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Complying with Canada's E-23

OSFI's E-23 guideline sets Model Risk Management (MRM) expectations for financial institutions, focusing on governance, validation, data integrity, and ongoing monitoring. Compliance challenges include resource constraints, AI model risks, and regulatory alignment. Best practices involve structured MRM frameworks, automated validation, and regular audits to ensure model reliability and regulatory adherence.

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Summary & Contents

Canada's Office of the Superintendent of Financial Institutions (OSFI) introduced Guideline E-23 to ensure financial institutions manage Model Risk Management (MRM) effectively. This guideline establishes expectations for governance, validation, risk assessment, and continuous monitoring of financial models to enhance stability and compliance.

REGULATORY PRIMER

Guideline E-23 was introduced by OSFI to address risks associated with financial models used in decision-making. It establishes regulatory expectations for federally regulated financial institutions (FRFIs) to ensure model integrity, transparency, and alignment with risk management practices.

Scope & Applicability

E-23 applies to all FRFIs, including banks, insurance companies, and trust companies, covering models used in credit risk, market risk, operational risk, and financial reporting.

Regulatory Expectation

The guideline requires institutions to:

- Implement strong governance with defined roles for board oversight, senior management, and risk teams.
- Maintain a model inventory categorizing models based on risk exposure.
- Perform independent validation of models before deployment and throughout their lifecycle.
- Ensure data accuracy and proper documentation for all models.
- Continuously monitor model performance and make adjustments as needed

Introduction

Effective risk management is more critical than ever. Financial institutions depend on sophisticated models to drive key decisions in credit risk, market risk, and financial reporting. However, these models also introduce inherent risks—ranging from data inconsistencies to flawed assumptions—that, if not properly managed, can result in significant financial and operational disruptions.

To address these challenges, Canada's Office of the Superintendent of Financial Institutions (OSFI) has introduced Guideline E-23, a regulatory framework aimed at strengthening Model Risk Management (MRM) across federally regulated financial institutions (FRFIs). This guideline establishes clear expectations for model governance, validation, and continuous monitoring to mitigate risks associated with model failures and inaccuracies.

This whitepaper provides a comprehensive overview of E-23 compliance, outlining its core components, regulatory requirements, and best practices for financial institutions. It also explores the evolving role of MRM as organizations increasingly adopt advanced analytics, artificial intelligence (AI), and machine learning (ML) models.

By understanding and implementing Guideline E-23, financial institutions can enhance the integrity of their risk management frameworks, align with regulatory expectations, and strengthen their overall operational resilience in an increasingly complex financial environment.

E-23 Elements

MODEL GOVERNANCE

Effective model risk management is essential for organizations that rely on models to drive critical business decisions. The E-23 framework outlines key components that help institutions manage model risk, ensure regulatory compliance, and maintain operational efficiency. These components establish a structured approach to model governance, classification, validation, data integrity, and ongoing monitoring. By implementing these best practices, organizations can enhance transparency, mitigate potential risks, and improve the reliability of their models. The following sections provide an in-depth exploration of the essential elements of E-23.

Model governance is the cornerstone of effective model risk management. Under E-23, organizations are required to implement a comprehensive Model Risk Management (MRM) framework that provides an enterprise-wide view of their exposure to model risk. This framework should reflect the organization's risk appetite and define processes to identify, assess, manage, monitor, and report on model risk throughout the model lifecycle. Governance structures typically involve a Model Risk Management Committee (MRMC), senior management oversight, and independent review teams to enforce policies and standards. Regular reviews and updates to the MRM framework are mandated to ensure continuous improvement and relevance.

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La gouvernance des modèles est la pierre angulaire d'une gestion efficace du risque modèle. Conformément à la directive E-23, les organisations doivent mettre en place un cadre complet de gestion du risque modèle (MRM) offrant une vision globale de leur exposition à ce risque. Ce cadre doit refléter l'appétit pour le risque de l'organisation et définir des processus clairs pour identifier, évaluer, gérer, surveiller et signaler les risques liés aux modèles tout au long de leur cycle de vie.

Les structures de gouvernance comprennent généralement un comité de gestion du risque modèle (MRMC), une supervision de la haute direction ainsi que des équipes d'examen indépendantes chargées de faire respecter les politiques et normes en vigueur. Des examens réguliers et des mises à jour du cadre MRM sont exigés afin d'assurer une amélioration continue et de maintenir sa pertinence.

E-23 Elements

MODEL INVENTORY

A centralized model inventory is essential for organizations to effectively track, manage, and oversee all models in use. E-23 underscores the importance of maintaining a comprehensive view of both active and retired models, ensuring that key attributes such as purpose, ownership, validation status, and risk tier are well-documented. This inventory serves as a foundational tool for governance, enabling organizations to monitor model performance, identify dependencies, and assess compliance with regulatory and internal policies. By maintaining an up-to-date inventory, firms can enhance model transparency, streamline audits, and support decision-making processes across various business functions.

A well-structured model inventory should also classify models based on complexity, usage, and their potential impact on business decisions. This classification helps organizations implement a risk-based approach to model management, ensuring that higher-risk models receive the appropriate level of scrutiny and validation. For example, actuarial models used for financial forecasting or capital adequacy assessments require rigorous validation, given their significant impact on an organization's financial health. Conversely, operational models, such as those used in underwriting decisions, demand continuous monitoring to maintain efficiency and accuracy. Proper classification not only improves risk management but also optimizes resource allocation by prioritizing model reviews based on their criticality to business operations.

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Un inventaire centralisé des modèles est essentiel pour permettre aux organisations de suivre, gérer et superviser efficacement tous les modèles utilisés. L'E-23 souligne l'importance de maintenir une vue d'ensemble complète des modèles actifs et retirés, en veillant à ce que des attributs clés comme l'objectif, le propriétaire, le statut de validation et le niveau de risque soient bien documentés. Cet inventaire constitue un outil fondamental de gouvernance, facilitant le suivi de la performance des modèles, l'identification des interdépendances et l'évaluation de la conformité aux exigences réglementaires et aux politiques internes. En conservant un inventaire à jour, les entreprises peuvent améliorer la transparence des modèles, rationaliser les audits et soutenir la prise de décisions dans l'ensemble des fonctions de l'organisation.

Un inventaire bien structuré doit également classer les modèles en fonction de leur complexité, de leur utilisation et de leur impact potentiel sur les décisions d'affaires. Cette classification permet aux organisations d'adopter une approche basée sur le risque pour la gestion des modèles, garantissant ainsi que les modèles à haut risque reçoivent le niveau de surveillance et de validation approprié. Par exemple, les modèles actuariels utilisés pour la prévision financière ou l'évaluation de l'adéquation du capital nécessitent une validation rigoureuse en raison de leur impact significatif sur la santé financière de l'organisation. À l'inverse, les modèles opérationnels, comme ceux utilisés pour la prise de décisions en souscription, doivent faire l'objet d'un suivi continu afin d'assurer leur efficacité et leur précision. Une classification rigoureuse améliore non seulement la gestion des risques, mais elle optimise aussi l'allocation des ressources en priorisant les examens des modèles selon leur importance stratégique pour l'entreprise.

E-23 Elements

MODEL VALIDATION & TESTING

Rigorous model validation and testing are essential to ensure the accuracy, reliability, and effectiveness of models. E-23 mandates that organizations establish robust protocols for validating, testing, and managing models, including periodic audits, re-validation, and documentation updates. This process includes independent assessments of model assumptions, methodologies, data inputs, and outputs. Validation should occur at initial development, during implementation, and periodically throughout the model's lifecycle.

A strong validation framework enhances confidence in model-driven decisions and reduces the likelihood of financial, operational, and reputational risks. By continuously assessing and refining models, organizations can identify potential weaknesses and mitigate risks before they impact business operations. Proper documentation and oversight also support regulatory compliance and industry best practices, ensuring that models remain effective and aligned with evolving standards.

Effective model testing is a critical component of the validation process, ensuring that models perform as expected under various conditions. This involves stress testing, backtesting, and sensitivity analysis to evaluate how models respond to different scenarios, data variations, and external factors. Stress testing assesses model resilience under extreme conditions, while backtesting compares model predictions against historical data to gauge accuracy. Sensitivity analysis helps identify which inputs have the most significant impact on outputs, ensuring transparency and robustness. By implementing rigorous testing procedures, organizations can detect errors, improve model reliability, and enhance decision-making confidence.

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La validation et les tests rigoureux des modèles sont essentiels pour garantir leur précision, leur fiabilité et leur efficacité. La norme E-23 exige que les organisations mettent en place des protocoles solides pour valider, tester et gérer les modèles, y compris des audits périodiques, des revalidations et des mises à jour de la documentation. Ce processus comprend des évaluations indépendantes des hypothèses du modèle, des méthodologies, des données d'entrée et des résultats. La validation doit avoir lieu lors du développement initial, pendant la mise en œuvre et périodiquement tout au long du cycle de vie du modèle.

Un cadre de validation robuste renforce la confiance dans les décisions fondées sur les modèles et réduit le risque financier, opérationnel et réputationnel. En évaluant et en améliorant continuellement les modèles, les organisations peuvent identifier les faiblesses potentielles et atténuer les risques avant qu'ils n'affectent leurs opérations. Une documentation et une surveillance appropriées favorisent également la conformité réglementaire et les meilleures pratiques de l'industrie, garantissant que les modèles restent efficaces et alignés sur les normes en évolution.

E-23 Elements

DATA INTEGRITY

Data integrity is a fundamental component of effective model management, as models depend on high-quality data for accurate outcomes. E-23 underscores the importance of data governance policies that ensure data used in models is complete, accurate, consistent, and timely. Organizations should establish a formalized risk assessment process specifically for AI models, addressing compliance with legal, regulatory, ethical, and social considerations. Additionally, this process should evaluate technical capabilities, including security measures, to safeguard the integrity of model performance.

Poor data quality can result in biased predictions, inaccurate risk assessments, and regulatory non-compliance, undermining the credibility of AI-driven decision-making. To mitigate these risks, organizations must implement robust data management practices that uphold the reliability and trustworthiness of model outputs. By prioritizing strong data governance and continuous monitoring, businesses can enhance the effectiveness of their AI models and ensure alignment with industry standards and best practices.

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L'intégrité des données est un élément fondamental de la gestion efficace des modèles, car ceux-ci dépendent de données de haute qualité pour produire des résultats précis. La norme E-23 souligne l'importance des politiques de gouvernance des données afin de garantir que les données utilisées dans les modèles soient complètes, exactes, cohérentes et à jour. Les organisations devraient mettre en place un processus formel d'évaluation des risques spécifiquement pour les modèles d'IA, en tenant compte des exigences légales, réglementaires, éthiques et sociales. Ce processus doit également évaluer les capacités techniques, y compris les mesures de sécurité, afin d'assurer la performance et la fiabilité des modèles.

Une mauvaise qualité des données peut entraîner des prédictions biaisées, des évaluations de risques inexactes et une non-conformité réglementaire, compromettant ainsi la crédibilité des décisions basées sur l'IA. Pour limiter ces risques, les organisations doivent adopter des pratiques rigoureuses de gestion des données qui garantissent la fiabilité et la transparence des résultats des modèles. En priorisant une gouvernance des données robuste et une surveillance continue, les entreprises peuvent améliorer l'efficacité de leurs modèles d'IA tout en assurant leur conformité aux normes et meilleures pratiques de l'industrie.

E-23 Elements

ONGOING MONITORING

Ongoing monitoring is crucial for ensuring that models continue to perform as expected under evolving conditions. E-23 mandates that organizations establish clear metrics to facilitate transparent and consistent monitoring of model risk at the enterprise level. By defining these metrics, organizations can systematically track performance and identify potential risks before they impact business decisions. Regular performance tracking, drift analysis, and recalibration are essential for detecting degradation in model accuracy over time, helping organizations maintain reliability and trust in their models.

Key monitoring activities include periodic performance reviews, sensitivity analysis, and automated alerts for deviations in expected outcomes. These measures allow organizations to respond swiftly to any unexpected shifts in model behavior, reducing the risk of errors and compliance violations. Continuous monitoring, coupled with proactive adjustments, ensures that models remain effective and aligned with regulatory standards. By implementing a structured approach to model oversight, organizations can enhance risk management, improve decision-making, and maintain confidence in their predictive capabilities.

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La surveillance continue est essentielle pour garantir que les modèles continuent de fonctionner comme prévu dans des conditions en évolution. L'E-23 exige que les organisations établissent des indicateurs clairs pour faciliter une surveillance transparente et cohérente du risque lié aux modèles à l'échelle de l'entreprise. En définissant ces indicateurs, les organisations peuvent suivre systématiquement la performance et identifier les risques potentiels avant qu'ils n'affectent les décisions commerciales. Le suivi régulier de la performance, l'analyse des dérives et le réétalonnage sont essentiels pour détecter toute dégradation de la précision des modèles au fil du temps, aidant ainsi les organisations à maintenir la fiabilité et la confiance dans leurs modèles.

Les principales activités de surveillance comprennent des examens périodiques des performances, des analyses de sensibilité et des alertes automatisées en cas d'écarts par rapport aux résultats attendus. Ces mesures permettent aux organisations de réagir rapidement à tout changement imprévu dans le comportement des modèles, réduisant ainsi le risque d'erreurs et de non-conformité. Une surveillance continue, accompagnée d'ajustements proactifs, garantit que les modèles restent efficaces et conformes aux normes réglementaires. En adoptant une approche structurée de la supervision des modèles, les organisations peuvent renforcer la gestion des risques, améliorer la prise de décision et maintenir la confiance dans leurs capacités prédictives.

Compliance Challenges

Broad Definition of 'Model': Guideline E-23 defines a model as any application of theoretical, empirical, judgmental assumptions, or statistical techniques, including AI/ML methods, that processes input data to generate results. This expansive definition encompasses a wide array of tools, from simple algorithms to complex AI systems. Consequently, institutions may find it challenging to identify and catalog all models within their operations, increasing the risk of overlooking certain models in their MRM frameworks.

Integration of Advanced Technologies: The rapid adoption of AI and ML introduces complexities in model behavior and interpretability. Ensuring that these advanced models align with E-23's requirements necessitates specialized expertise, which may be scarce. Additionally, the dynamic nature of AI/ML models requires continuous monitoring to maintain compliance, posing resource and operational challenges.

Proportional Application: E-23 emphasizes that MRM practices should be proportional to an institution's size, complexity, and model usage. However, determining the appropriate level of rigor can be subjective, leading to potential inconsistencies in implementation across institutions. Smaller organizations, in particular, might struggle with allocating sufficient resources to meet the guideline's expectations.

Comprehensive Model Inventory: Maintaining an up-to-date inventory of all models, including those decommissioned, is a cornerstone of E-23. This task can be daunting, especially for large institutions with numerous models across various departments. Ensuring accuracy and completeness in this inventory requires robust internal processes and continuous oversight.

Governance and Accountability: Establishing clear governance structures is crucial for effective MRM. E-23 mandates defined roles and responsibilities for model development, validation, approval, and usage. Aligning these requirements with existing organizational structures may necessitate significant adjustments, potentially leading to internal resistance or operational disruptions.

Considerations for Compliance

Tailored MRM Frameworks: Institutions should develop MRM frameworks that reflect their unique risk appetites and operational contexts. This includes setting clear policies for model development, validation, and monitoring, ensuring they are commensurate with the institution's size and complexity.

Continuous Training and Development: Investing in training programs ensures that staff remain adept at managing evolving model risks, particularly those associated with AI/ML. Building internal expertise is vital for the effective implementation of E-23's principles.

Robust Data Management Practices: Given that data quality directly impacts model performance, institutions should implement stringent data governance policies. This includes ensuring data accuracy, completeness, and relevance, which are essential for reliable model outputs.

Regular Independent Reviews: Conducting periodic independent validations of models helps identify potential issues and ensures adherence to E-23. These reviews provide an objective assessment of model performance and compliance.

Stakeholder Engagement: Engaging all relevant stakeholders, including model developers, users, and validators, fosters a comprehensive understanding of model risks. This collaborative approach enhances the effectiveness of the MRM framework.

While Guideline E-23 presents challenges in its implementation, particularly concerning the broad scope of models and the integration of advanced technologies, a strategic and tailored approach can facilitate effective compliance. Institutions that proactively adapt their MRM practices in line with E-23's principles will be better positioned to mitigate model risks and enhance decision-making processes.

Best Practices for Compliance

Automate Inventory Management: Utilize technology to maintain accurate and real-time model inventories, ensuring efficient tracking and updating of model statuses.

Regular Audits and Reviews: Conduct periodic audits to assess compliance with the MRM framework, identify gaps, and implement necessary improvements.

Comprehensive Documentation: Maintain detailed documentation for each model, covering aspects such as development rationale, data sources, assumptions, validation results, and any modifications. This practice enhances transparency and facilitates effective governance.

Stakeholder Engagement: Engage relevant stakeholders, including model users, compliance teams, and senior management, throughout the model lifecycle to ensure alignment with organizational objectives and regulatory expectations.

Continuous Training and Development: Invest in ongoing training programs for staff involved in model development and risk management to keep abreast of emerging risks, technologies, and regulatory changes.

By adhering to these best practices, financial institutions can enhance their model risk management capabilities, ensuring that models are used responsibly and effectively, thereby safeguarding against potential financial, operational, and reputational risks.

Expanded Scope and Applicability

The original Guideline E-23, issued in 2017, primarily targeted deposit-taking institutions and focused on models related to financial risks and capital modeling. The revised draft significantly broadens its scope to encompass all FRFIs and FRPPs, recognizing that entities such as insurance companies and pension funds also heavily depend on models for decision-making processes. This expansion ensures a consistent approach to MRM across various financial sectors, promoting robust risk management practices industry-wide.

Comprehensive Definition of Models

The draft guideline adopts an inclusive definition of what constitutes a model, extending beyond traditional financial models to include AI and ML methodologies. Specifically, a model is defined as the application of theoretical, empirical, judgmental assumptions, and/or statistical techniques—including AI/ML methods—that process input data to generate results. This broad definition acknowledges the evolving nature of modeling techniques and the integration of advanced analytics in financial decision-making.

Principles-Based Approach and Proportionality

OSFI employs a principles-based approach in Draft Guideline E-23, allowing institutions to tailor their MRM frameworks in alignment with their size, complexity, and risk profiles. This approach emphasizes proportionality, ensuring that smaller or less complex institutions can implement MRM practices commensurate with their specific operational contexts. Such flexibility is crucial for fostering innovation while maintaining rigorous risk management standards.

Key Components of the MRM Framework

The guideline outlines several critical components that institutions should incorporate into their MRM frameworks:

Governance and Accountability: Establishing clear roles and responsibilities for model development, validation, approval, and usage to ensure robust oversight and accountability.

Model Identification and Inventory: Maintaining a comprehensive inventory of all models in use, facilitating effective monitoring and management throughout their lifecycle.

Model Risk Assessment and Rating: Implementing a risk-based approach to assess and categorize models, enabling institutions to prioritize resources and controls based on the potential impact of each model.

Model Development, Validation, and Implementation: Ensuring rigorous processes for model development and independent validation to confirm that models perform as intended and are aligned with their designated purposes.

Model Monitoring and Reporting: Establishing ongoing monitoring mechanisms to track model performance and implementing reporting structures to communicate findings to relevant stakeholders effectively.

Implications for the Future of MRM

The implementation of Draft Guideline E-23 is poised to significantly influence the future landscape of MRM in several ways:

- **Enhanced Resilience:** By adopting comprehensive MRM frameworks, institutions can better anticipate and mitigate risks associated with model inaccuracies, thereby strengthening their overall resilience.

- **Adaptation to Technological Advancements:** The inclusive definition of models to encompass AI and ML techniques ensures that MRM practices remain relevant amidst rapid technological advancements, promoting responsible innovation.

- **Regulatory Alignment:** The guideline aligns with global regulatory trends emphasizing robust MRM, positioning Canadian institutions to meet international standards and expectations.

- **Operational Efficiency:** A structured approach to MRM facilitates more efficient allocation of resources, as institutions can focus efforts on models with higher risk profiles, optimizing operational effectiveness.

Final Thoughts

Guideline E-23 represents a significant step forward in ensuring financial institutions in Canada maintain robust Model Risk Management (MRM) practices. By establishing clear expectations around governance, validation, and continuous monitoring, OSFI has provided a framework that supports financial stability and enhances model transparency. Compliance with E-23 is not merely a regulatory obligation but a strategic necessity for institutions looking to mitigate risk and improve operational resilience.

As financial institutions increasingly integrate artificial intelligence, machine learning, and other advanced modeling techniques into their operations, the principles outlined in E-23 will continue to play a crucial role in safeguarding model integrity. Institutions that proactively implement best practices in MRM, such as structured governance frameworks, independent validation, and continuous performance assessments, will be better positioned to adapt to evolving regulatory expectations and industry advancements.

The future of model risk management under E-23 will likely involve greater scrutiny, particularly in the areas of AI model governance and risk quantification. Financial institutions must remain agile and forward-thinking in their approach to compliance, leveraging technology and automation to streamline validation processes and improve model oversight. By doing so, they can ensure regulatory compliance while fostering innovation and enhancing decision-making capabilities.

Ultimately, E-23 compliance is about more than just meeting regulatory requirements—it is about strengthening trust in financial models and reinforcing the overall resilience of the financial sector. Institutions that embrace these principles will not only mitigate risks effectively but also gain a competitive advantage in an increasingly data-driven world.

About Empowered

Empowered provides cutting-edge Model Risk Management (MRM) solutions designed to help financial institutions achieve full compliance with OSFI's E-23 guidelines. Our Connected Risk platform is built to streamline MRM processes, enabling institutions to automate model validation, enforce robust governance frameworks, and maintain seamless regulatory reporting. By leveraging advanced analytics, automation, and machine learning, our solutions empower organizations to reduce model risk while improving efficiency and oversight.

With increasing regulatory scrutiny and the growing complexity of AI-driven financial models, it is critical for institutions to implement a comprehensive, scalable MRM framework. Connected Risk offers real-time monitoring, automated compliance checks, and risk quantification tools, ensuring that financial institutions stay ahead of evolving regulations and industry best practices.

If your institution is preparing for E-23 compliance or looking to enhance its Model Risk Management program, Empowered is here to help. Our experts provide tailored consultations to assess your MRM maturity, identify gaps, and implement solutions that align with both regulatory requirements and business objectives.

Contact us today to schedule a consultation and ensure your financial institution is compliance-ready for E-23.

Visit **empoweredgrc.com** to learn more.

This summary of relevant regulations and any additional regulatory information that constitutes this whiteapaper is provided for informational purposes only and does not constitute legal advice. We advise that you obtain advice from a lawyer or appropriate legal counsel.