

KPMG

# Actuarial Data Governance

Alex Zaidlin & Benjamin Farnsworth
Actuarial Society of New York
June 2018

#### Disclaimer

Presentations are intended for educational purposes only and do not replace independent professional judgment. Statements of fact and opinions expressed are those of the participants individually and, unless expressly stated to the contrary, are not the opinion or position of KPMG LLP. KPMG LLP assumes no responsibility for, the content, accuracy or completeness of the information presented.



### With You Today



Alex is a Director at the Risk Analytics practice of KPMG LLP. He has over 12 years of experience with consulting, insurance and reinsurance firms. His actuarial experience includes transformation engagements, actuarial modeling and model enhancement projects, pricing and valuation, actuarial software conversions, actuarial audits, experience analysis, product and assumption development. Alex has helped multiple clients across North America build, implement and maintain their model governance frameworks around actuarial modeling. Alex is a Fellow of the Society of Actuaries, Member of the American Academy of Actuaries and Associate of the Canadian Institute of Actuaries.

Alex Zaidlin, FSA, ACIA, MAAA Director, Actuarial and Insurance Risk



Ben is a Director in KPMG's Risk Analytics practice with over 15 years' experience in the life insurance industry. His current areas of focus include financial transformation, business analytics, model validation and risk analysis, and actuarial audits. Ben has also worked to develop a new model governance framework as part of transformation projects and reduce the model risk that has existed with legacy model processes. He is a Fellow of the Society of Actuaries, Member of the American Academy of Actuaries and CFA charter holder.

Benjamin Farnsworth, FSA, MAAA Director, Actuarial and Insurance Risk

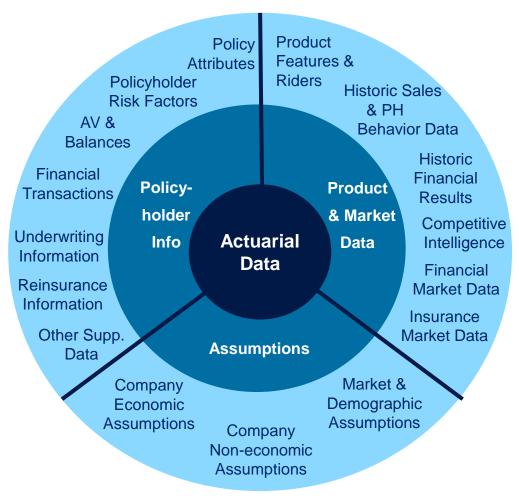




# Actuarial Data

#### **Actuarial Data**

Actuarial data is a segment of the overall company data that is meant to support actuarial operations including experience analysis, modeling, valuation and financial reporting.





# Pitfalls in Actuarial Data Management

Due to the breadth and complexity of actuarial data, it can be often misused, misinterpreted, miscommunicated and incorrectly modified.

#### **Common Actuarial Data Pitfalls**

- "I can do it myself!" approach
  Ad-hoc, undocumented data transformations that inadvertently get integrated into production process
- The quick Band-Aid solution
  Top-side adjustments made to the data or "recycling" of legacy data processes for new purposes
- The Phantom table
  Table replication for one-off need combined with inconsistent naming convention may create confusion in data repository
- Everyone in their own sandbox

  Decentralization of data transformation and management and unavailability of sufficient hardware and software tools to manage data effectively
- Failure to clean
  Lack of discipline of reviewing and removing outdated data tables and processes



# Outcomes of Poor Data Management



Unnecessarily complex and error prone transformation processes



Multiple unvalidated spreadsheets with overlapping functionalities



Time and resources wasted on resolving data issues and tracing back complex transformations



Multiple sources of information, but no single "source of truth"



Storage wastage due to multiple copies of the same data



Production and process errors that can result in misstatements and delays in reporting



#### What is Actuarial Data Governance?

Actuarial data governance framework is the conglomerate of policies, processes and controls put in place to manage availability, usability, accessibility, integrity and security of data used by the insurance company.

# Drivers of initial and continuous success for a sound actuarial data governance framework



Seniority and influence of the governance committee members



Clarity and ease of adaptability of governance policies



Periodic critical review, communication and updates to the governance policies and compliance monitoring



Periodic critical re-evaluation of effectiveness of controls

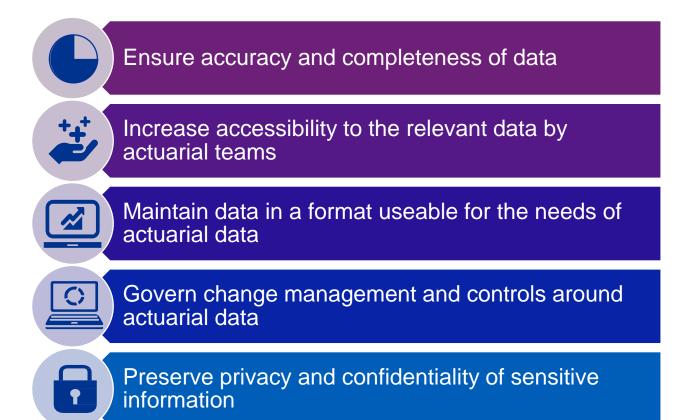


Timely upgrade and implementation of functional and current data management software and hardware



#### Goals of Actuarial Data Governance

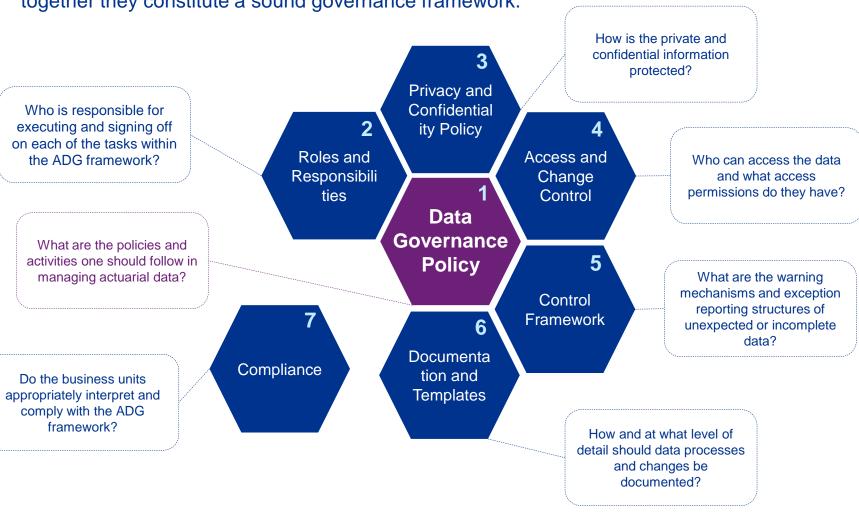
The goals of implementing a sound ADG framework can be summarized in the following five mission statements:





## Components of Actuarial Data Governance

With Data Governance Policy in the core, these components are highly interdependent, and together they constitute a sound governance framework.





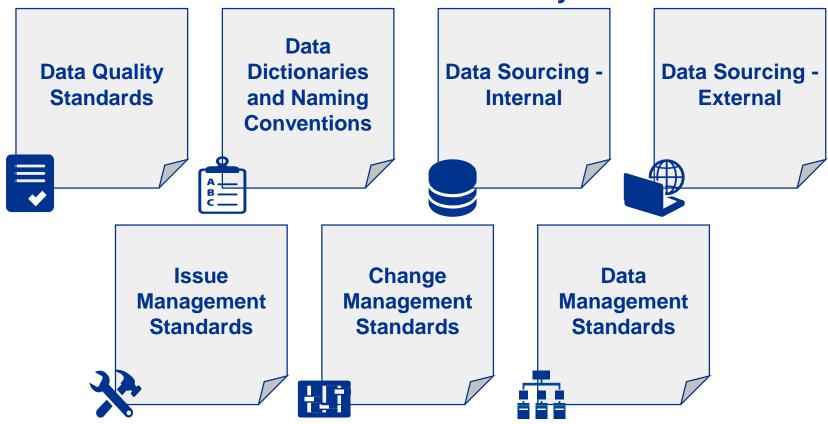


# Deep Dive into Components of Actuarial Data Governance

# **Data Governance Policy**

The data governance policy consists of a set of standards around retrieving, managing, transforming, preparing and archiving data. It also contains guidance around data validation, controls and documentation processes.

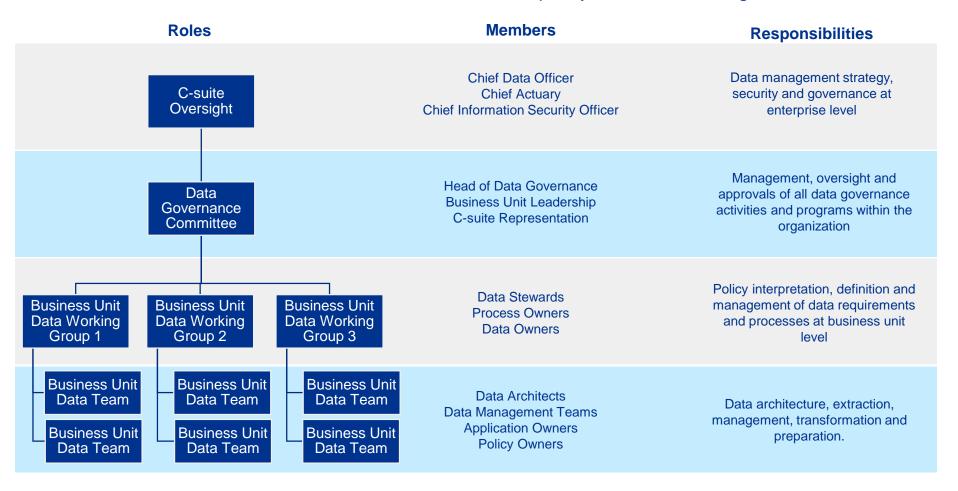
#### **Actuarial Data Governance Policy Standards**





# Roles and Responsibilities

Life insurers should aim to build a strong foundation for their enterprise-level data governance framework, and have ADG embedded in the overall policy as one of the segments.





# Privacy and Confidentiality Policy

This policy is supplemented by access and change controls and is in place to protect private and confidential data from being viewed, used or removed by an unauthorized party.

Classify all actuarial data sets by level of confidentiality

**Identify** technological components by ability to securely read, maintain, and output data.

**Review** and adjust software and process configurations to align data confidentiality classifications with technology level of security

**Consider** the minimal subset of individuals who should be granted access to confidential data and related processes

**Roll out** the policy describing treatment of confidential data, requirements for accessing highly secure data sets, and permission levels



# Access and Change Control

Limiting the ability to access and change actuarial data is especially important when data contains personally identifiable information of policyholders or other confidential information.

#### **Leading Practices**



Minimization of data transformation within actuarial platforms and externalization of ETL processes into locked-down database environment



Environment-based read/write permission structure for actuarial processes that involve data management



Minimization of spreadsheet use for data management and preparation



Streamlining and automation of data processes and embedded data controls to eliminate the need for human interaction and reduce the number of similar data-related processes



Automated versioning of data tables and implementation of database/table change alerts



#### Control Framework

Controls should be built into every stage of the actuarial data lifecycle and be viewed as a vital component of actuarial data processes. Depending on the criticality of data, both active and passive controls should be implemented into the data processes.

These should be periodically evaluated for **adequacy**, **effectiveness** and **implications of failure**.

Data Sources	Data Preparation		on	Calculation	Data Aggregation	Analysis Outputs
Admin Systems	Transformation 1	Data Warehouse	Transformation 2	Actuarial Models	Results Warehouse	Reporting and Business Intelligence
<ul> <li>Trend Analysis of periodic extracts</li> <li>Controls over relationships of key variables</li> <li>Identification of missing or unexpected</li> </ul>	<ul> <li>Data         reconciliation         controls</li> <li>Missing or         unexpected         format/values         handling         controls</li> <li>New value in         fields reporting</li> </ul>	<ul> <li>Load and reconciliation to source controls</li> <li>Reconciliation to last time period / same period last year</li> <li>Control totals</li> </ul>	<ul> <li>Data         reconciliation         controls</li> <li>Missing or         unexpected         format/values         handing         controls</li> <li>Procedure         error handling         controls</li> </ul>	<ul> <li>Data exceptions controls</li> <li>Unexpected data in calculations controls</li> <li>Supplementary data evaluation controls</li> </ul>	reconciliation to source controls •Reconciliation	•Reconciliation to past reports •Comparison to expectations •Controls over relationships of key metrics



format/values

## **Documentation and Templates**

From the very technical comments in the transformation code, to change requests and approvals, documentation is a key for a sound governance framework. To expedite and streamline the documentation process, templates are often created to ensure all the required information is populated.

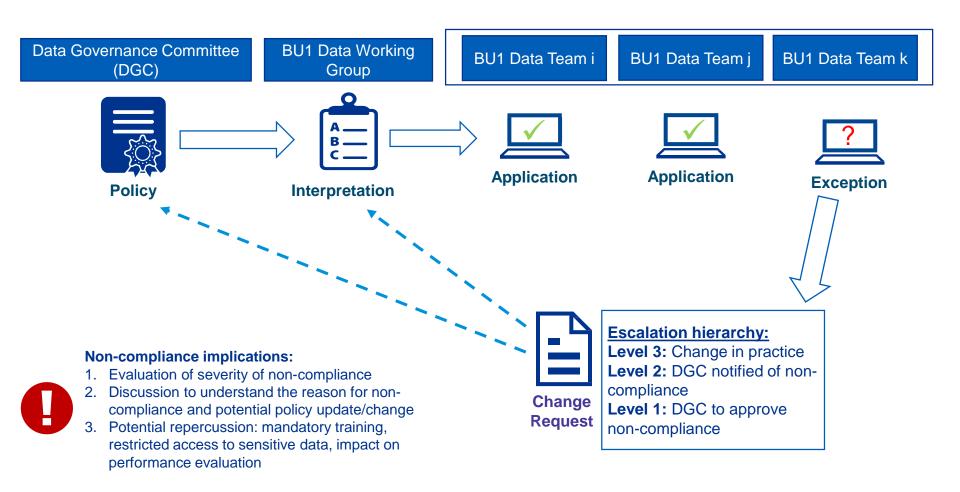
Data Sources	Data Preparation			Calculation	Data Aggregation	Analysis Outputs
Admin Systems	Transformation 1	Data Warehouse	Transformation 2	Actuarial Models	Results Warehouse	Reporting and Business Intelligence
•Standards and glossary for open text fields •Admin system data validation results •Data mapping rules from	and data aggregation	<ul> <li>Table and field naming conventions</li> <li>Table inventory</li> <li>Process flows and table relationships</li> </ul>	<ul> <li>Extract file change request template</li> <li>Data dictionaries</li> <li>ETL mapping issue identification template</li> </ul>	<ul> <li>Data focused model documentation</li> <li>Supplementary data documentation</li> <li>Model data reconciliation and controls documentation</li> </ul>	field naming conventions •Table inventory •Process flows and	Data related exceptions and limitations Data sources and parameters Data visualization and commentary



legacy admin systems

# Compliance

Compliance with the ADG policies will ensure continuous success of the framework.







# Actuarial Data Governance – Phased Implementation

# **ADG** Implementation

- Inventory all existing data documentation, dictionaries, controls, and data sets and actuarial models to evaluate existing state and structure
- Identify gaps in data documentation and procedure and inefficiencies
- Classify groups of data for privacy and confidentiality levels

Phase 1 Initialize

#### Phase 2 Develop

- Address erroneous procedures and data inefficiencies identified previously in phase 1
- Write first drafts of actuarial data governance policies
- Establish actuarial roles and responsibilities
- Draft and develop privacy and confidentiality policy, access and change controls, control framework

- Establish and finalize all actuarial data governance policies, standards, and controls
- Embed and Implement all seven components of the governance framework
- Align vision and strategy of governing bodies and end users

Phase 3 Embed





# Thank you





#### kpmg.com/socialmedia

The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavor to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

© 2018 KPMG LLP, a Delaware limited liability partnership and the U.S. member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. All rights reserved.

The KPMG name and logo are registered trademarks or trademarks of KPMG International.