



CARIBBEAN
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Model Risk Management & Actuarial Modelling

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Dec 1, 2023

This presentation has been prepared for the 2023 Caribbean Actuarial Association (CAA) Conference.

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ERM | Model Risk Management

- Model risk management (MRM) is one aspect of a robust ERM program
- Steering committee – oversee and guide MRM approach; contains reps from various organizations, business units and disciplines
- Model – quantitative application of math & other theories, techniques and assumptions to process input data into numerical estimates

Model Governance

- **Consistent requirements** for creation, use documentation, control, monitoring and validation of models
- Applies to all business units using models for **financial balances, management decisions impacting financial results, and risk management models used for decision making**
- Three levels of risk mgmt. / lines of defence: model/business owners, MRM/SteerCo, internal audit

Model Governance (cont'd)

- **Model risk assessment** – risk rating methodology & classification; drives risk-based controls
- **Model inventory** – accuracy and completeness
- **Model validation*** - appropriateness and implementation of controls, conceptual soundness and continue fit for purpose, includes 3rd party vendor app output
- **Model documentation** – required especially for high-risk models

Model Validation

- **Independent verification** of performance
- Validation **prior to use**
- Periodic, scheduled, **risk-ranked** re-validations
- **Three levels of risk management** / lines of defence
 - Model/business process owners – **flexible design** of **own RM processes** based on **unique needs**
 - MRM SteerCo – **broad application** of policies enterprise-wide
 - Internal audit – **objective** peer review

Model Governance Goals

- Education - transparency and credibility
- Partnership – opportunity to express business needs; knowledge sharing, planning, long-term solutions
- Environment – requirements & specs, planning, prioritization, implementation – all in a controlled process
- Accountability – single point of entry thru Model Steward

Model Gov. Roles – Business Unit

Business Unit

- BU Modeler
- BU Model Validator
- BU User
- BU Model Process Owner

- BU Modeler
 - Has subject matter expertise
 - Articulates & can sometimes provide model business logic
 - Collaborates in design discussions & functional rqmts
- BU Model Validator
 - Executes independent model assessment & UAT
- BU User – uses output

Model Gov. Roles – Stewardship

Model Dev. Program

- Model Steward
- Model Actuary
- Model Developer

- Model Steward

- Design & implement model governance framework
- Manages model inventory
- Oversees model dev process & program for all models

- Model Actuary & Developer

- Comprehend business requirements | creates model design | writes actuarial model specs | coordinates model validation | inventories & documents models

Model Gov. Roles – System Dev.

- System Development Lead
 - Establishes tech development standards & best practices
 - Ensures effective platform utilization
 - Leads technical development
- Solution Architect
 - Understand complex rqmts
 - Design model solutions
- Model Builder
 - Creates & configures models

System Development

- Sys. Dev. Lead
- Solution Architect
- Model Builder/
Developer

Model Dev. Processes

- Initial stage – high-level scoping
- Early stage – complex requirements
- Mid stage – model development
- Late stage – model validation & UAT
- End stage – model implementation & documentation

Model Dev. – Use Cases

- Non-actuarial
 - Target Asset Allocation
 - Net Investment Income
 - Derivatives
 - Taxes
 - Subsidiary P&L models
- Actuarial
 - In-force liability models
 - Built from a regulatory regime model chassis
 - CFT, IFRS-17

Model Dev. – Use Cases

- Data and data governance
 - Managing data quality, security and usage
 - Data lake (central repository), data management group, access restrictions
 - Data stewardship...same as MRM
- Assumptions & assumptions governance
 - Experience assumptions group
 - Actual-to-Expected
 - Credibility vs. own company experience
 - New emerging experience

Model Dev. – Use Cases

- Model logic & model dev. governance
 - Business requirements | scope
 - Model design (high-level)
 - Mock-up | wireframe
 - Functional specs
- Model coding
- Model validation | UAT | lines of defence
- Model documentation
- Model monitoring

Conclusion

- Thank you!
- Q&A
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