SHMA

FROM COMPLIANCE TO CAPABILITY

RECENT DEVELOPMENTS IN ERM & RBC IN UAE AND KSA

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KSA: Actuarial Shift to Risk & Exposure Modeling

By introducing Reinsurance Optimisation and Risk-Based Capital, the Insurance Authority shifted actuarial work from aggregate reserving to peril-level exposure assessment and risk modelling, requiring actuaries to analyse frequency, severity, and tail risk to inform reinsurance design, capital adequacy, and risk-based decisions.

REINSURANCE OPTIMIZATION

Historical Analysis

Assess each Reinsurance Arrangement for its Historical Performance

Stochastic Modeling

Forward looking stochastic approaches to determine both Average performance as well as tail behavior

Recommendation based on clear Risk Assessment

Requiring Actuaries to determine a comprehsive view on Risk Behavior especially for tail events and recommend Reinsurance Strategies accordingly

Forward looking

Capital Adequacy is assessed for both forward looking BS projections as well as for current period

Solvency II inspired shocks

Capital Model inspired by a globally renowned standard with shocks having a well documented rationale

Exposure based Scenarios

CAT Module covered through Scenarios requiring companies and actuaries to understand their contractual risks and trigger points

RISK-BASED CAPITAL

An Overview of the KSA RBC Framework

From the existing Solvency framework which was based largley on the Solvency I framework of Europe, the shift to RBC marks a giant leap. The solvency framework phases out the Asset Admissibility requirements replacing them with Prudent Principles in Investing and furthermore allowing companies to have their own Internal Capital Models subject to IA's approval.

Insurance Risk

Volatility in Premium Risk and Reserve Risk, followed by a Scenario Based CAT Module. Separate module for long-term life

Investment Risk

Fully inspired Solvency II Investment Risk Module covering Interest Rate, Property, Equity, Spread, Currency and Concentration Risk

Credit Risk

Fully inspired Solvency II Credit Risk Module with Type I and Type II exposures and offsetting allowance for collaterals

Operational Risk

Assumes a Cyber Attack scenario causing business interuption for several weeks and resultant loss in business and ransom

PPP

Departure from the traditional Asset Admissibility Regulations to the Prudent Person Principles in Investing

UAE: Enter ORSA, Recovery Planning, ERM and Climate Change Regulations

While there are still speculations about whether or not CBUAE will change the current solvency regime to accomodate IFRS-17 financial basis, in UAE there has been an onslaught of new regulations from a Risk Management Perspective and ORSA has been mentioned in nearly all of them.

01

DECEMBER 2022

ORSA got mandated for the first time through Risk Management and Internal Controls Regulations

02

DECEMBER 2023

Recovery Plan Regulations Issued directing companies to monitor key solvency metrics and build resilience plan. Mentions ORSA.

03

CLIMATE CHANGE

Instructions issued at various timepoints to consider Climate Change in ERM. Very recent instructions in October 2025. ORSA cited again

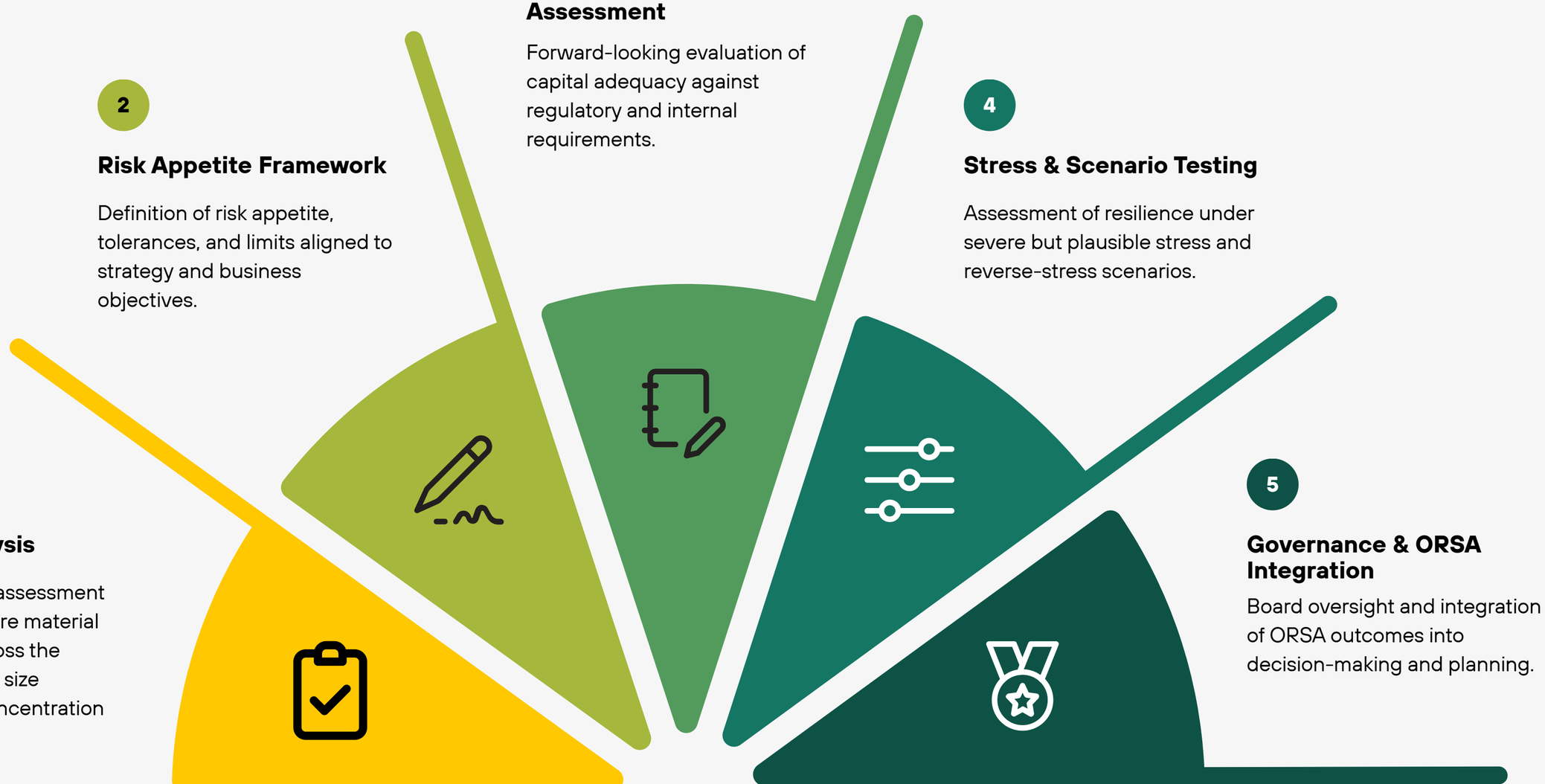
04

JANUARY 2026

New ERM for Insurance companies regulations issued requiring policies, procedures, duties and framework. ORSA related instructions added.

Components of ORSA

ORSA is meant to be a forward-looking assessment of the company's material risk exposures, forming the foundation for capital, solvency, and risk management decisions. **An opportunity to build dynamic RBC models that can be used in real time decision making and capital management.**



1

Exposure Analysis

Identification and assessment of current and future material risk exposures across the business, covering size geography and concentration

2

Risk Appetite Framework

Definition of risk appetite, tolerances, and limits aligned to strategy and business objectives.

3

Capital & Solvency Assessment

Forward-looking evaluation of capital adequacy against regulatory and internal requirements.

4

Stress & Scenario Testing

Assessment of resilience under severe but plausible stress and reverse-stress scenarios.

5

Governance & ORSA Integration

Board oversight and integration of ORSA outcomes into decision-making and planning.

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THANK YOU

Looking forward to continuing the dialogue with all of you

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INTERNATIONAL ARAB ACTUARIAL CONGRESS

Capital Models and Risk Management for Insurance and Takaful Businesses

WTW

4 February 2026

With you today

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„Personal business footprint“

Insurers worldwide
use internal models

Key Ideas of Risk Modelling

What is Risk Modelling?

- Quantitative approach to determine the **appropriate amount of capital** an insurance company needs to remain solvent under extreme conditions (e.g. large losses, financial stress)
- It helps assess the **capital required** to absorb losses from various risk exposures, including underwriting risk and reserve risk

How does Risk Modelling work?

- It combines **historical data** and **risk assessment** techniques (e.g. probability distributions) to calculate the **capital required to cover potential losses**. The model evaluates risks from areas like claims, investments and catastrophes
- **Advanced statistical methods** (e.g. Monte Carlo simulations) are used to **quantify risk exposures** and test capital sufficiency under multiple scenarios

Why is Risk Modelling Needed?

Regulatory Compliance: ensures the insurer can meet local and/or international regulations for solvency

Risk Management (ERM): enhances decision-making by aligning capital to actual risks, rather than using generic formulas that may not reflect their true risk exposure

Capital Efficiency: helps optimise the amount of capital held, ensuring sufficient coverage while avoiding excessive reserves

Strategic Advantages: supports decision-making in key business functions including pricing, reserving, underwriting strategy, investment decisions and reinsurance optimisations

Credit Ratings: insurers with strong capital modelling capabilities often receive better credit ratings, leading to lower borrowing costs and increased market credibility

Applications of a bespoke Risk Model

External motivations

Regulatory	Rating ambitions	Investors
Expectations around introducing risk-based capital approach	Will require embedded ERM, likely including IM capital. Embedding of BCAR model	Dividend management Attracting potential investors

Internal uses and benefits / Identifying key business decisions

Feed into risk appetite setting process	Asset class optimisation	Scenario and strategy testing	Good corporate governance	Assist with Reinsurance purchase/optimisation	Measure ROC by line of business
Quantify risk within the business and achieve a better balance between risk/reward	Assist with business planning	Identify opportunities (e.g. M&A)	Establish appropriate capital charges/ profit loads	Performance measurement by business unit/capital by business unit	Control risk aggregation

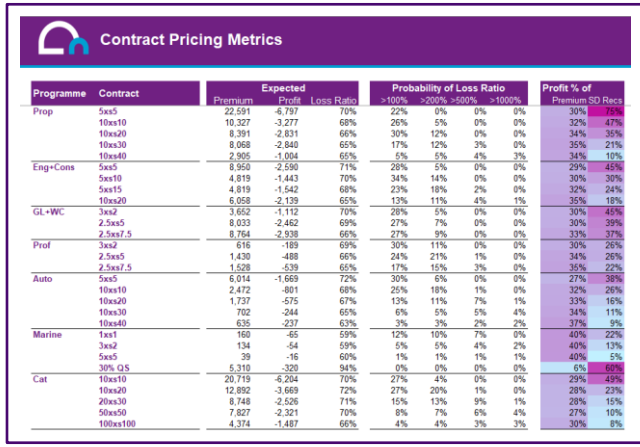
The intended model uses guide the model specification: **Basis, granularity, time horizon, outputs, what triggers a model run**

Reinsurance Analytics as a prominent use case

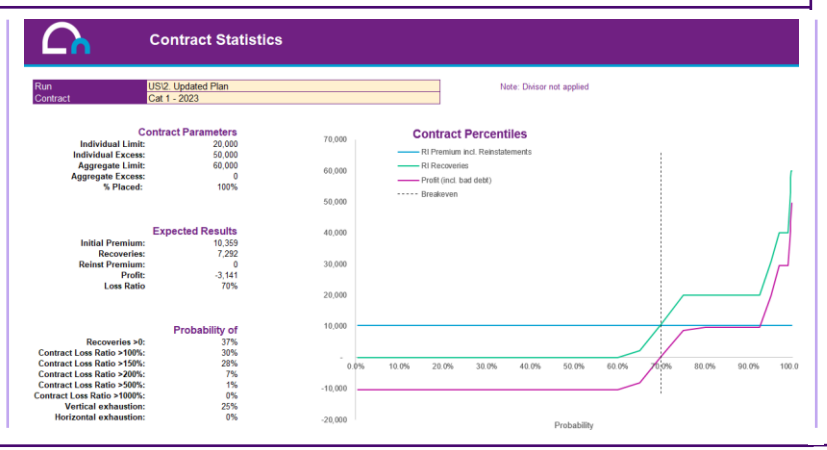
Insurers use capital models to understand their risk profile and test how different reinsurance structures perform with regard to:

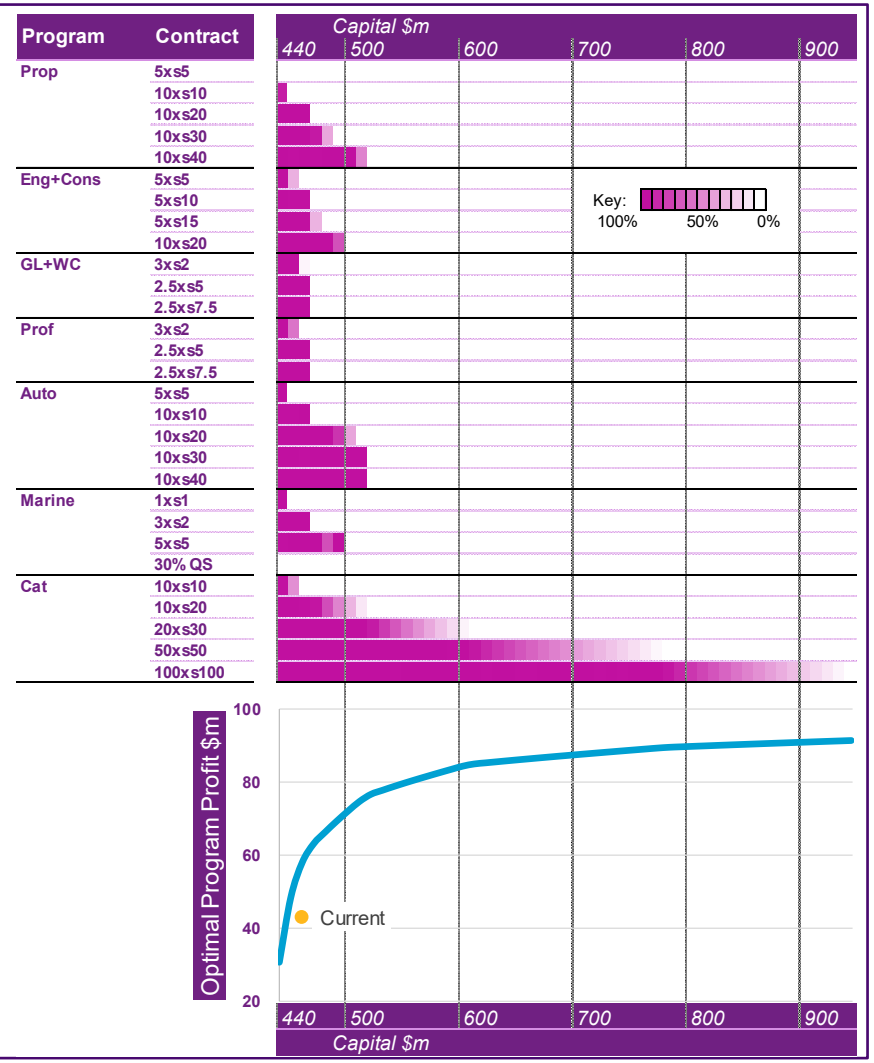
- **Controlling volatility**
- **Reducing capital**
- **Maximising return on capital**
- **Maximising efficiency of reinsurance spend**

Tools come with a comprehensive modelling library so that insurers can model all types of contracts and structures. Reports and diagnostics give insights into the current program and guide you towards the optimal program.



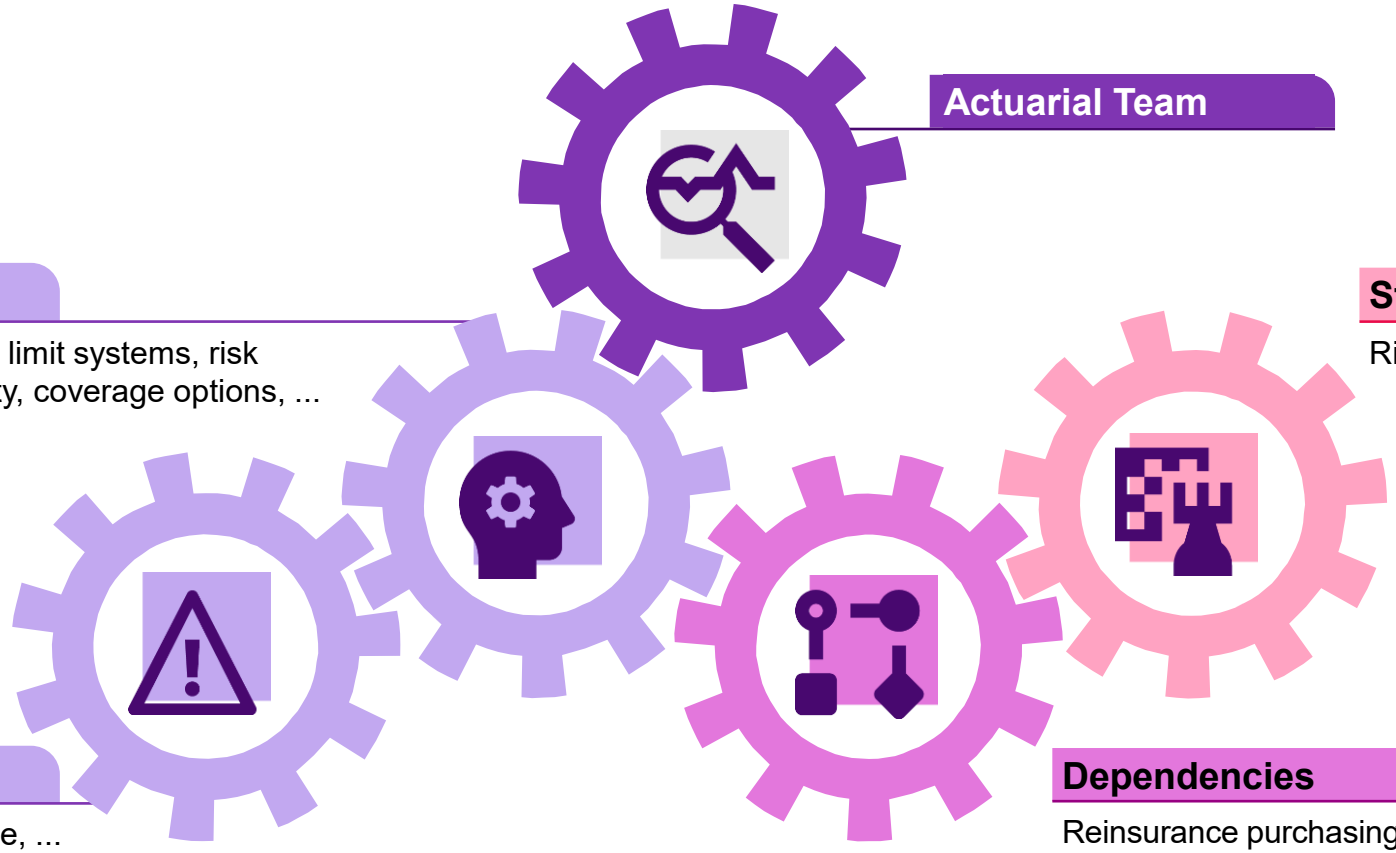
Programme	Contract	Expected Premium	Expected Profit	Expected Loss Ratio	Probability of Loss Ratio >100%	>200%	>500%	>1000%	Profit % of Premium	SD Recs
Prop	5xs5	22,591	-6,797	70%	22%	0%	0%	0%	30%	15%
	10xs10	10,327	-3,277	68%	26%	5%	0%	0%	32%	47%
	10xs20	8,391	-2,831	66%	30%	12%	0%	0%	34%	35%
	10xs30	8,068	-2,840	65%	17%	12%	3%	0%	35%	21%
	10xs40	2,905	-1,004	65%	5%	5%	4%	3%	34%	10%
Eng+Cons	5xs5	8,960	-2,590	71%	28%	5%	0%	0%	29%	45%
	5xs10	4,819	-1,443	70%	34%	14%	0%	0%	30%	30%
	5xs15	4,819	-1,542	68%	23%	18%	2%	0%	32%	24%
	10xs20	6,058	-2,139	65%	13%	11%	4%	1%	35%	18%
GL+WC	3xs2	3,652	-1,112	70%	28%	5%	0%	0%	30%	45%
	2.5xs5	8,033	-2,462	69%	27%	7%	0%	0%	30%	39%
	2.5xs7.5	8,764	-2,938	66%	27%	9%	0%	0%	33%	37%
Prof	3xs2	616	-189	69%	30%	11%	0%	0%	30%	26%
	2.5xs5	1,430	-488	66%	24%	21%	1%	0%	34%	26%
	2.5xs7.5	1,528	-539	65%	17%	15%	3%	0%	35%	22%
Auto	5xs5	6,014	-1,669	72%	30%	6%	0%	0%	27%	38%
	10xs10	2,472	-801	68%	25%	18%	1%	0%	32%	26%
	10xs20	1,737	-575	67%	13%	11%	7%	1%	33%	16%
	10xs30	702	-244	65%	6%	5%	5%	4%	34%	11%
	10xs40	635	-237	63%	3%	3%	2%	2%	37%	9%
Marine	1xs1	160	-65	59%	12%	10%	7%	0%	40%	22%
	3xs2	134	-54	59%	5%	5%	4%	2%	40%	13%
	5xs5	39	-16	60%	1%	1%	1%	1%	40%	5%
	30% QS	5,310	-320	94%	0%	0%	0%	0%	6%	60%
Cat	10xs10	20,719	-6,204	70%	27%	4%	0%	0%	29%	49%
	10xs20	12,892	-3,669	72%	27%	20%	1%	0%	28%	23%
	20xs30	8,748	-2,526	71%	15%	13%	9%	1%	28%	15%
	50xs50	7,827	-2,321	70%	8%	7%	6%	4%	27%	10%
	100xs100	4,374	-1,487	66%	4%	4%	3%	3%	30%	8%





Actuaries play a crucial role

In providing momentum and streamlining the communication between different stakeholders



Actuarial Team

Analysis

Reinsurance structures, limit systems, risk capital, capacity, volatility, coverage options, ...

Strategic impulses

Risk management, definition of "optimum", ...

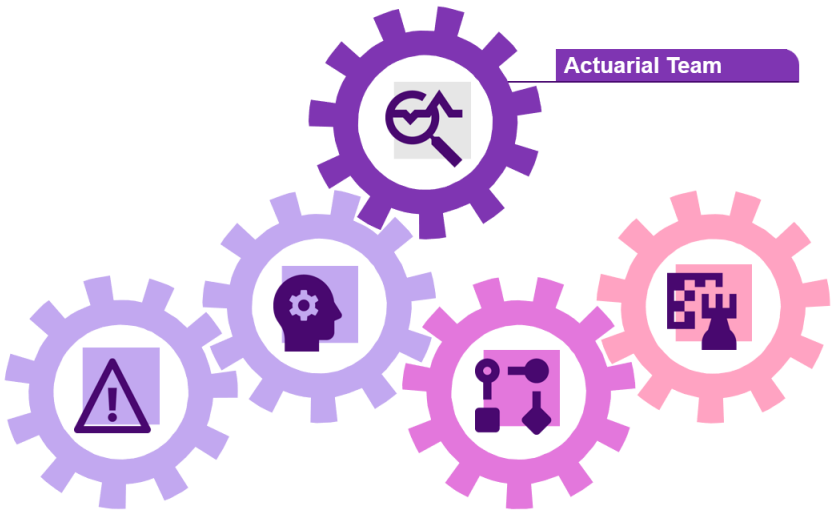
Risk Appetite

Goals, current risk profile, ...

Dependencies

Reinsurance purchasing, investment strategy, balance sheet management, pricing, ...

Conclusion



Far beyond risk modelling for solvency purposes and validation of the status quo, a stochastic model can help to ...

- better understand one's own **risk profile**,
- generate **independence** from reinsurance brokers when **actively managing** reinsurance structures.

An **agile capital modelling** process ...

- involves various internal and external stakeholders
- is driven and only made possible by the **“steering“ of the actuarial team**.

An existing model allows for an immediate start to your modelling journey without the need for prior implementation efforts.

Thank you!

PERSATUAN AKTUARIS INDONESIA
(THE SOCIETY OF ACTUARIES OF INDONESIA)

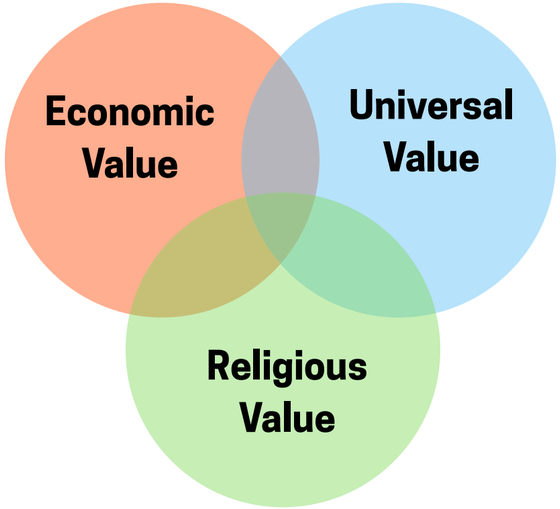
TAKAFUL & ROLE OF ACTUARIES

Paul Setio Kartono,
FSAI, ASA, MAAA, CFA, FIIS

Why Takaful / Sharia based Insurance

More than 90% of population in MENA
42% of population in SEA and majority in Indonesia, Malaysia, Brunei
Growing population in India, growing majority in Pakistand and Bangladesh
Applicable also for non Moslem
Hybrid approach between mutual and stocks company

What benefit does it bring



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Opportunities in Takaful

- Combining insurance and social donation
- Sharing risk for the uninsured
- Lower cost of fraud and waste
- Universal value obtain for non claim customer

Lemonade

Kitabisa
Saling Jaga

Threats

- Relies on Interpretation and sometimes contradictory
- Cost of double compliance
- Limited human resources
- Some regulation e.g. capital is not favoring Takaful business

Role of Actuaries in Takaful

- Considering that customer are the big part of the stakeholder, not only service but also financial
- Role as operator of Takaful
- Maintain neutral in conflict of interest situation between company and member
- Uphold high Standard of Practice and exercise fiduciary duty
- Advocate for favorable regulation (e.g. operator is not bearing insurance risk, thus doesnt get underwriting profit, but still need to reserve capital for insurance risk)
- Optimize the Economic value of Takaful beyond Conventional insurance

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THANK YOU

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