Crowe Caliber
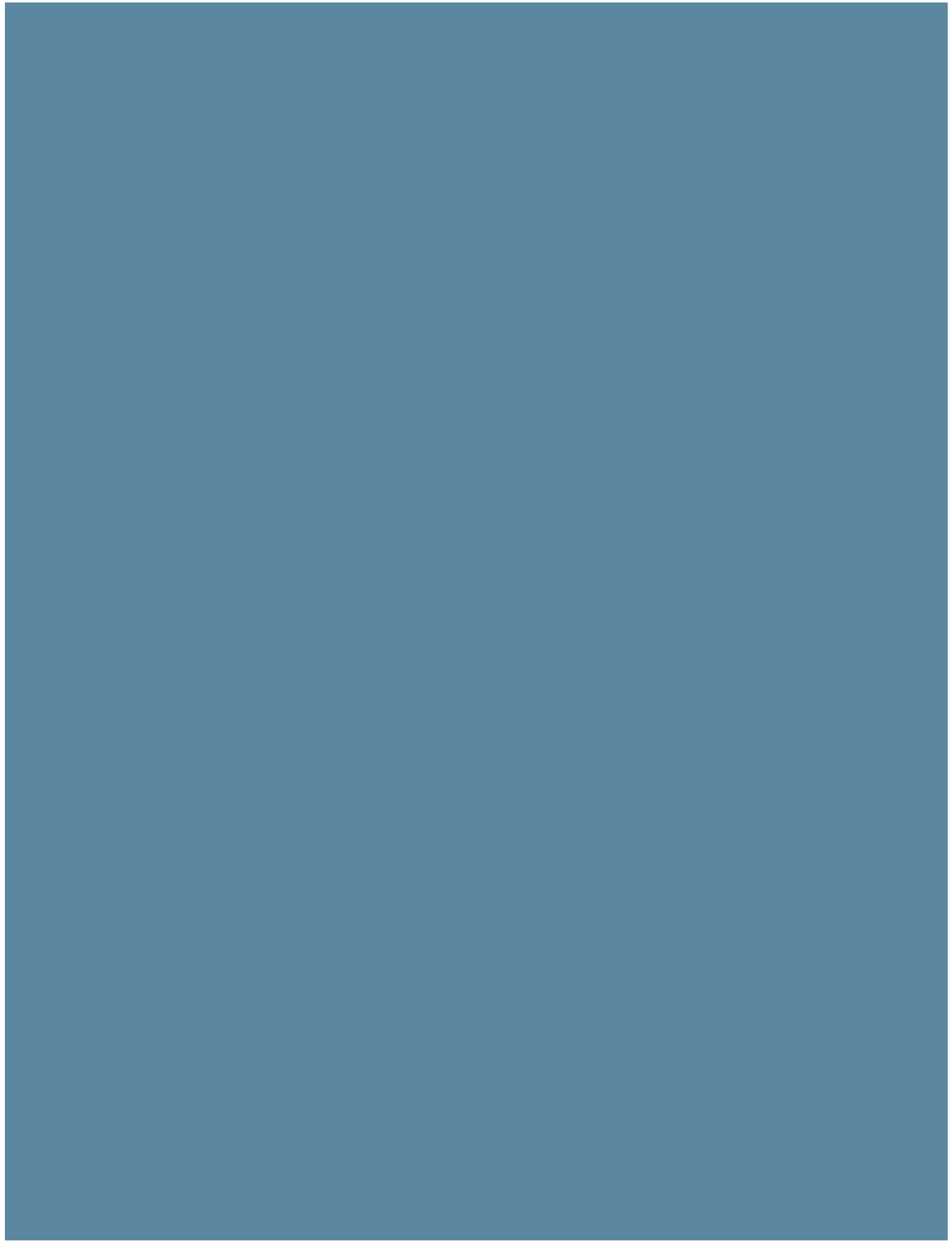
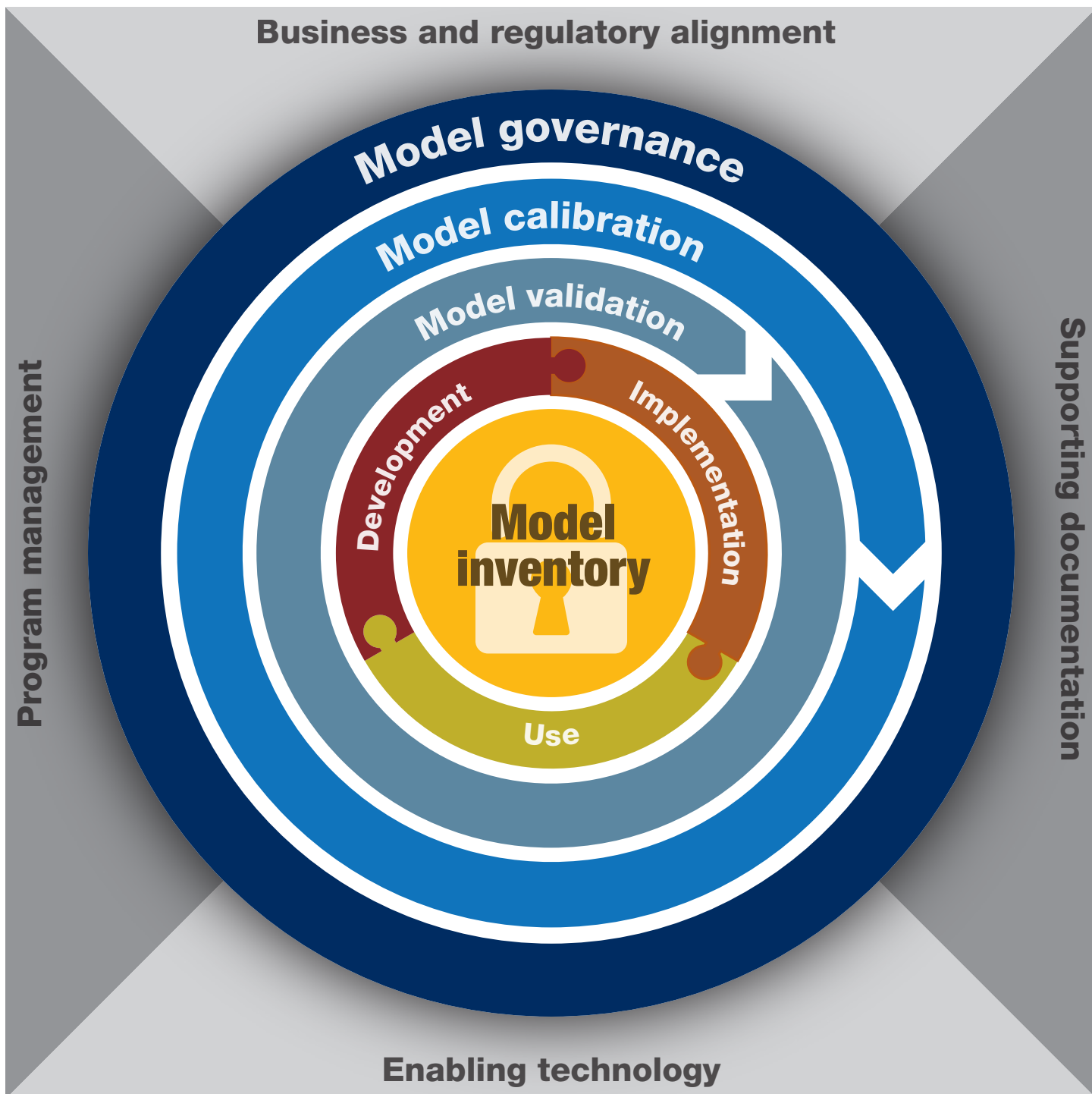Using technology to enhance AML model risk management programs and automate model calibration

Supporting AML model risk management

The increasing complexity of regulatory guidance presents financial institutions with significant challenges in their efforts to manage, document, justify, and validate anti-money-laundering (AML) models used for compliance. Many automated systems and models provide the capability to monitor and manage AML risks across large volumes of customers and transactions. However, increased regulatory scrutiny on transaction monitoring, customer due diligence, and sanctions/watch list filtering systems requires banks to demonstrate practices consistent with the *Bank Secrecy Act* (BSA) and the "Supervisory Guidance on Model Risk Management" (OCC 2011-12, SR 11-7). Failure can result in fines, penalties, enforcement actions, and mandated look-backs.

Crowe risk specialists designed a customizable solution, Crowe Caliber, to help banks and other regulated institutions address expectations for AML model risk management and optimization of AML systems based on coupling an established method with enabling technology.

Crowe Caliber supports AML system management and optimization through consistent documentation standards, statistical and quantitative analyses, workflow management and signoff, reporting and tracking, and establishment of an audit trail in each of the six areas of the Crowe AML model risk management framework.

Business and regulatory alignment

Program management

Supporting documentation

Model governance

Model calibration

Model validation

Development

Implementation

Use

Model inventory

Enabling technology

4

Enhancing AML model risk management

Although Crowe Caliber facilitates the entire AML model risk management effort, it includes specific functionality tailored to the primary area of scrutiny and increased examiner expectations: AML transaction monitoring system optimization and tuning. Transaction monitoring is the cornerstone of an institution's AML compliance efforts. Ineffective monitoring can lead to a high volume of false-positive alerts and a resulting increase in resolution efforts.
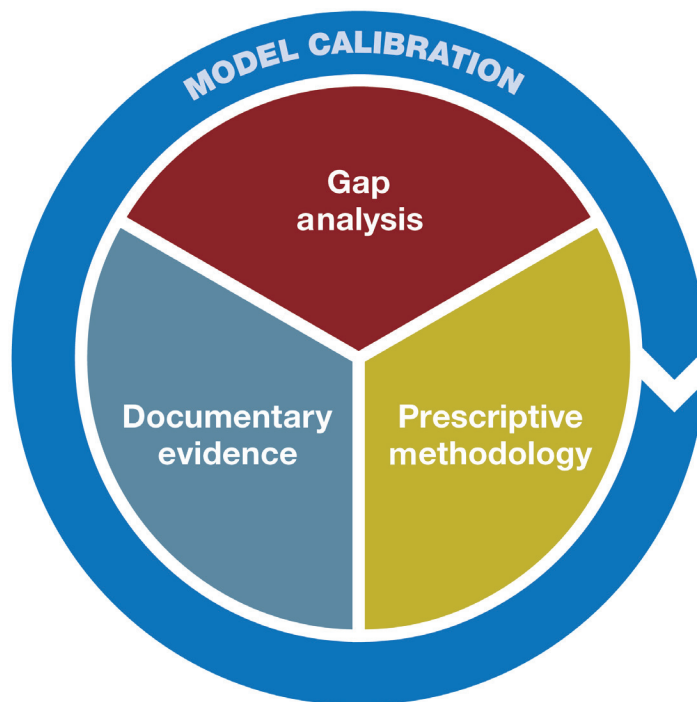
Proper monitoring typically involves the examination of transactions using rules-based or profile-based filtering to flag specific alerts as suspicious. When the filtering criteria are not properly tuned and optimized, the result can be monitoring gaps and inefficiencies, as well as misappropriated human capital.

Model tuning and optimization is important to maintaining the highest efficiency of transaction monitoring and involves three critical elements:

1. **Gap analysis** or a coverage assessment to determine whether the model covers the institution's identified risks

2. **Prescriptive methods** to formally document a comprehensive approach to tuning and optimization, as well as any change-control procedures or initiating events requiring subsequent adjustments

3. **Documentary evidence** to create an audit trail of changes made to model parameters and thresholds during the tuning and optimization process

Crowe Caliber supports these requirements by providing the tools to create samples, review and categorize alerts, collect and consolidate data, maintain quality control, analyze findings, follow change control procedures, and give a full audit trail of the data analysis, justification, and approval process for making model enhancements.
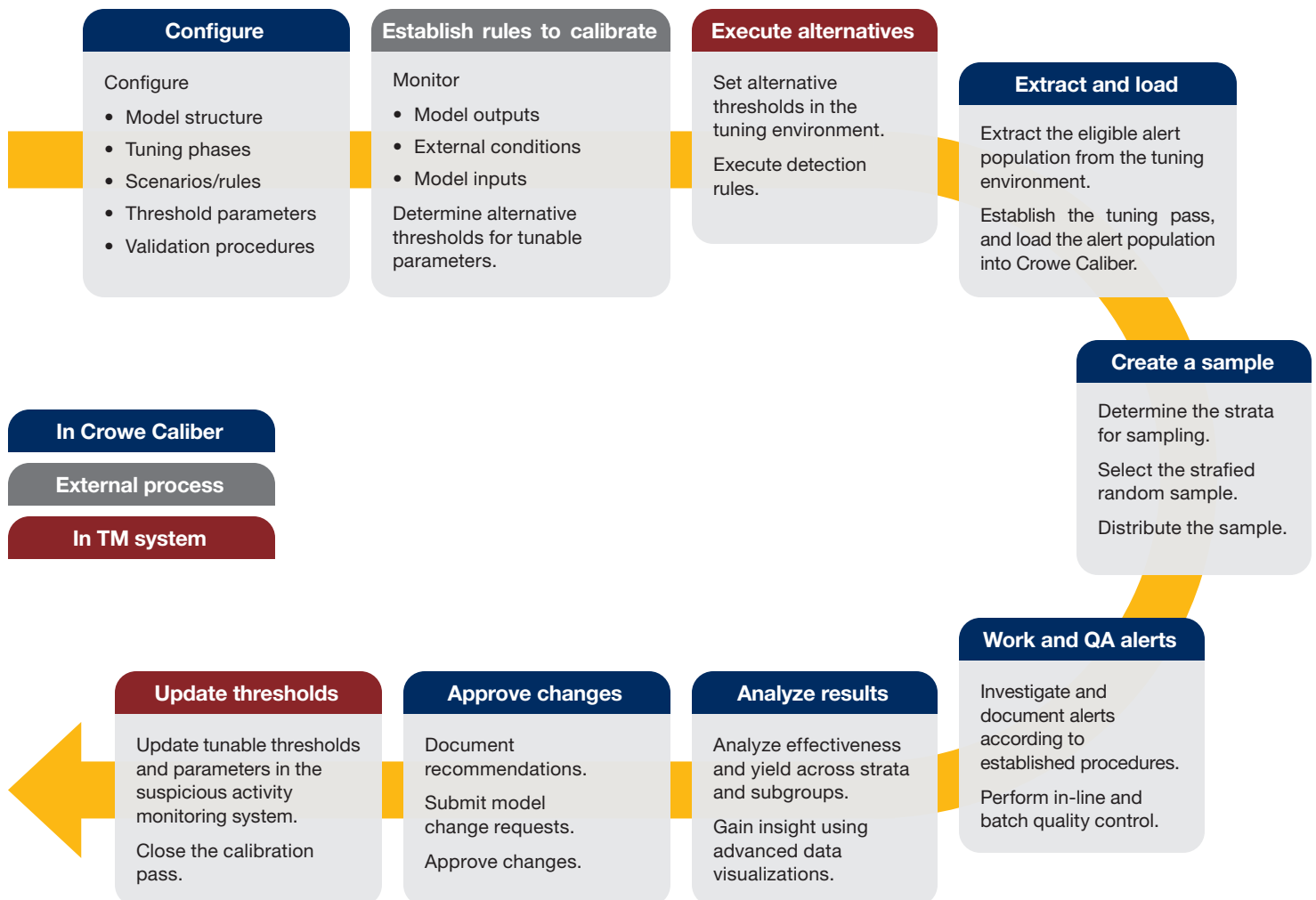
Why are model parameters and thresholds important?

In a typical transaction monitoring system, parameters are set to generate alerts for customers with potentially suspicious transactions in a set time frame. In addition, customer risk-scoring model parameters are set to add points to a customer's score for other risk factors, such as political exposure, country of origin, or banking history.

Setting appropriate parameters and thresholds for AML systems is critical to the efficiency and effectiveness of the bank's risk mitigation efforts. The analysis manager module of Crowe Caliber provides the analytic tools required to determine the optimal parameter settings for alert generation based on the institution's tolerable levels for accuracy, efficiency, and risk.

The Crowe Caliber calibration process

Crowe Caliber is built on secure and robust industry-standard technology to allow real-time or batch integration with core systems, account-opening platforms, enterprise risk management (ERM) and enterprise risk planning (ERP) solutions, and other operational or financial systems. The Web-based solution allows for easy access and continuous updating.
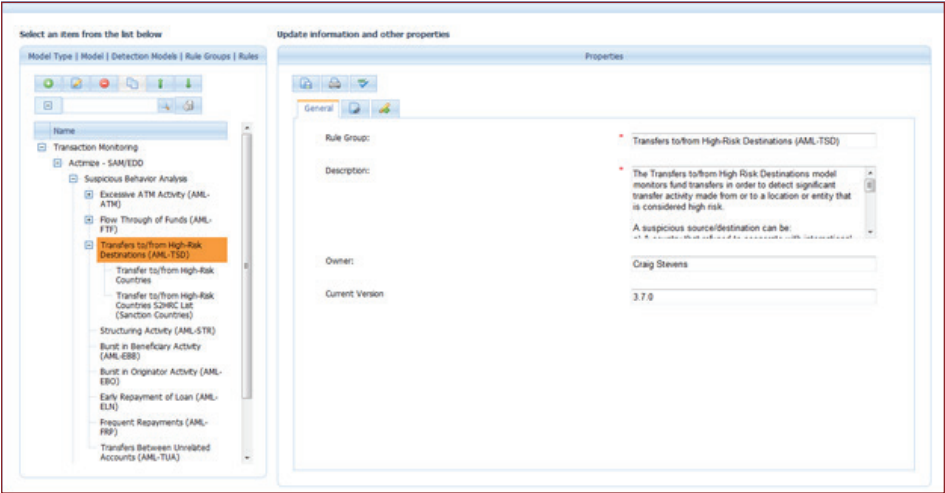
Configure

Configure
- Model structure
- Tuning phases
- Scenarios/rules
- Threshold parameters
- Validation procedures

Establish rules to calibrate

Monitor
- Model outputs
- External conditions
- Model inputs

Determine alternative thresholds for tunable parameters.

Execute alternatives

Set alternative thresholds in the tuning environment.

Execute detection rules.

Extract and load

Extract the eligible alert population from the tuning environment.

Establish the tuning pass, and load the alert population into Crowe Caliber.

Create a sample

Determine the strata for sampling.

Select the strafied random sample.

Distribute the sample.

In Crowe Caliber

External process

In TM system

Work and QA alerts

Investigate and document alerts according to established procedures.

Perform in-line and batch quality control.

Update thresholds

Update tunable thresholds and parameters in the suspicious activity monitoring system.

Close the calibration pass.

Approve changes

Document recommendations.

Submit model change requests.

Approve changes.

Analyze results

Analyze effectiveness and yield across strata and subgroups.

Gain insight using advanced data visualizations.

More effective, efficient calibration and optimization with Crowe Caliber modules

Model manager

The model manager module helps organize and manage AML model and system information, such as the models, scenarios, rules, events, thresholds, scoring scales, customer segments, or peer groups defined within an AML system. The integration engine can be set up to update the model thresholds, parameters, and scenario values automatically on a scheduled basis to facilitate up-to-date information. Functionality includes the ability to add, edit, and delete models, rules, and their associated threshold parameters.

Data set manager

The data set manager module provides functionality to import data files from AML models – in particular, alerts from transaction monitoring systems – and manage the attributes of each import instance. Files can be imported on an ad hoc basis from data files and spreadsheets or, using the data integration engine, directly from the source system on a scheduled basis. For below-the-line tuning, the data import wizard can appropriately assess multiple data files to identify the relevant data subset based on defined logic.

Exhibit 1: Model hierarchy

Exhibit 2: Sample data set with alert properties
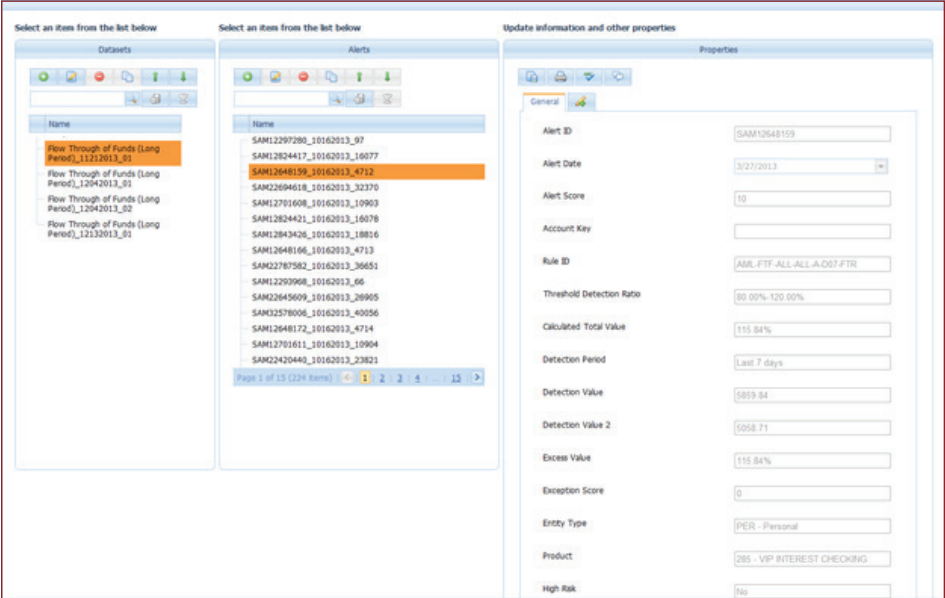
Sample manager

The sample manager module is used by tuning analysts to generate a sample of alerts from the overall population to reasonably represent the entire data set. Crowe Caliber uses widely accepted industry-standard algorithms and sampling methods to match specific needs to the tuning method without the need for manual intervention.

Crowe Caliber supports many sampling methods, including judgmental, random-normal, and random-hypergeometric. When calculating sample sizes and then selecting a proportional sample, the values are not always exact. In this case, the user can choose rounding to the closest integer (either up or down) or a more conservative approach to always round up.

Crowe Caliber can define both discrete and continuous strata and create statistically valid samples inside each stratum (stratified random sampling). The random sample calculator supports any confidence level, margin of error, proportion (assumed error rate), power, and one- or two-tailed populations. Crowe Caliber also provides the ability to isolate rare events for sampling as part of a unique stratum.

Distribution monitor

The distribution monitor module (Exhibit 4) in Crowe Caliber allows the user to distribute sample alerts to individual analysts or a pre-queue. Tuning analysts, investigators, or management can view, work, reassign, and request additional items in their workbenches for qualification. A work list feature is used when approving change requests and helps promote a consistent and repeatable process by defining configurable workflows and tuning stages.

Exhibit 3: Sample creation wizard

Exhibit 4: Sample alert

Analysis manager

The analysis manager module (Exhibit 5) provides the ability to analyze the model output to determine if any changes need to be made to the model, rule, or scenario. Crowe Caliber mines the reviewed alert data to provide metrics about the number and percentage of good alerts, very good alerts (possibly SAR), bad alerts, and alerts with data quality issues.

Analysis can be performed for the entire sample or at the continuous or discrete strata level. Additional analysis can be performed across multiple data sets and with multiple samples in a single data set using variable date ranges. Users graphically can plot alert dispositions to show the effectiveness of various thresholds and identify the alerts contributing significantly to false-positive results.

Advanced analytics and data visualization

The advanced analytics and data visualization module (Exhibit 6) is used by model managers to generate standard and custom reports. Each field and entry in Crowe Caliber is documented in every module and can be used to create various consolidated reports for review by the bank, auditors, and examiners.

Crowe Caliber uses Tableau Software products to provide powerful data visualization, interactive browser analytics, and the structure to tightly integrate charts, graphs, and other images into the user interface through a series of standard visualizations developed from user feedback.

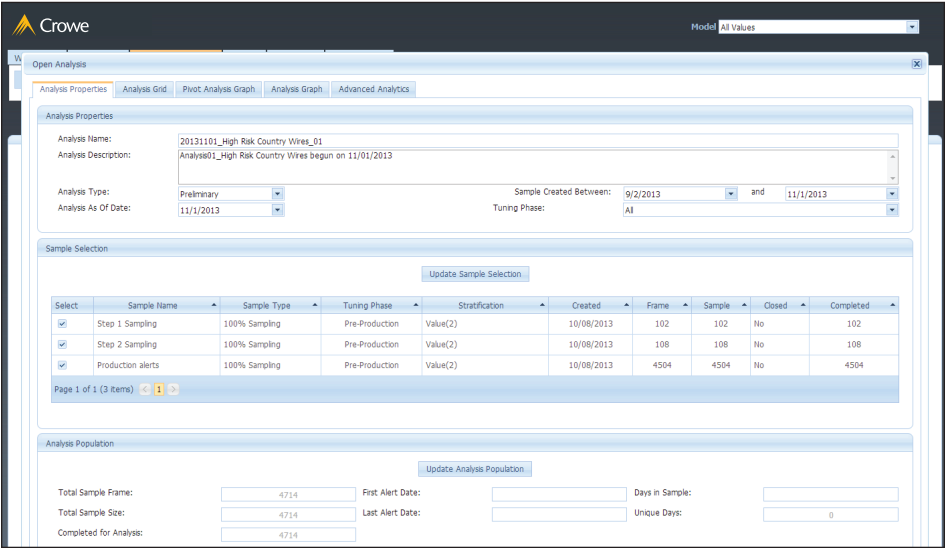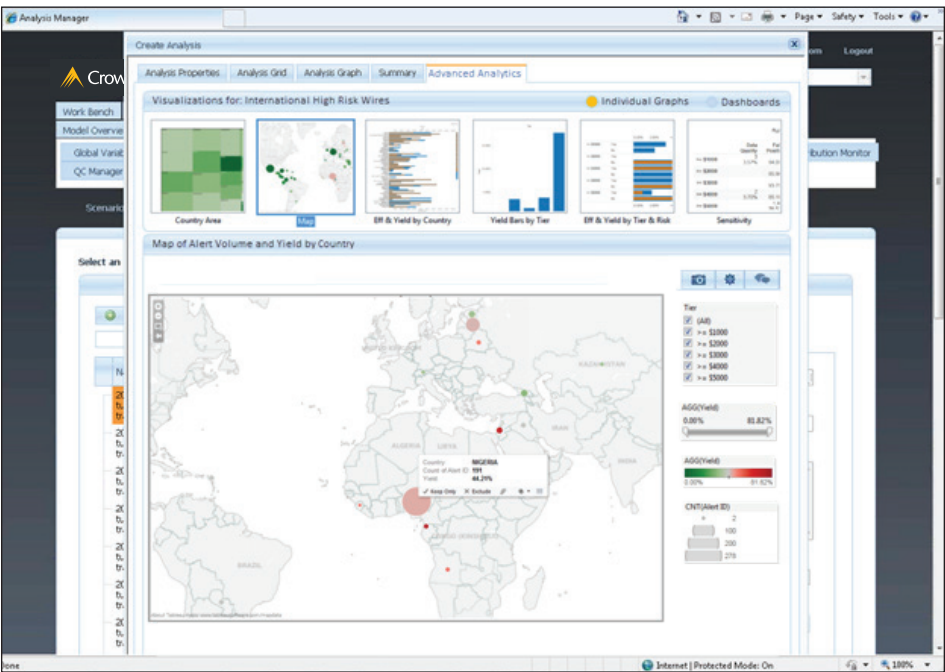**Exhibit 5: Analysis manager – Analysis properties**

Exhibit 6: Crowe Caliber advanced analytics user interface

Tuning out inefficiencies

Along with supporting the overall AML model risk management process, Crowe Caliber helps tune out false-positive alerts using a consistent calibration method incorporating:

- Built-in dynamic sampling tools
- Clustering to identify opportunities for threshold enhancements
- A formal change management process, including documentation of approvals and centralized analysis and justification for changes
- Controls to confirm the use of a consistent and repeatable approach

Crowe Caliber allows users to personalize the AML model risk management and calibration process by guiding analysts in their sampling, analysis, and recommendation development based on internal standards, policies, and procedures. Crowe Caliber also captures the results of each step in an audit trail to document the decision-making process for regulatory scrutiny.

Ultimately, Crowe Caliber provides your institution with a solution that helps:

- Track model inventory
- Manage documentation related to model development, implementation, and use
- Monitor and track model validation results
- Execute model tuning
- Supply controls and oversight for effective model governance

Crowe Caliber capabilities and benefits

Capability	Benefits
Centralized repository provides for the management and documentation of all items related to AML model risk management.	- Manage attachment capabilities at each level within a module. - Document management capabilities and audit trail tracking.
Demonstrated calibration process provides a proven approach for optimizing solutions for monitoring suspicious activity.	- Define roles and workflows to confirm that documented procedures and methods are followed accurately. - Simplify execution of the tuning processes and threshold enhancements. - Take advantage of technology to minimize human error and maximize efficiency.
Documented audit trail increases the ability to respond to regulatory scrutiny and reduces reputational risk due to citations or oversight.	- Consolidate all documentation for a model – including requirements, project plans, calibration analyses, recommendations, and threshold change requests – in a centralized document repository and reporting tool. - Demonstrate compliance for regulator/auditor review.
Automated workflow supports consistent and repeatable processes with less manual effort.	- Configure tailored workflows for project reviews and approvals. - Reduce effort and errors for enhanced productivity. - Improve efficiency in back-office operations for lower cost of ownership.
Integrated dashboards provide insight into model use and analytic processes employed during model optimization.	- Improve reaction time to changing situations with a real-time view of model performance. - Assess risks with heat map capabilities. - Improve visibility to team performance with reporting and dashboards. - View trends over time for model use and testing.
Administrator functionality offers easy configuration and editing for enhancements.	- Manage user permissions, business object creation, security group mapping, and workflow management. - Adapt quickly to requests for user or system updates. - Control access to modules and permission levels based on roles.
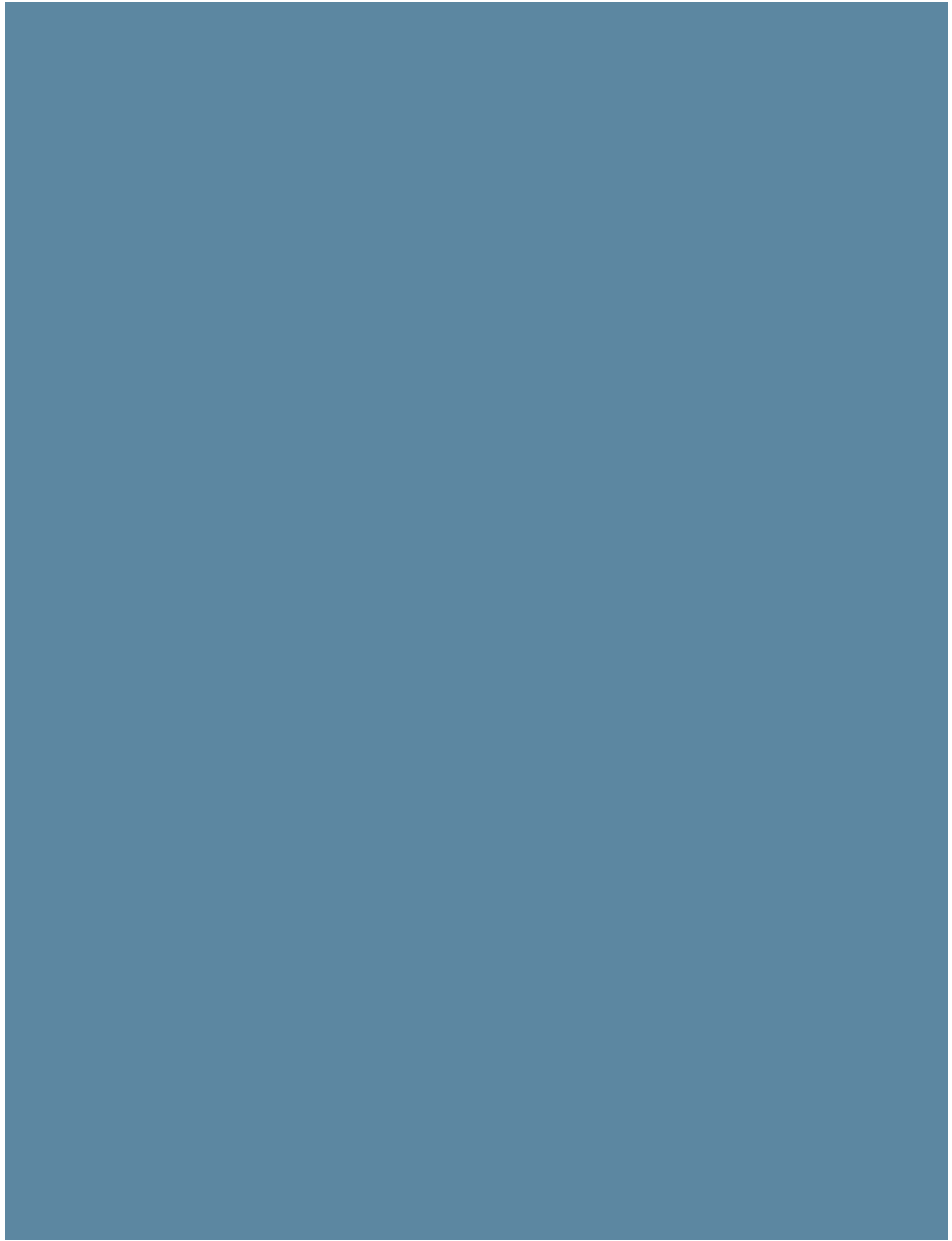
Learn more

For more information on Crowe Caliber and other Crowe-developed technology solutions to help reduce model risk and drive down the cost of compliance, contact:

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