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Exploring the New Era of ORSA

Enterprise Risk Management (ERM)/ Own Risk and Solvency Assessment (ORSA) Committee

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Special acknowledgements to Matt Covalle and Seong-Min Eom who helped develop this presentation.

Agenda

Definition of ERM and ORSA Evolution

- Two primary goals
- Evolution of ORSA
- Iterative nature of ERM
- Risk culture and governance
- Risk governance structures
- ERM policies and procedures

The Basics of ERM

- Risk identification and evaluation
- Models and tools (including economic capital)
- Monitoring and mitigating risks
- Trends for the future

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Agenda

ERM Standard/ Regulations

- US ORSA - summary report
- Process implementation
- Solvency II
- Regulatory comparisons on ORSA
- Relevant ASOPs

Q and A

ERM: Two Primary Goals

Identify, assess, and quantify risks

And their correlations and dependencies from all sources within an organization

Ensure implementation of risk treatment strategies

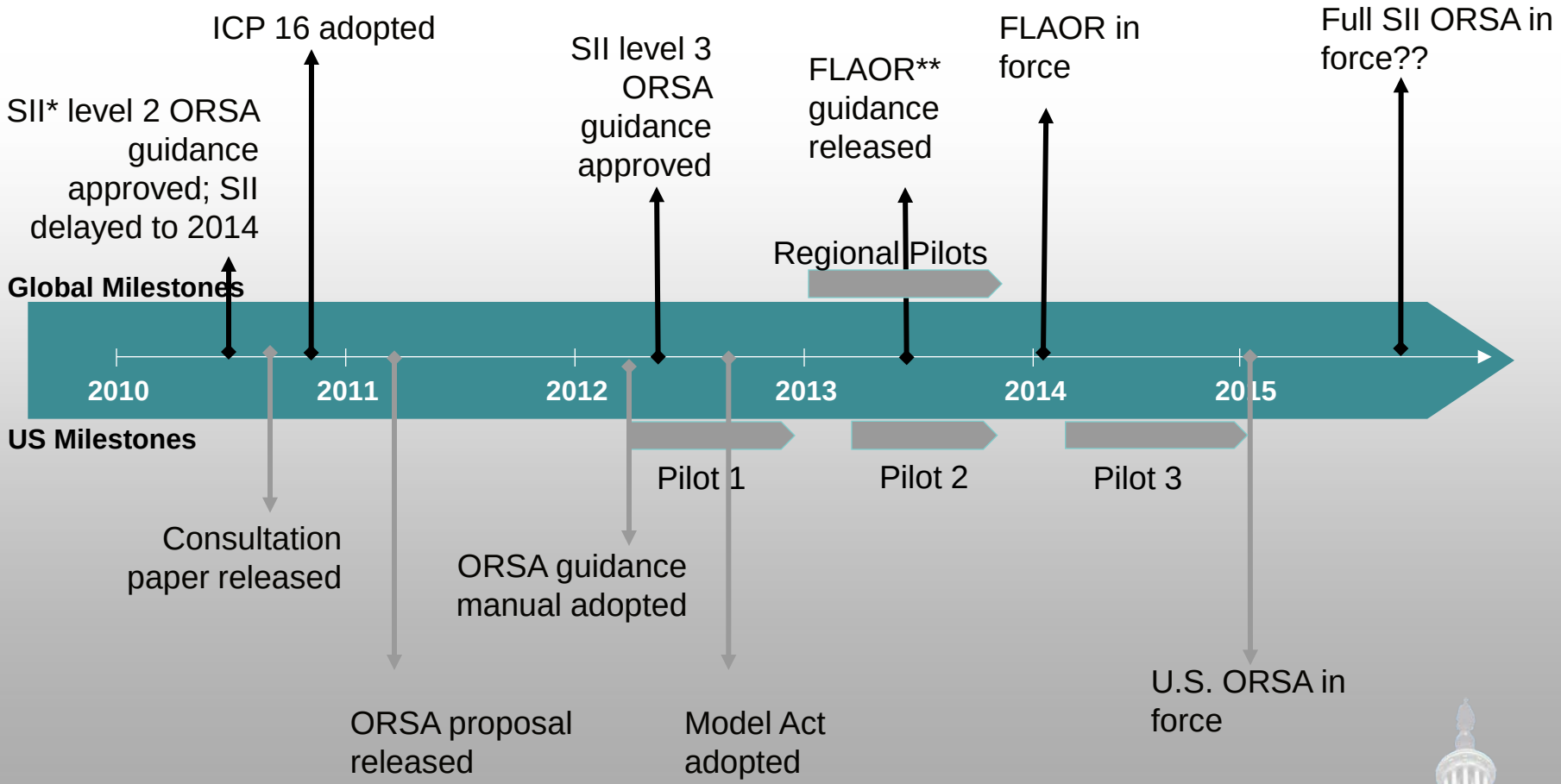
That leverage risk knowledge to achieve appropriate risk and return tradeoffs in line with organization's values and goals

ORSA is essentially an ERM process (i.e., the insurer's own assessment of risk and solvency)

ORSA Evolution

- Part of early Solvency II guidance, included as part of "Pillar 2" Risk Governance
- Designed as an evaluation of an organization's own view of its capital position, as compared to the regulatory capital requirements ("Pillar 1")
- Further defined with the advent of Insurance Core Principle 16 (ICP 16), which created a global standard for insurer reporting on ERM
- Solvency II "equivalence" and ICP 16 both were drivers of the Solvency Modernization Initiative (SMI) work on U.S. ORSA requirements
- ORSA is now a common element of most international capital and risk structures in some form

Overall Timeline of ORSA



** Solvency II*
***Forward looking assessment of own risks*

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Global Standard: ICP 16

- The ORSA should:
  - Include all reasonably foreseeable and relevant material risks
  - Be proportionate to the nature, scale, and complexity of the business
  - Include insurer's **own** assessment of quality and adequacy of capital resources in determining economic capital and in demonstrating that regulatory capital requirements are met
  - Be undertaken on a regular basis as well as after significant changes in risk profile

Global Standard: ICP 16

- As part of the ORSA, the insurer should:
  - Undertake periodic, forward-looking continuity analyses
  - Be able to demonstrate the ability to manage risks over the longer term under a range of plausible adverse scenarios
  - Apply reverse stress testing to identify scenarios that would be likely to cause business failure

Global Standard: ICP 16

- ICP 16 16.16.10 (Page 29):
  - "While an insurer may itself decide to hold additional capital or reduce its risks as a direct result of its continuity analysis as well as taking other management actions, the analysis should not of itself be used as a basis for increasing current regulatory capital requirements/solvency control levels."
- The responsibility for the ORSA lies with the board and senior management
- Effectiveness of the ORSA should be assured through an independent review

Iterative Nature of ERM

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Role of the Actuary in ERM & ORSA

- Actuaries have long been recognized for their important and unique professional role in contributing to insurer solvency
- While current guidance on ORSA does not prescribe a specific actuarial role, actuaries will likely be involved in ORSA because of their:
  - Education-Competency in specialized aspects of insurance, investments, and accounting
  - Experience-Variety of practice areas and scenario planning
  - Standards of actuarial professionalism-Protect both the public interest and the integrity of professional work

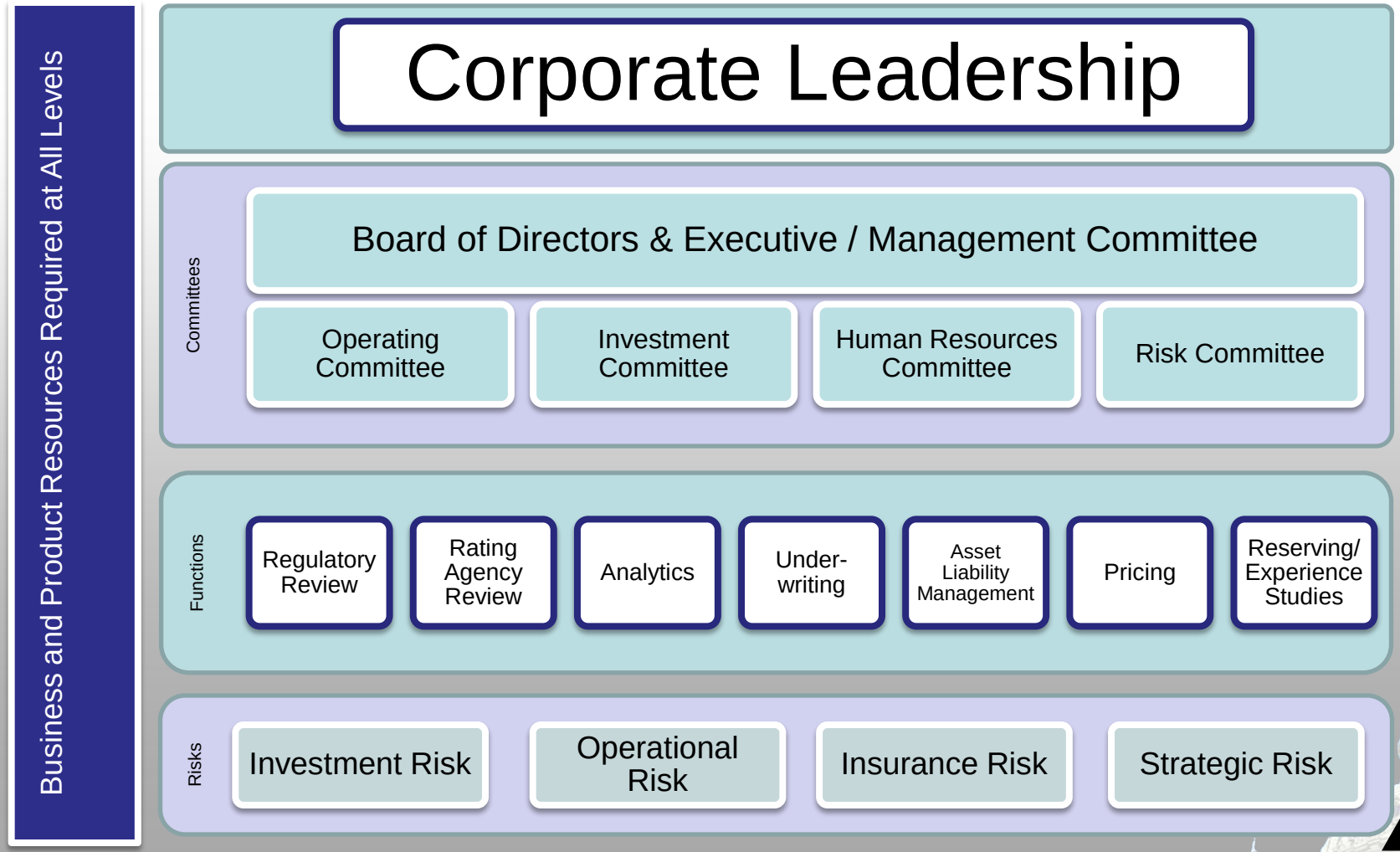
Risk Culture

- Risk culture encompasses:
  - Risk-based decisions
  - Broad risk management competency – everyone is responsible
  - Questioning, challenging, and engaged management
  - Clearly defined risk roles and responsibilities
  - Engaged CRO and/or ERM team
  - Risk management leaders undertaking coordinated efforts
  - Common risk language
  - Proper calibration to the complexity and sophistication of the underlying business

Governance and Policies/Procedures

- Effective risk governance should consider:
  - Well-defined risk appetite, tolerances, and limits
  - Escalation procedures if limits are approached or breached
  - Portfolio assessment of assets and liabilities
  - Effective assessment of results and feedback
  - Management communication of risk metrics and responses
  - Risk mitigation supported by cost benefit analysis
  - Business continuity for extreme events
  - Efficient and effective use of capital in reinsurance and capital markets
  - Performance measurements based on risk adjusted returns
  - Effective controls without impeding the ability to operate
  - Risk event planning (e.g., cybersecurity breach and operational risks)

Risk Governance Structures



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ERM Basics

To Manage Risk, You Must First Identify It

- Define the concept of risks for an organization and establish the risk assessment environment
- Do not determine solely by recent experience or external (rating agency or regulator) considerations
- How various risks interrelate under range of different conditions (economic, financial, marketplace) is key
- Identify risk categories to be used and associated sub-risks in order to manage risks at granular level
- Actuarial resources are well suited to play a role in risk identification process

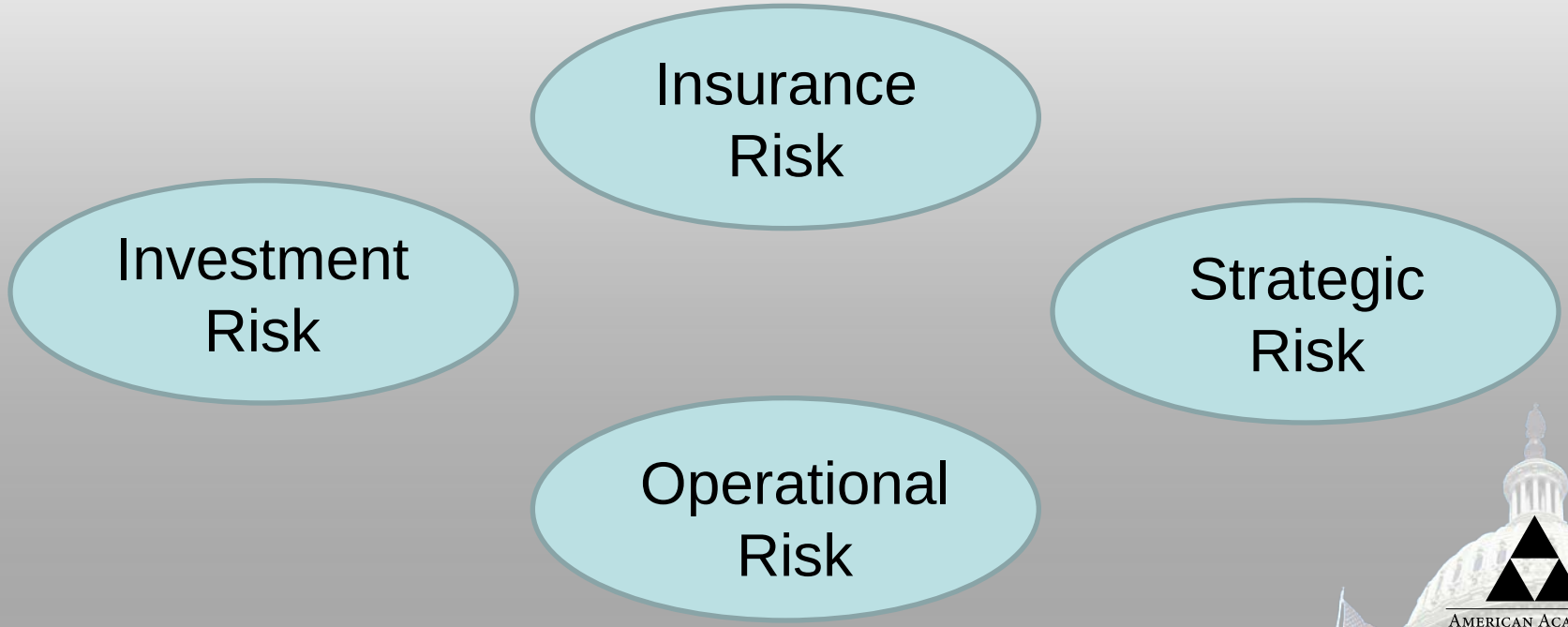
Characteristics of Effective Risk Identification Process

- Comprehensive
- Inclusive
- Efficient
- Consistent
- Focused

Risk assessments are done on both a regularly scheduled basis as well as whenever material changes to organization occur

Common Risk Categories

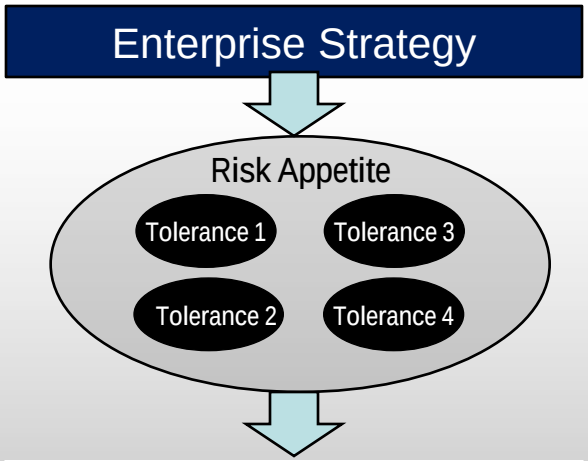
Efficiency, ease of communication, and development of a consistent risk language are established through the use of standard risk categories. These generally include:



Holistic and Flexible Approach Required

- For ERM to be effective:
  - Risks cannot be examined solely on standalone bases
  - Impacts of activities on the full portfolio of the organization must be reviewed
  - Risk metrics and methodologies must be well defined
  - Both internal and external drivers of risk must be recognized, as well as changes to the organization's risk profile
  - The view of risk needs to evolve over time as the organizational ability to absorb and manage risks change

Establishing a Risk Appetite



Toler-ance	Limit	Early Warning	Current Exposure
1	100	110	175
2	15%	10%	12%
3	etc		
4			
5			

Source: Risk & Regulatory Consulting, LLC, May 2014

- **Risk appetite** is the amount of specific risk and aggregate risk that an organization chooses to take during a defined time period in pursuit of its objectives
- **Risk tolerance** is the aggregate risk-taking capacity of an organization
- **Risk limit** is a threshold used to monitor the actual risk exposure of a specific risk or activity unit of the organization to ensure that the level of actual risk remains within the risk tolerance

Source: American Academy of Actuaries Insurance Enterprise Risk Management Practices Practice Note July 2013

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Risk Appetite Example

Strategy Setting and Business Planning

- Strategic objective: stay financially strong and provide value to shareholders
- 3-year financial plan for 8% growth target

Risk Appetite and Tolerance Definition

- Financial strength component of risk appetite defined based on RBC ratio
- Risk tolerance is a minimum 300% RBC ratio

Scenario Definition and Limit Setting

- Limit: maintain RBC ratio of at least 300% (325% early warning signal)
- 3 stress scenarios defined

Analyze, Communicate, and Manage

Scenario	RBC Ratio Year 1	RBC Ratio Year 3
Baseline	400%	400%
Severe recession	345%	315%
Reputational Event	385%	395%
Sharp rise in rates	345%	360%

Based on breach of early warning, mitigation plans involve curtailing growth in capital intensive business

Source: Risk & Regulatory Consulting, LLC, May 2014

Emerging Risk Process

- Beyond a regular process to identify and manage ongoing risks, organizations must uncover and assess potential emerging risks in real time
- Requires a strong internal communication network and self-reflection
- Environmental scans also required for changes to external environment
  - Industry conferences, journals, committee service
  - Periodic interface with industry experts
  - Review of general demographic and sociographic trends

Next Step Requires Proper Tools

- Once risks have been identified, you need tools to evaluate the potential impact to the organization
- Can be done on both qualitative and quantitative basis
- Quantitative methods used include:
  - Stress tests and reverse stress tests
  - Stochastic models
  - Reference to standard measures
- Qualitative reviews vary by organization and risk
- Emerging risks need to be monitored, managed, or mitigated
- Actuarial models and resources can play a crucial role in the aggregation of risk measures for use in calibration against the various metrics

Risk Quantification

ERM should provide specific criteria for assessing the likelihood, severity, and velocity of risks

In addition, the time period of the assessment should be defined (i.e., 1 year, 2 years, etc.)

Sample Likelihood Scale

Unlikely	Somewhat Likely	Likely	Highly Likely
0-15%	15-30%	30%-50%	>50%

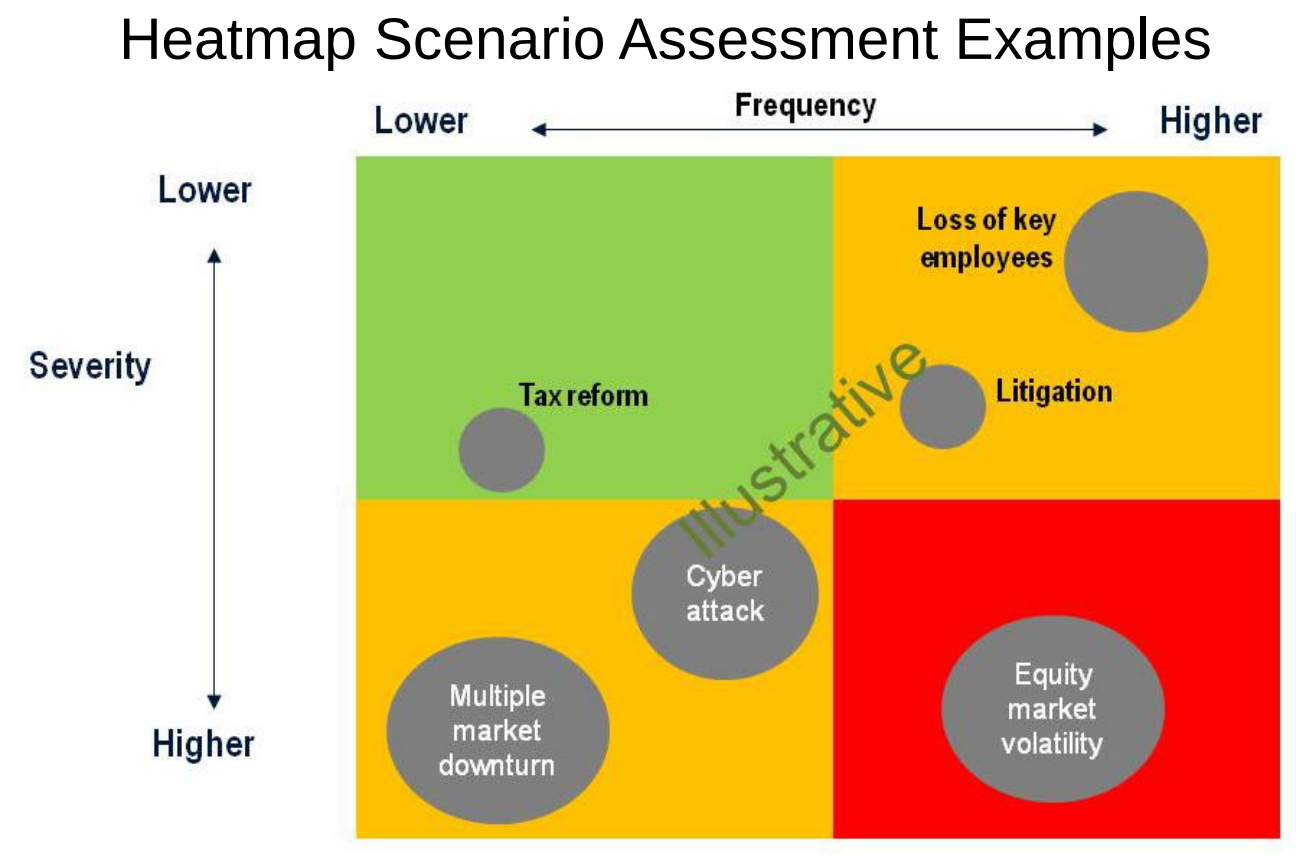
Sample Severity Scale

Impact on:	Immaterial	Moderate	Threatening	Severe
Capital	<250M	250-500M	500M-1B	>1B
Earnings	<10% drop	10-20% drop	20-40% drop	>40% drop
Liquidity	<20% outflow increase	20-40% outflow increase	40-60% outflow increase	>60% outflow increase

Source: Risk & Regulatory Consulting, LLC, May 2014

Risk Assessment Results

Heatmaps are often used to show prioritization by frequency, severity, and speed of onset (velocity)



Source: Risk & Regulatory Consulting, LLC, May 2014

Stress and Scenario Testing

Examples of actuarial scenarios currently being evaluated as part of ORSA include:

Business	Scenario	Definition	Use of Results
P&C	Cat Risk: Hurricane	Specific level of hurricane occurs in multiple cities in the same time period (e.g., 1 year)	• Assess impact on capital, liquidity, and ratings to determine whether still within defined risk tolerance (and if not, determine necessary immediate mitigating actions) • Understand level of exposure over time to influence strategic decisions on business mix, growth plans, and potential mitigation strategies
P&C	Reserve increases vs. cat losses	1 in 3 insolvencies arise from reserve issues	

Stress and Scenario Testing

Examples of actuarial scenarios currently being evaluated as part of ORSA include:

Business	Scenario	Definition	Use of Results
Health	Regulatory Change Risk: ACA	Anti-selection under new ACA requirements increases morbidity/claims by 10%	• Assess impact on capital, liquidity, and ratings to determine whether still within defined risk tolerance (and if not, determine necessary immediate mitigating actions) • Understand level of exposure over time to influence strategic decisions on business mix, growth plans, and potential mitigation strategies
Health	Regulatory Change Risk: ACA	30% increase and decrease in membership driven by ACA requirements	
Life	Market Risk: Low Interest Rates	Interest rates drop 50% and stay at that level for 10 years before a gradual recovery	

Reverse Stress Testing

- Identify the scenario that causes a breach in limit
- Typically stresses a single variable at a time (i.e., equity levels, interest rates, hurricane, climate change, etc.)
- Demonstrate how protected the business is in a crisis
- Helpful to calibrate the resulting level of stress if feasible
- Examples:
  - RBC ratio falls below the risk tolerance with a drop in equities that is 20% worse than 2008 financial crisis
  - GAAP earnings loss falls below the risk tolerance with a hurricane that is 1.5 times the magnitude of Sandy in the Northeast corridor
  - Reputational damage falls below the risk tolerance with a customer data breach equal to Target, Home Depot, etc.

Fit for Purpose Risk Models

- Reproducible and adaptable to new risks
- Proper trade-off between precision and simplicity
- Complexity proportionate to materiality
- Understanding of data input limitations
- Dependencies and interactions among risks properly captured
- Independently validated for integrity, particularly when subjective assumptions required

Control Strategies for Risk Models

- Data reconciliation
- Peer reviews
- Reasonability checks
- Affirmations
- Supporting documentation
- Independent validation
- Controls over IT environment and systems used
- Model risk management as emerging actuarial discipline
- Back-testing as a validator

Economic Capital Models

- One of primary tools used in assessing risk to an organization is an economic capital (EC) model
- EC is a measure of the capital an organization requires to survive or meet a business objective over a given timeframe at a selected confidence level
- Aligns with, and helps flesh out, the risk profile of the organization
- Scope, complexity, and use of such models varies widely
- A strong model provides key metrics for capital and risk decisions across the organization

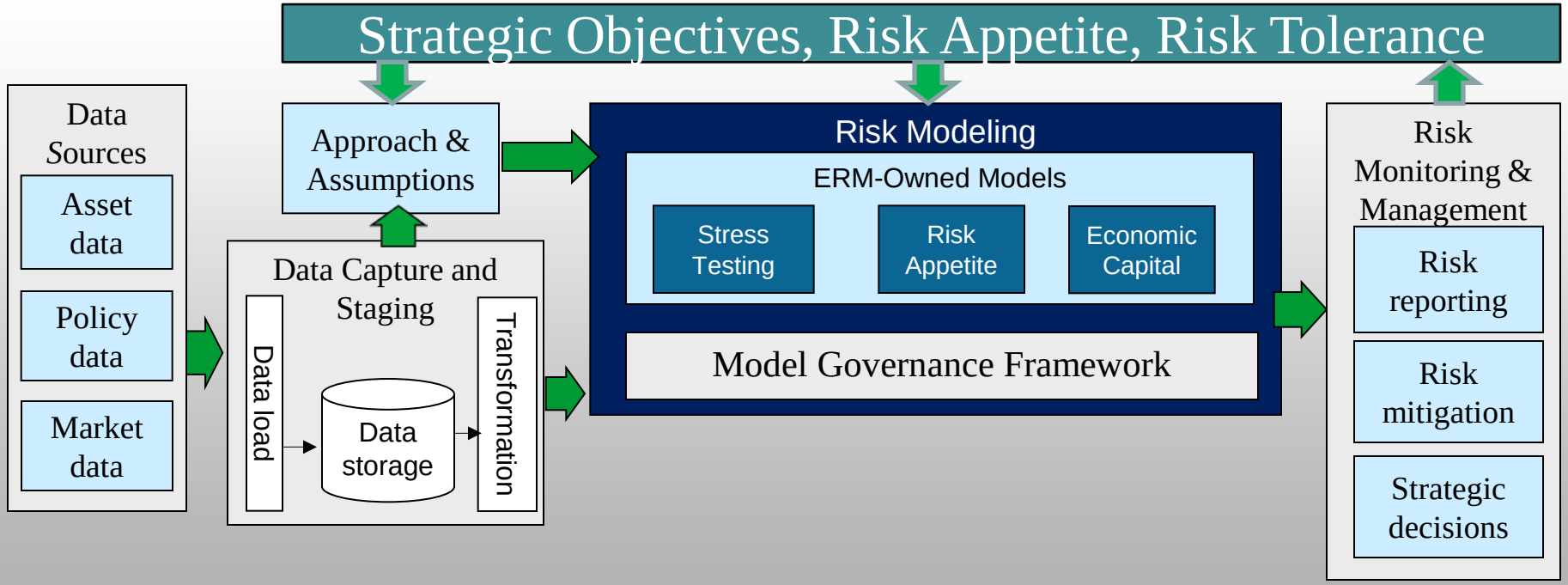
Uses of EC Models

- Assessing capital adequacy
- Determining appropriate risk treatment strategies
- Analyzing financial performance
- Pricing
- Developing business strategies
- Determining relative risk and reward

Internal Models

- A variety of internal models may be used for components of ERM
- Key considerations include:
  - Link to strategy and risk appetite
  - Data source
  - Reconciliations
  - Use of results in strategic decision making

Internal Models



Internal Models

- In light of the complexity of these models, a critical component of ERM processes is the existence of an appropriate model governance framework
- Actuaries are increasingly focused in the areas of model governance and model validation

Model Validation

Core Principle*	Considerations
Build for intended purpose	While the idea of a "single model" is nice in theory, it often fails in practice Many ERM models are designed for full enterprise use, and therefore may be less granular than other company models
Model validation is independent	A separate functional area charged with validation
Establish model validation owner	Creates accountability Should have authority to communicate and remediate
Appropriate model governance	Defined policies that cover roles, responsibilities, and minimum requirements
Consider proportionality	Critical for validation to provide sufficient benefits for the cost
Validate model components	Data, methods, assumptions, calculations, and outputs
Address validation limitations	Including plans to address in the future
Document the validation	Can be used to improve and focus future validations

*8 core principles identified in the North American CRO Council's paper
"Model Validation Principles Applied to Risk and Capital Models in the Insurance Industry"

Modeling ASOP

- Comprehensive standard that applies to the design, selection, build, modification, development, use, review, and evaluation of models
- Model: A representation of relationships among variables using statistical, financial, economic, mathematical, or scientific concepts and equations
- Extent of requirements dependent on the extent of reliance upon and financial effect of the model
- General requirements include understanding/assessment of fit for purpose, appropriateness of model inputs, model validation, governance and controls, documentation, and reliance

Key Risk Metrics

Risk Mitigation

- Insurance/reinsurance
- Hedging
- Capital market products
- Awareness campaigns, educational programs, and loss control measures
- Change in governance or process controls
- Change in business mix or target markets
- De-risk products or reduce risk exposure

Actuarial skills are essential to set and implement risk transfer programs and should be utilized in the process

Trends and Improvements

- Improved linkage to overall strategies and decision making
- Increased cascading of risk to individual business units
- Increased use of multiple risk lenses and metrics
- Increased consistency across insurance industry
- Separation of duties into “three lines of defense”
- Improved infrastructure and documentation
- Increased regulatory scrutiny

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ERM Standards and Regulations

ORSA Summary Report

Section 1

Description of the Insurer's Risk Management Framework

- Risk culture and governance
- Risk identification and prioritization
- Risk appetite, tolerance, and limits
- Risk management and controls
- Risk reporting and communication

ORSA Summary Report

Section 2

Insurer's Assessment of Risk Exposure

- Primary risk assessment in normal and stressed environments
- Risks exposures measured in quantitative and qualitative method
- Descriptions and explanations of the identified risks, assessment method, key assumptions, risk-mitigation activities, and stress scenario outcomes
- Impact of risks on balance sheet, financial statements, and cash flows
- Stress impact on risk capital, available capital, and required capital
- Model validation and model calibration factors for risk assessments

ORSA Summary Report

Section 3

Group Risk Capital and Prospective Solvency Assessment

- Definition of solvency and accounting or valuation regime
- Business included and aggregation and diversification
- Time horizon
- Risks modeled and quantification method
- Risk capital metric
- Defined security standard

Roles and Responsibilities In ORSA Process Implementation

Actuarial

- Develop actuarial models and methodologies, maintain and update assumptions
- Perform risk assessment calculations and long-term projections
- Provide quantitative and qualitative assessments of impacts of actions on risks

Risk Management

- Assist with the development of the ERM framework, risk appetite, risk tolerance, and risk limits
- Analyze the risk profile of the insurer, and cooperate with all the other areas to oversee the risk management processes and controls

Underwriting

- Have ownership in underwriting risk management and provide underwriting risk input into ORSA process and report
- Assess future underwriting decisions

Finance

- Produce external financial reports
- Incorporate projections of the future capital management information within the business plan
- Coordinate with other areas to consolidate financial data

Roles and Responsibilities In ORSA Process Implementation

Internal Audit

- Provide an independent oversight of the ORSA process

Information Technology

- Enhance systems to efficiently produce accurate information
- Assist in the development and file of the ORSA Summary Report

Compliance

- Provide a mechanism to identify changing regulations and evolve ORSA guidance
- Manage ORSA compliance risks

Investment

- Provide investment data and projections
- Manage ALM under both normal and stress conditions
- Develop risk mitigation strategies

What are companies doing now in response to the NAIC ORSA?

- Review the effectiveness of the current corporate ERM program, including risk governance
- Identify gaps between the current company practice and the ORSA requirements
- Analyze the materiality of the identified risks, prioritize key risks, and evaluate aggregate risk across the group
- Develop and enhance aggregate group level capital model and stress/scenario testing framework

Company Response to NAIC ORSA

- Develop process to perform forward looking assessments of risk and solvency over the planning horizon
- Integrate ERM into the group strategic planning process
- Develop a mock ORSA Summary Report
- Industry have provided feedback on the pilots: http://www.naic.org/documents/committees_e_orsa_wg_related_docs_pilot_feedback.pdf

Draft NAIC Guidance for Regulators

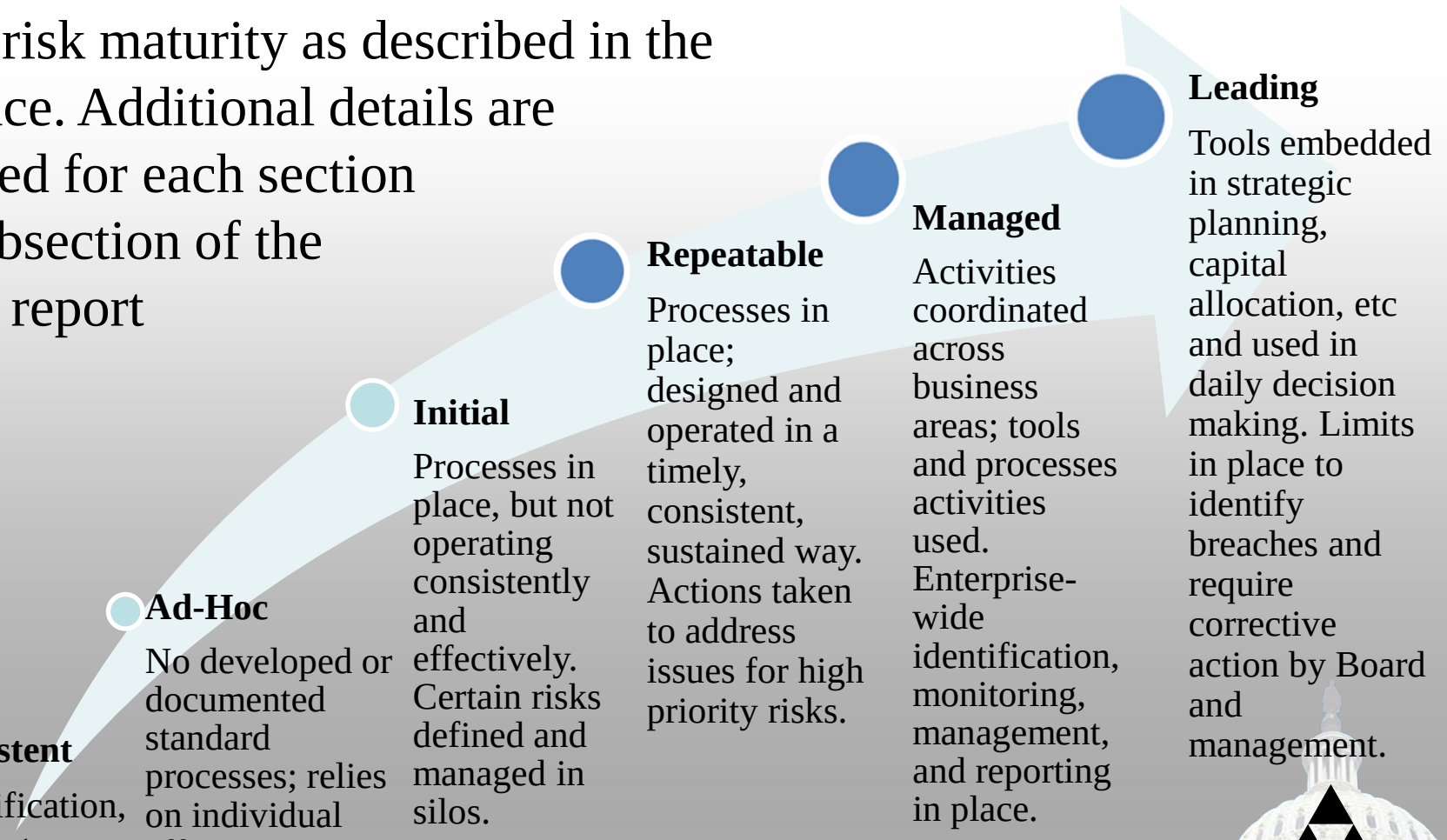
- Risk-Focused Surveillance Working Group released detailed guidance on use of ORSA in financial analysis and exams in March 2014
  - Since then, three exposure periods have been completed.
- Principle goals of ORSA are:
  - To foster an effective level of ERM at all insurers
  - To provide a group-level perspective on risk and capital, as a supplement to the existing legal entity view
  - To allow the regulator to obtain a high level understanding of the insurer's ORSA and to assist the commissioner in determining the scope, depth, and minimum timing of risk-focused analysis and examination procedures

Draft NAIC Guidance for Regulators

- Summarizes the guidance as well as the RIMS ERM maturity model to provide education to the user on what to expect from "good ERM"
- Failure to demonstrate sufficient ERM is likely to result in increased supervision, "up to and including a hazardous financial condition determination"
- ERM assessed on a 1-5 scale

Draft NAIC Guidance for Regulators

RIMS risk maturity as described in the guidance. Additional details are provided for each section and subsection of the ORSA report



Assessing Solvency

Per the NAIC ORSA Guidance Manual, assessment of group solvency should describe approach used, methods, assumptions. Examples from the guidance include:

Considerations	Description of Methods/Assumptions	Examples
Definition of Solvency	How solvency is defined (capital and liquidity)	Cash flow basis, balance sheet basis
Accounting/Valuation Regime	Underlying accounting/valuation basis	GAAP, Stat, market consistent, IFRS, rating agency
Business Included	Subset of business included in capital analysis	In-force as of a specific date, new business included
Time Horizon	Horizon over which risks are modeled	1 year, multi-year, lifetime, runoff
Risks Modeled	Which risks included, are all relevant and material ones in?	Credit, market, insurance, liquidity, operational

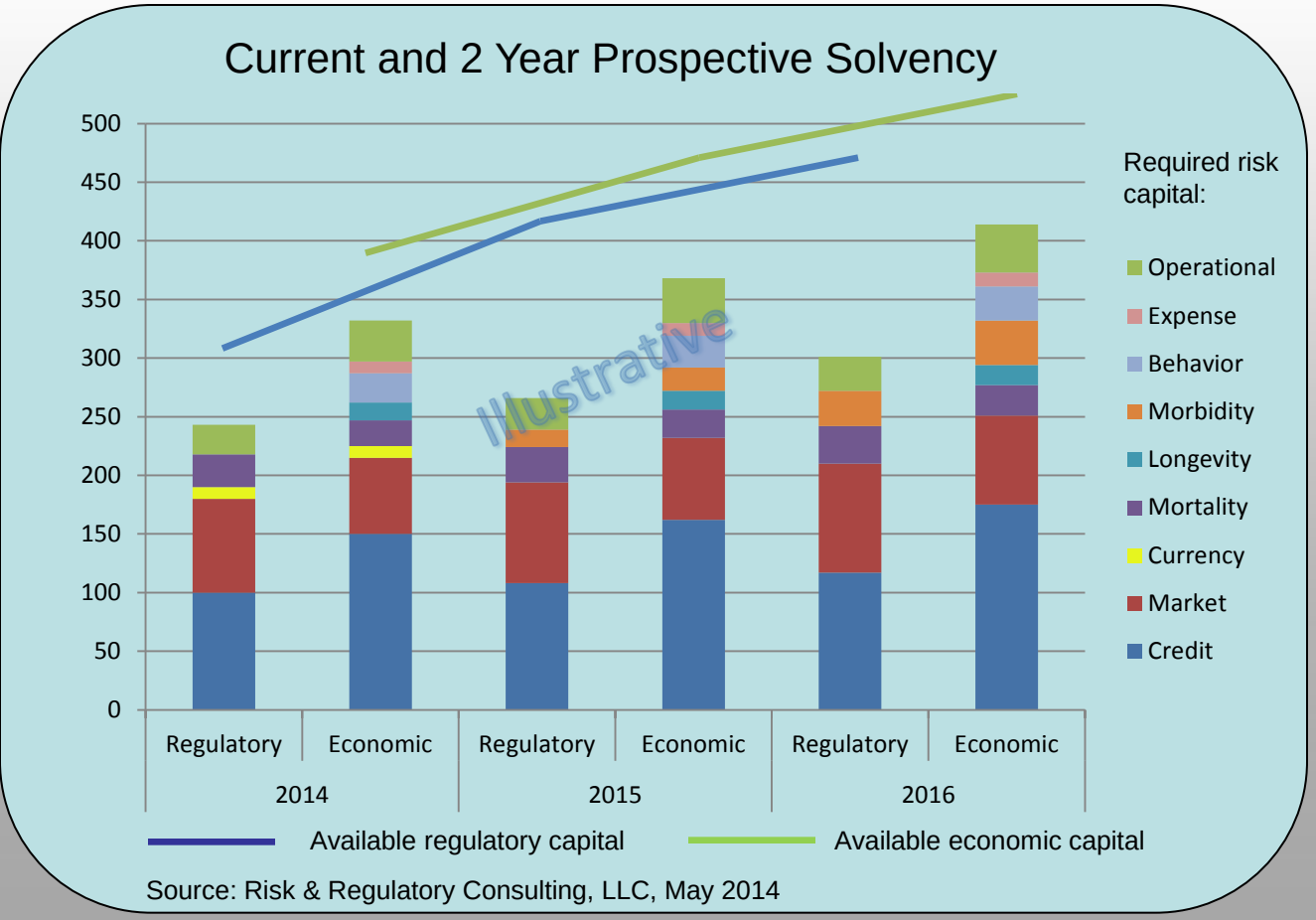
Assessing Solvency

Per the NAIC ORSA Guidance Manual, assessment of group solvency should describe approach used, methods, assumptions. Examples from the guidance include:

Considerations	Description of Methods/Assumptions	Examples
Quantification Method	How risk exposure is quantified	Stresses, stochastic, factor-based
Risk Capital Metric	Measurement metric for determining needed capital	VaR, TVaR, P(ruin), P(ruin) given capital available
Defined Security Standard	Standard used to determine risk capital, including link to strategy	AA solvency, percentile confidence, percent of RBC
Aggregation/ Diversification	Method of aggregation and group diversification benefits considered/calculated	Correlation matrix, dependency structure, full/part/no diversification

Assessing Solvency

Sample of the type of information that may be included in Section 3 of the ORSA, assuming the insurer has a prospective view on economic solvency



Source: Risk & Regulatory Consulting, LLC, May 2014

Sample Commentary:

- International operations sold in late 2014, eliminating currency risk
- Planning entry into disability income in 2015, which will create exposure to morbidity risk but also drive diversification benefits

Relevant ASOPs*

- ASOP No. 1—Introductory Actuarial Standard of Practice
- ASOP No. 7—Analysis of Life, Health, or Property/Casualty Insurer Cash Flows
- ASOP No. 10—Methods and Assumptions for Use in Life Insurance Company Financial Statements Prepared in Accordance with U.S. GAAP
- ASOP No. 11—Financial Statement Treatment of Reinsurance Transactions Involving Life or Health Insurance

** These are suggested ASOPs only. It is the responsibility of the actuary to determine which ASOPs apply to their work.*

Relevant ASOPs

- ASOP No. 12—Risk Classification (for All Practice Areas)
- ASOP No. 18—Long-Term Care Insurance
- ASOP No. 19—Appraisals of Casualty, Health, and Life Insurance Businesses
- ASOP No. 20—Discounting of Property/Casualty Unpaid Claim Estimates

** These are suggested ASOPs only. It is the responsibility of the actuary to determine which ASOPs apply to their work.*

Relevant ASOPs

- ASOP No. 21—Responding to or Assisting Auditors or Examiners in Connection with Financial Statements for All Practice Areas
- ASOP No. 22—Statements of Opinion Based on Asset Adequacy Analysis by Actuaries for Life or Health Insurers
- ASOP No. 23—Data Quality
- ASOP No. 25—Credibility Procedures

** These are suggested ASOPs only. It is the responsibility of the actuary to determine which ASOPs apply to their work.*

Relevant ASOPs

- ASOP No. 38—Catastrophe Modeling (for All Practice Areas)—revision pending
- ASOP No. 41—Actuarial Communications
- ASOP No. 43—Property/Casualty Unpaid Claim Estimates
- ASOP No. 46—Risk Evaluation in Enterprise Risk Management
- ASOP No. 47—Risk Treatment in Enterprise Risk Management

** These are suggested ASOPs only. It is the responsibility of the actuary to determine which ASOPs apply to their work.*

Summary

- ERM and ORSA are used to:
  - Identify, assess, and quantify risks
  - Ensure implementation of risk treatment strategies
- Actuaries are likely to be involved in the ORSA because of their specific education, experience, and standards
- When working on ERM and ORSA, it is important to understand an insurer's risk culture, governance structure, and policies/procedures
- Risks are both numerous and complex. They must be identified as part of ERM

Summary

- The proper tools are needed to evaluate risk within ERM
  - Actuarial models and resources, including the ASOPs, can play a crucial role in the aggregation of risk measures
- Options for risk mitigation should be suggested as part of this process
- ERM standards and regulations, including the ORSA report, are critical to managing, evaluating, and mitigating insurer risks

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Questions?