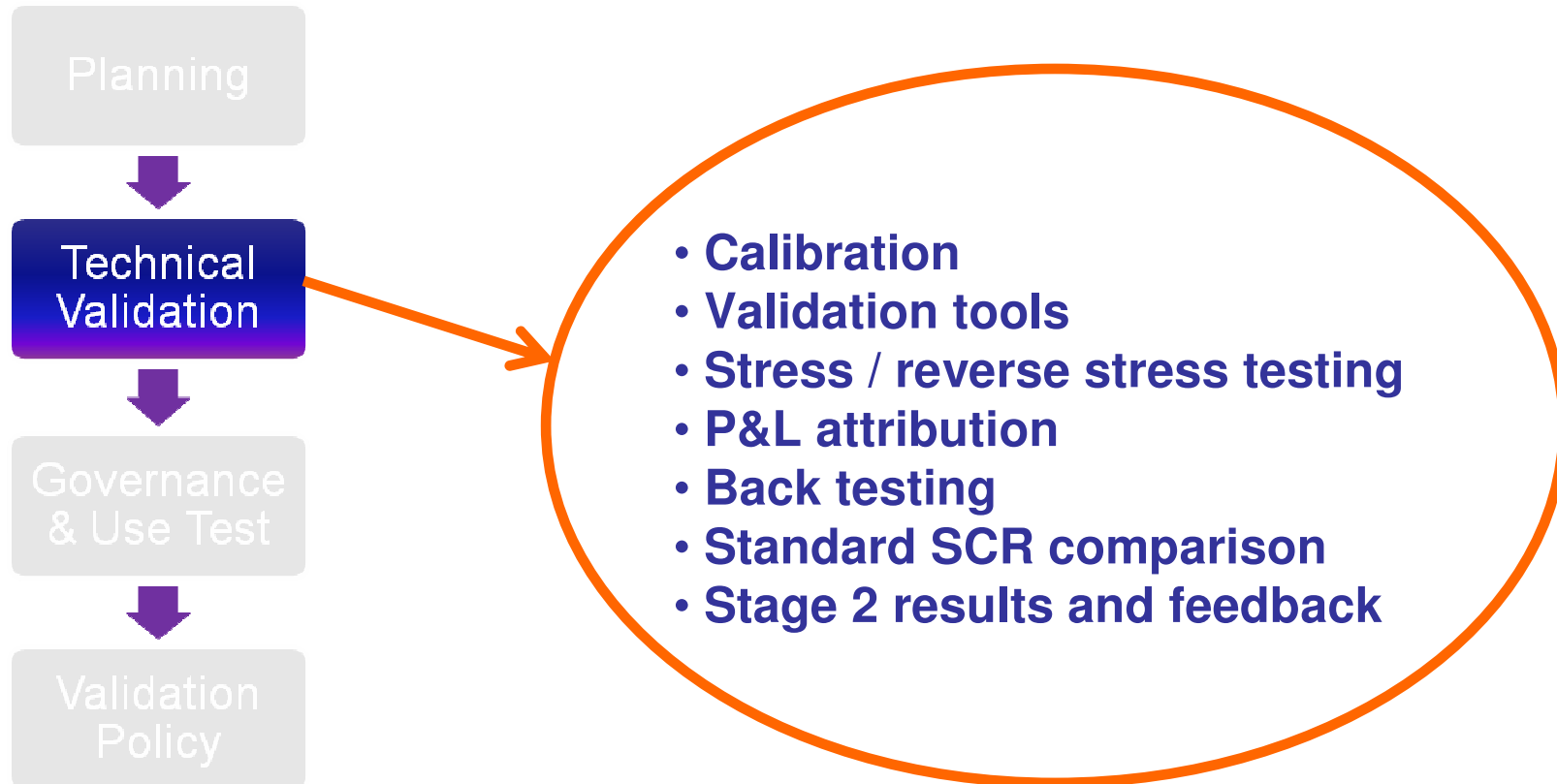


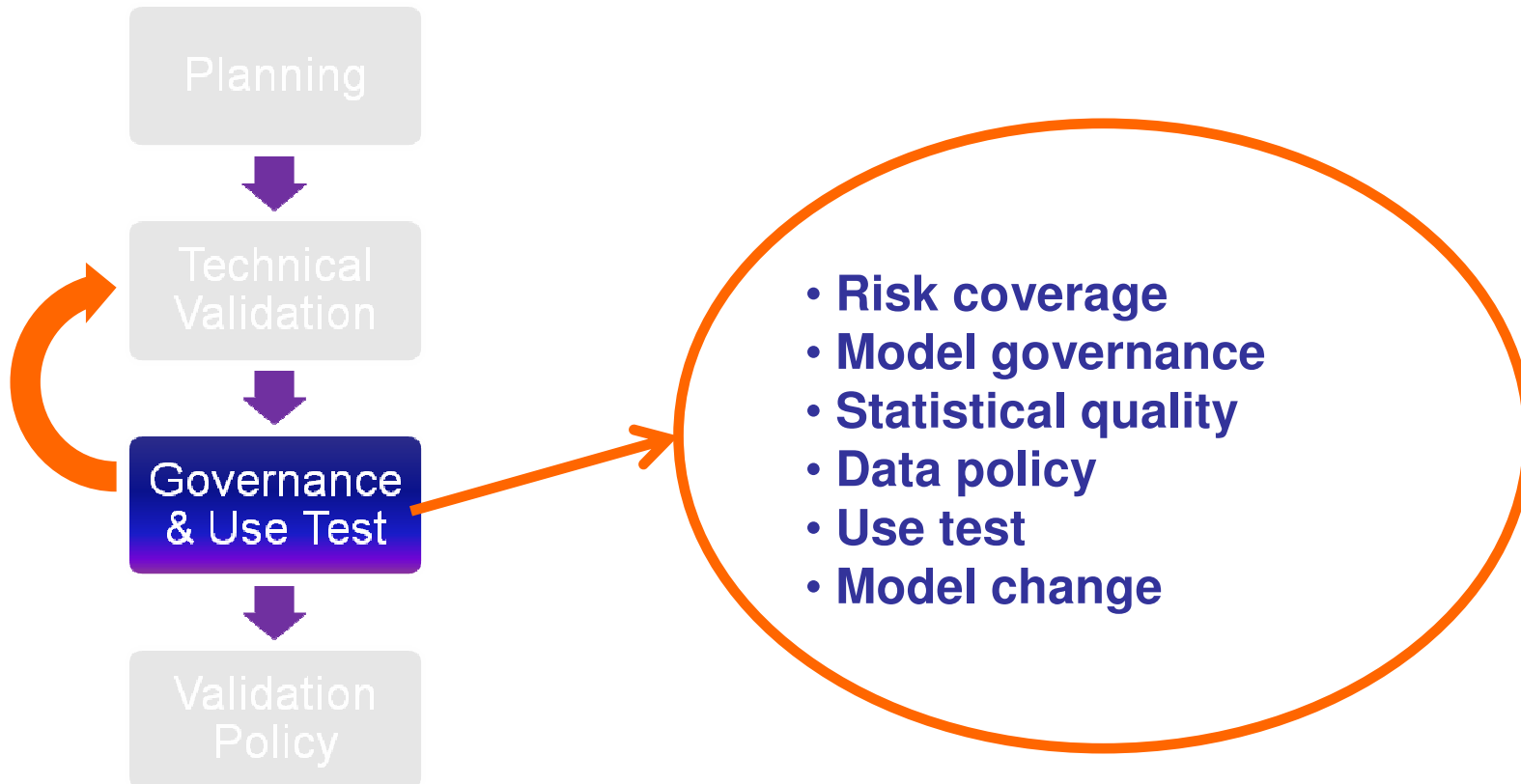
Governance
& Use Test

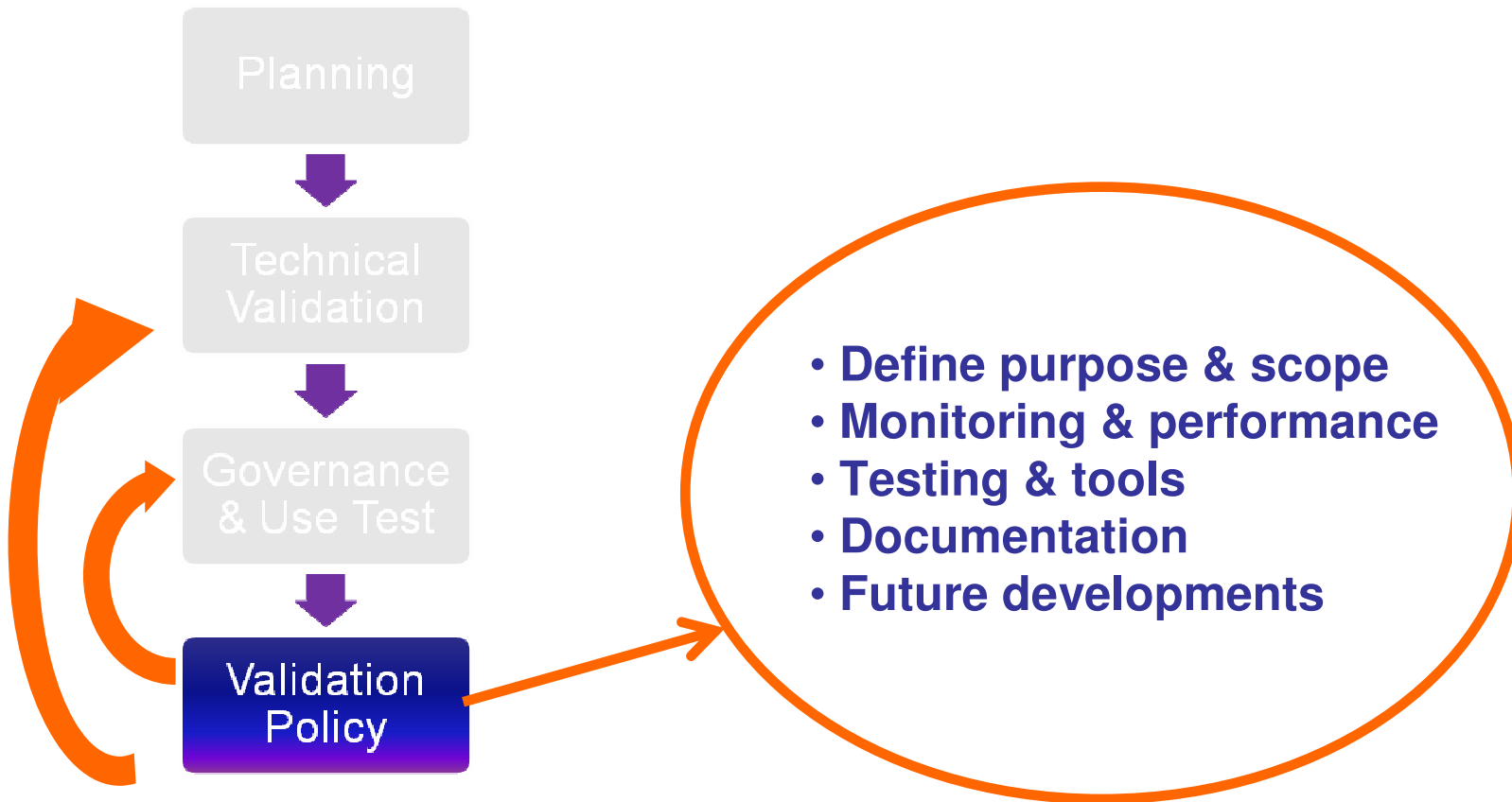


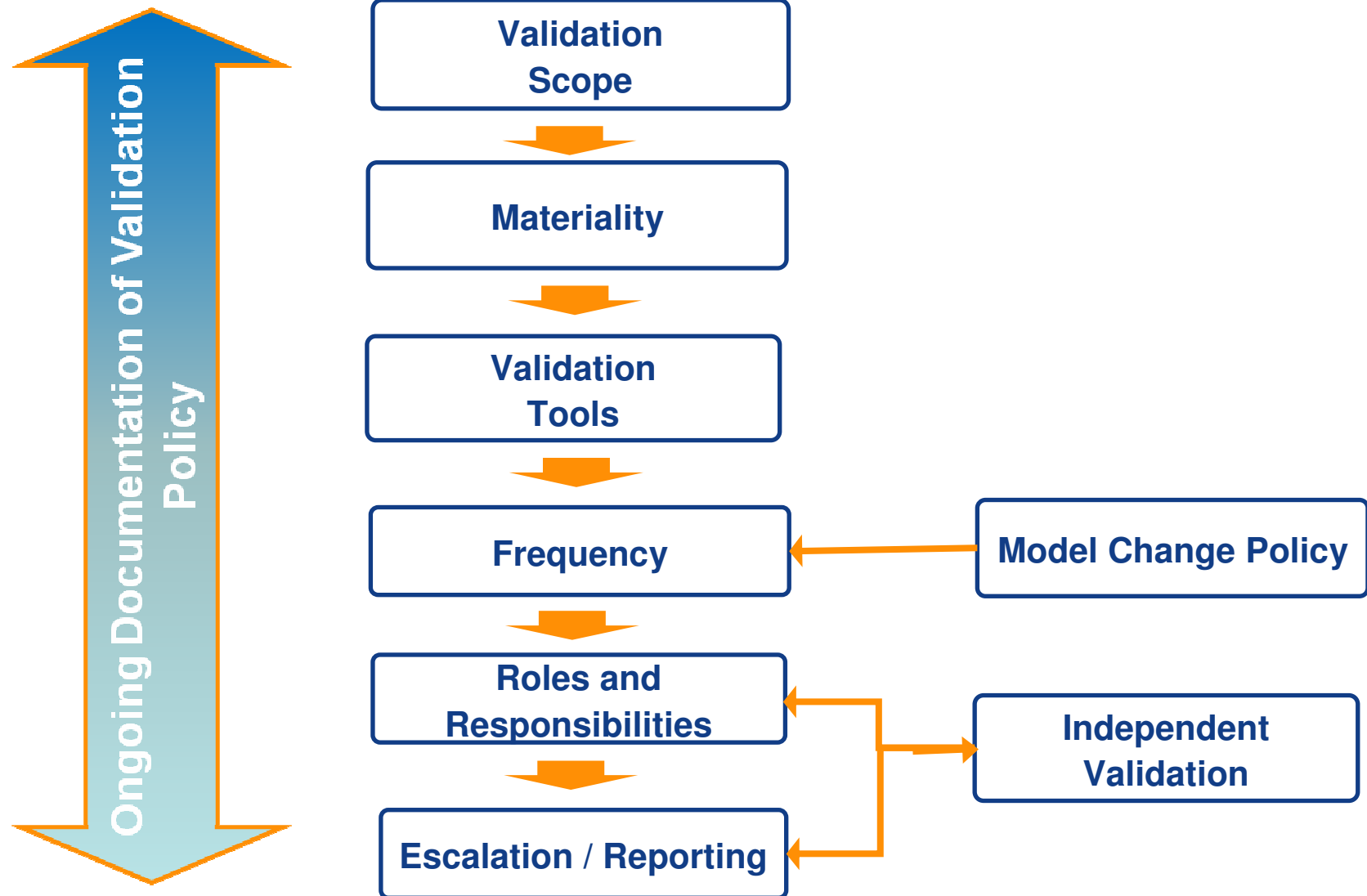
Validation
Policy

- Kick Off workshops
- Current status
- Detailed scoping
- Training
- Integration of TGP
- Stage 1 results and feedback







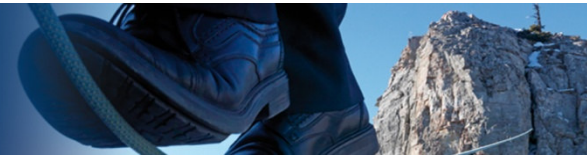




- **Purpose and Scope** – Extent to which firms gain comfort and how achieve it.
- **Tools and Processes** – What will firms use to achieve purpose and scope
- **Frequency of Validation** – Apply proportionality to determine frequency and event limit triggers to check validity
- **Governance of Results** – Risk management function responsible for validation policy, but can delegate. Clarify ownership of validation tasks. Clarify involvement of senior management in validation policy. Clarify escalation criteria.
- **Limitations and Future Developments** – Firms must set out any known limitations and any parts of model not covered. An iterative process of validation policy development. Specify planned developments of policy.
- **Documentation** - Process must be documented in an understandable way for knowledgeable third parties
- **Independent Review** – Essential to effective validation as it creates challenge. Must clarify the independent review process. Explain strategy to maintain independence over time.



Solvency II Update – Documentation



Documentation of the internal model should incorporate the following:

- The **interaction** of disciplines across the organisation
- **Experience and understanding** of the needs across all levels of a company
- Effective **project planning** integrated within the business
- The potential **limitations of models** in practical business situations
- An understanding of the relevant data, assumptions and parameters as applied to each **individual recipient**
- Appropriate level of **granularity**
- Appropriate knowledge in the application of the use of **judgement**
- Knowledge of the **strengths and weaknesses** of the modelling methods
- Processes, controls and **governance** of internal models.



Article 125 - “Insurance and reinsurance undertakings shall document the design and operational details of their internal model.”

Level 2 Advice - “Sufficiently detailed and sufficiently complete to satisfy the criterion that an **independent** knowledgeable third party could form a sound judgment as to the reliability of the internal model and the compliance with Articles 120 to 126”:

- Use test
- Statistical quality
- Calibration
- P&L attribution
- Validation
- External Models

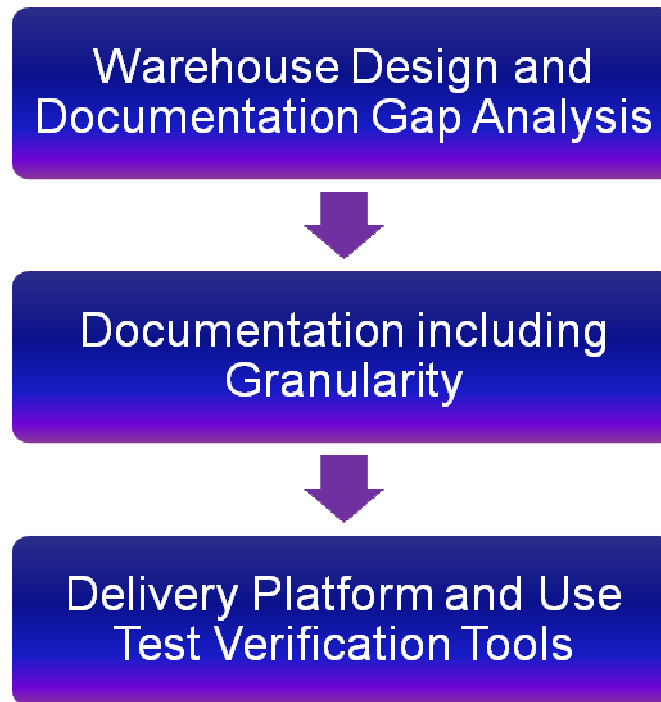


Documentation



Our approach is based on application of our proven model documentation tool, MiDoc, which has been implemented in documentation projects for a number of clients.

There are three key stages namely:





Solvency II Update – Captives



Some of the characteristics of captives do not fit easily into Solvency II.

- ▶ Specialist underwriters limiting risks to those of the owners
 - ▶ The law of large numbers may not apply where the number of risks is limited
 - ▶ Policy wording often bespoke to the owner
 - ▶ Investment strategy can be limited to a small number of assets
 - ▶ Many operational processes are outsourced
 - ▶ Captives do not always follow the insurance market cycle
 - ▶ Lack of resource
-
- **The SCR calculation was designed to represent a 1 in 200 likelihood of insolvency over a one-year period for ‘average’ companies in the insurance industry. Not designed for niche or specialist insurers with alternative structures. SCR unlikely to reflect the nature of the captive risk profile.**
 - **A failed captive should not leave behind exposed policyholders.**
 - **In response CEIOPS has produced some simplifications for captives.**

▪ Some of the challenges facing captives

- ▶ Gearing Solvency II to reflect the nature, scale and complexity of the captive
- ▶ Resource costs; lack of resource cannot be used as a reason for not meeting regulatory standards
- ▶ Impact on investment strategy
- ▶ Formulation of an optimum strategy under Solvency II legislation, in particular following the QIS5 exercise
- ▶ Internal model or standard formula?
 - *Will internal model reduce capital requirement?*
 - *Cost of internal model including resource to meet tests*
 - *Finding a suitable model at a suitable price for a limited line captive insurer.*
- ▶ Internal model validation. There will be a need to achieve a successful approval process with the regulator.
- ▶ Board members are expected to demonstrate that they understand Solvency II. Many of them do not have technical insurance backgrounds.

- Captives must meet prescribed requirements to use simplifications.
- In addition each simplification must be proportionate to the nature, scale and complexity of the risks inherent in the business.
- Simplifications apply to:
 - ▶ Interest rate risk
 - ▶ Market spread risk
 - ▶ Concentration risk
 - ▶ Non-life underwriting risk, including aggregate limits

The simplifications are still quite complex and may not reduce the capital requirement.

- For cedants to captive reinsurers there are simplifications for counterparty risk.

A photograph of a rock climber in a blue jacket and helmet, climbing a rock face, positioned in the top right corner of the slide.

Solvency II Update – The Actuarial Function

Insurance and reinsurance undertakings shall provide for an effective actuarial function to:

- a) Coordinate the calculation of technical provisions;
- b) Ensure the appropriateness of the methodologies and underlying models used as well as the assumptions made in the calculation of technical provisions;
- c) Assess the sufficiency and quality of the data used in the calculation of technical provisions;
- d) Compare best estimates against experience;
- e) Inform the administrative or management body of the reliability and adequacy of the calculation of technical provisions;
- f) Oversee the calculation of technical provisions in the cases set out in Article 82;
- g) Express an opinion on the overall underwriting policy;
- h) Express an opinion on the adequacy of reinsurance arrangements;
- i) Contribute to the effective implementation of the risk management system referred to in Article 43, in particular with respect to the risk modelling underlying the calculation of the capital requirements set out in Chapter VI, Sections 4 and 5 and the assessment referred to in Article 44.



Insurance undertakings shall provide for an effective actuarial function to:

1. Calculation of technical provisions;

2. Appropriateness of the methodologies and underlying models used as well as the assumptions used in the calculation of technical provisions;

c) Assess the sufficiency of the technical provisions;

d) Compare best estimates with the technical provisions;

e) Inform the administration of the company of the reliability and adequacy of the calculation of technical provisions;

f) Oversee the calculation of technical provisions in accordance with Article 82;

g) Express an opinion on the overall underwriting strategy;

h) Express an opinion on the adequacy of reinsurance arrangements;

i) Contribute to the effective implementation of the risk management strategy in accordance with Article 43, in particular with respect to the risk modelling underlying the technical provisions, in line with the requirements set out in Chapter VI, Sections 4 and 5 and the assessment in Article 44.

Technical Reserves

Opinion on Underwriting Policy

Opinion on Reinsurance Arrangements

Contribution to Risk Modelling and Capital Requirements



Who carries out the Actuarial function:

- “The actuarial function shall be carried out by persons who have knowledge of actuarial and financial mathematics, commensurate with the nature, scale and complexity of the risks inherent in the business of the insurance or reinsurance undertaking, and who are able to demonstrate their relevant experience with applicable professional and other standards.”
- so in theory at least they don't actually have to be qualified actuaries!
- but how do you assess what are ‘applicable professional and other standards’?

How is the non-life actuary's work likely to change?

- Case study: an actuary formerly employed by a medium sized general insurance company in a role that required
 - ▶ Quarterly formal reserve valuations and reports to the Board of Directors
 - ▶ Attendance and actuarial input to monthly underwriting and pricing meetings
 - ▶ Attendance and actuarial input to quarterly reinsurance review meetings
- Calculation of technical reserves is still king. The first six of the nine tasks required of the actuarial function are technical reserve related.
- However, the Solvency II requirements do make specific reference to the need for assessing the appropriateness, accuracy and completeness of the available data with a requirement to convey recommendations on improving data quality. This is likely to represent an additional set of duties to the normal actuarial workload.

How is the non-life actuary's work likely to change?

- The seventh actuarial function requirement is:
 - ▶ Express an opinion on the overall underwriting policy;
- A real departure from existing actuarial tasks.
- Expressing an opinion on underwriting will require a detailed and close understanding of how underwriters operate. The opinion does not need to cover every single policy, but the underwriting policy in general.
- Underwriting comes in several different varieties, sometimes within the same insurer. So the actuary's involvement may vary considerably.
- Diplomacy may be tested in underwriter led organisations.



- The eighth actuarial function requirement is:
 - ▶ Express an opinion on the adequacy of reinsurance arrangements;
- Probably less of a departure from existing tasks than the opinion on overall underwriting policy
- The guidance states that “ ... the opinion to be expressed by the actuarial function should include an opinion on the adequacy of the reinsurance and other mitigation techniques strategy in relation to the underwriting policy and the adequacy of the technical provisions arising from reinsurance.”
- The opinion on adequacy of technical provisions should arguably belong to the first six actuarial function requirements which deal specifically with technical reserve adequacy.

- The final actuarial function requirement is:
 - ▶ Contribute to the effective implementation of the risk management system referred to in Article 43, in particular with respect to the risk modelling underlying the calculation of the capital requirements set out in Chapter VI, Sections 4 and 5 and the assessment referred to in Article 44.
- According to the solvency II directive it is the risk management function which is responsible for the design, implementation, testing and validation of the internal risk model. However, the actuarial function is in no way precluded from assisting in these tasks!



- The IP mentions that the actuarial function can be involved in performing the functions and taking decisions in areas which it is required to opine on (e.g. underwriting policy).
- The IP also states that “In forming and formulating its own actuarial view the actuarial function shall be objective and free from influence of other functions of the administrative, management or supervisory body and provide its opinions in an independent fashion.”
- An outsourced actuarial function may help to bring the independence required

- The role of the actuary is set to expand
- Resources are likely to be stretched
- Involvement in non traditional actuarial areas
- Potentially a challenge for the actuarial profession
- BAS and Groupe Consultatif developing guidance
- A cultural shift may also be needed. There will be a greater need for the actuary to get his/her hands dirty and report their findings

A dark blue banner at the top of the slide features a photograph of a person's hands and feet in climbing gear, gripping a rope and a rock face.

Solvency II Update – ORSA



The Eight Dimensions of Risk and Performance Management





- ▶ CEIOPS Issues paper 27 May 2008 defines the ORSA

9. The entirety of the processes and procedures employed to identify, assess, monitor, manage, and report the short and long term risks a (re)insurance undertaking faces or may face and to determine the own funds necessary to ensure that the undertaking's overall solvency needs are met at all times

- ▶ What is the ORSA?
 - *Risk management tool*
 - *For assessing risks and own funds required to back them*
 - *'ORSA process' versus 'ORSA outcome'*
 - *More than a just a calculation engine!*
- ▶ Proportionality principle



Principle A

The ORSA is the responsibility of the undertaking and should be regularly reviewed and approved by the undertaking's administrative or management body.

Principle B

The ORSA should encompass all material risks that may have an impact on the undertaking's ability to meet its obligations under insurance contracts

Principle C

The ORSA should be based on adequate measurement and assessment processes and form an integral part of the management process and decision making framework of the undertaking

Principle D

The ORSA should be forward-looking, taking into account the undertaking's business plans and projections

Principle E

The ORSA process and outcome should be appropriately evidenced and internally documented as well as independently assessed



■ Actuarial consulting

- ▶ Building models under UK's ICAS framework at international (re)insurers
- ▶ Responsible for Individual Capital Assessments (ICA) - under ICAS at international (re)insurers
- ▶ Benchmarking ICAs
- ▶ QIS 2, 3 and 4 submissions and review
- ▶ Assisting with transition to Solvency II technical reserving
- ▶ Validation of internal models under ICAS and Solvency II
- ▶ Embedding and integration of modelling throughout insurance business through board level
- ▶ Solvency II training
- ▶ Solvency II gap analysis

■ Cross functional activities

- ▶ Solvency II project management
- ▶ Solvency II implementation
- ▶ Change management
- ▶ Business process re-engineering
- ▶ Management information systems and data mapping

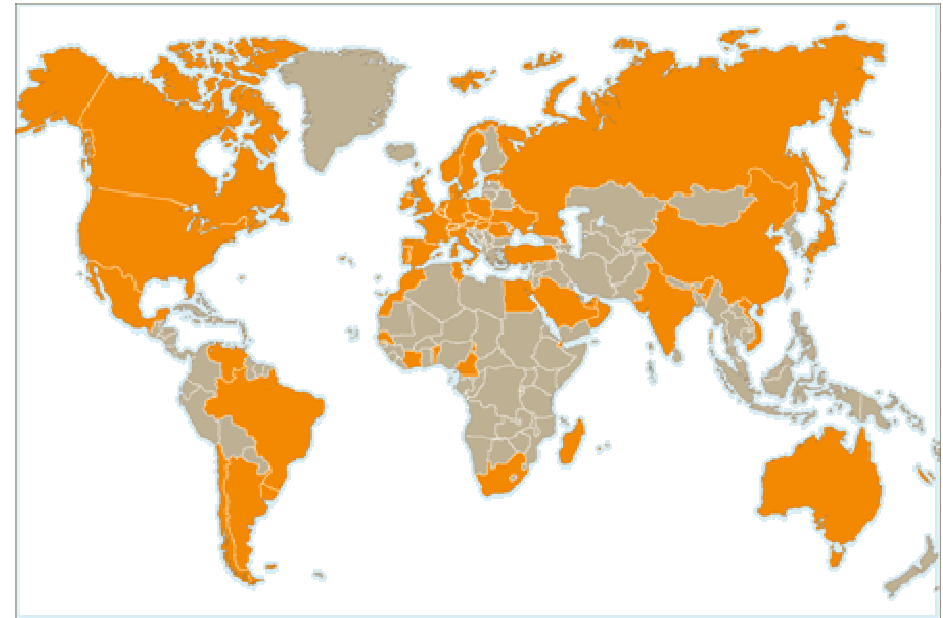


- *Mazars Actuaries & Consultants LLP is a subsidiary of Mazars LLP*
- *Mazars LLP is the UK firm of Mazars, an international advisory and accountancy group.*
- *The information provided during this presentation is intended to provide only a general outline of the subjects covered. Accordingly, Mazars Actuaries & Consultants LLP, Mazars LLP and Mazars accept no responsibility for loss arising from any action taken or not taken by anyone attending this presentation.*
- *The information in these slides will have been supplemented by matters arising from the oral presentation by us, and should be considered in the light of this additional information.*
- *If you require any further information or explanations, or specific advice, please contact us and we will be happy to discuss matters further.*

Worldwide

Mazars is an integrated organisation of 12,500 professionals in 56 countries, generating revenues of more than €767 million.

With *Praxity*, the international alliance of which it is a founding member, Mazars has access to and additional 14,000 professionals 22 additional countries.



EUROPE



Europe

26 countries

6,600 professionals

Mazars is the 7th largest audit firm in Europe.

It provides services to more than 15% of the FTSE Eurofirst 100 and to more than 200 other listed clients in Europe.

Integrated international teams are available over our entire range of services.

- **Team**
 - ▶ 18 partners
 - ▶ Over 200 professionals
- **Offices: Dublin, Galway and Belfast**
- **Market Position**
 - ▶ One of Ireland's largest audit and advisory firms
- **Business fields**
 - ▶ Audit, Tax, Consulting, Business Advisory
- **Clients**
 - ▶ Banking & insurance sectors
 - ▶ Industry sector
 - ▶ Public and Not for Profit sectors
 - ▶ SME sector
 - ▶ Higher education sector



Contacts :

Mark Kennedy – Partner

mkennedy@mazars.ie

+353 1 4494442

Adam Brunskill – Partner

adam.brunskill@mazars.co.uk

+44 207 063 4200

Dale Lee - Partner

dale.lee@mazars.co.uk

+44 207 063 4199

Peter Gatenby – Partner

peter.gatenby@mazars.co.uk

+44 207 063 4474

Address:

Block 3 - Harcourt Centre

Harcourt Road

Dublin 2

Ireland

Tower Bridge House

St Katharine's Way

London

E1W 1DD

United Kingdom

Join Mazars Ireland Solvency II Group on 