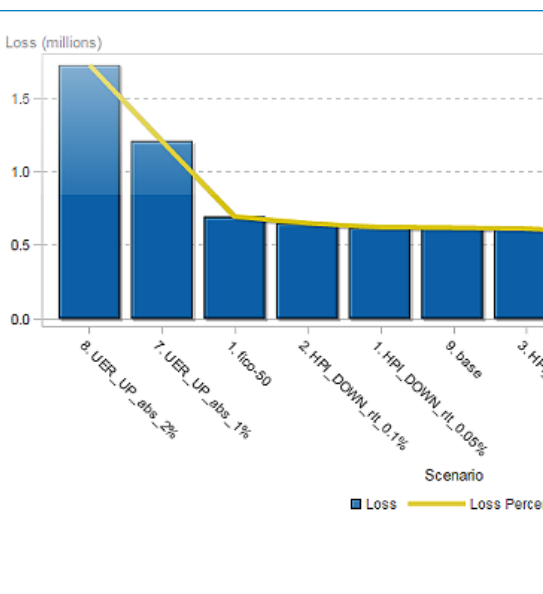


SAS® Risk and Finance Workbench

Manage multidepartmental processes from a centralized hub



Current regulations and business management practices require that risk and finance methodologies cover the entire enterprise and include results for all legal entities and subsidiaries of a bank. To generate enterprise-wide results, banks must manage many processes, scenarios and models across legal entities and business units. Results need to be aggregated into a comprehensive set of financial statements, risk reports and capital plans.

To reduce manual effort, eliminate inefficient processes and coordinate resources while adding structure around the entire process, SAS Risk and Finance Workbench helps banks automate the execution of these processes.

The solution provides a web-based environment for financial analysts to manage the end-to-end process without requiring them to be experts in risk analytics. They can compare and aggregate risk and finance results, perform what-if scenario analysis for capital adequacy and develop reports for internal and external stakeholders.

What does SAS® Risk and Finance Workbench do?

SAS Risk and Finance Workbench serves as a central hub from which banks can manage a range of complex analytic and regulatory reporting processes such as IFRS 9/CECL and stress testing with consolidation and aggregation of results from different sources. It integrates with other components of SAS and third-party systems through a centralized inventory of models, scripts and a repository for risk and finance data.

Why is SAS® Risk and Finance Workbench important?

A web-based environment lets analysts easily orchestrate the entire multidepartmental process. They can specify and edit scenarios, execute models and scripts, and bring modeling results with consolidated data into financial statements and capital plans to meet regulatory and internal requirements in an efficient and auditable manner. Regulatory reports can be produced using standards from different regulations, jurisdictions and geographies.

For whom is SAS® Risk and Finance Workbench designed?

This solution is designed for risk/finance managers and analysts who need to manage complex projects from different departments in a robust and scalable environment. It can help orchestrate the workflow required to meet regulatory and internal demands, reducing time to results and making the entire process more efficient.

As part of the SAS platform, SAS Risk and Finance Workbench links to other SAS components to support a robust process for both stress testing and IFRS 9/CECL compliance through a centralized inventory of models and a common repository for risk and finance data.

Benefits

- Improve auditability, transparency and repeatability of risk and finance projects by synchronizing tasks in a single user interface.
- Keep track of the work and people involved and monitor progress using graphic workflow features.
- Seamlessly integrate with SAS and third-party solutions for data management, model development and execution to address the requirements of multidepartmental projects – from detailed calculations using granular data to aggregated, enterprise-level results.
- Mitigate risks arising from a scattered model management approach using a library of models.
- Protect your investment by retaining and updating existing SAS and other models, as well as communications reflecting user knowledge, validation history and audit trails.
- Gain business insight and generate value by aggregating firmwide data and modeling what-if business scenarios using a fully customizable risk and finance data mart.
- Enable business analysts and subject-matter experts with no coding skills to easily create and maintain data models.
- Quickly set up and ensure compliance controls using reusable objects such as model groups and parameters.
- Share data and information in different formats using report templates and SAS tools for reporting and visualization.
- Reduce development costs and speed time to benefit by leveraging SAS regulatory and reporting content package add-ons.

Capabilities

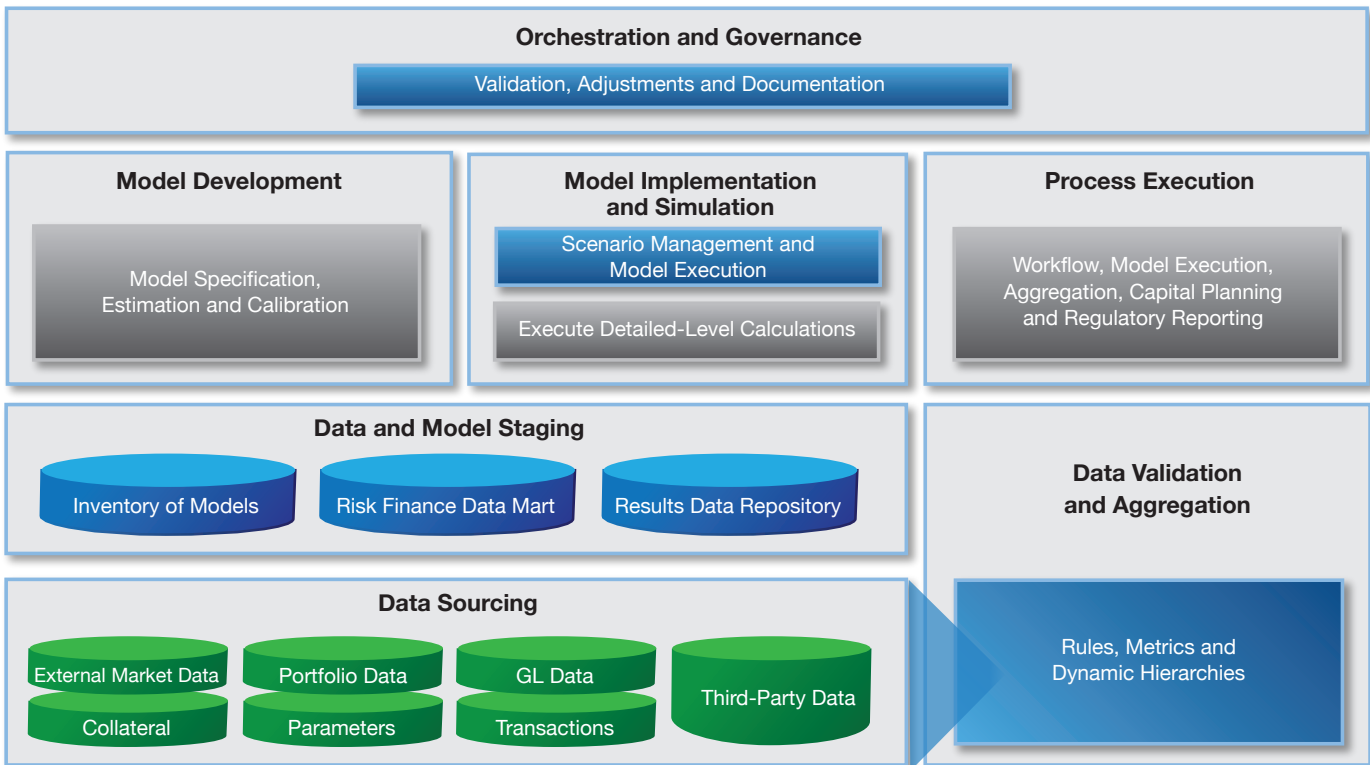
Centralized orchestration of risk and finance activities

By putting all activities related to risk and finance projects like IFRS 9/CECL and stress testing in a single location, banks can easily orchestrate the entire process. This provides the auditability, transparency and repeatability needed to comply with government regulations and enables internal oversight.

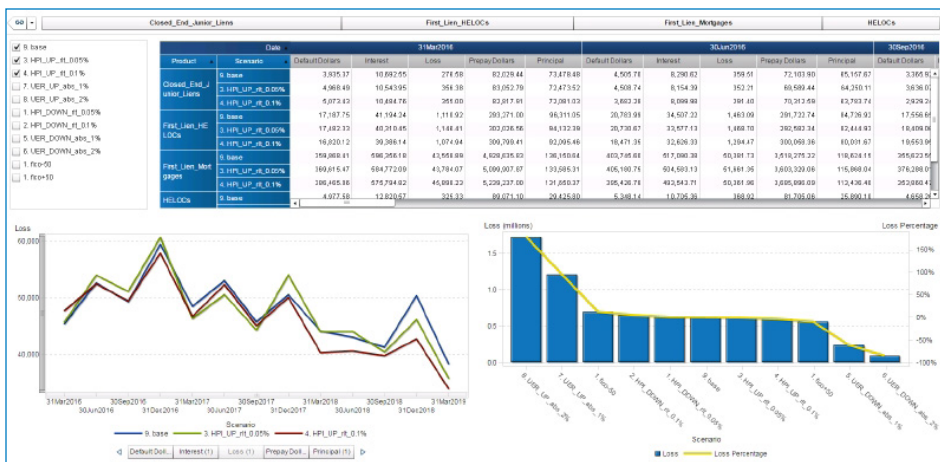
The interface offers:

- **Governed process orchestration.** Integrate all aspects of your process, including model selection, scenario specification, scheduling, creation of capital plans and process workflow.
- **Built-in workflow.** A defined process enables analysts to specify workflows, timelines and approval paths related to credit loss reserving and stress testing.

- **Greater risk and finance integration.** Improve collaboration among risk and finance teams by coordinating and unifying model execution, results consolidation, reconciliation and exception remediation.
- **Security and visibility.** Groups of analysts edit and visualize objects and data according to their roles in different enterprise-wide projects and entitlements.



SAS Risk and Finance Workbench is integrated in a modular approach with the other components of SAS to enable complete governance and transparency of the entire process from model development to reporting.



Visualize scenarios for interactive comparative analysis.

The central hub can be used to trigger execution of calculations, integrate results, manage dependencies, render and populate reports, make last-minute changes under a maker/checker process, publish regulatory disclosures, coordinate actions among multiple analysts and guarantee auditability.

Model development and execution

Use best-in-class SAS Analytics capabilities to create and execute a wide variety of models, including predictive, time series, forecasting, econometrics, simulation and optimization. A specialized programming language is available for complex matrix calculations. Additionally, you can call and use R, Python and other open source and third-party models without the need to recode them.

Aggregation and consolidation of risk and finance results

Historically, banks have had to pass interim results from models to different financial systems. In many cases, they had to aggregate and map these results manually. Having a consolidation tool that is integrated with the risk and finance platform saves time by aggregating and mapping results from risk, finance and treasury systems automatically.

SAS Risk and Finance Workbench maps results from quantitative risk models to the financial models that create projected balance sheets, income statements and capital plans. Financial hierarchies are fully integrated into the system. Therefore, it's quick and easy to map and aggregate values between risk and finance hierarchies, and hierarchies between various regulatory reports. The solution streamlines the process of translating stress testing results into meaningful financial forecasts and capital plans by providing:

- A single place to create, manage and use templates for balance sheets, income statements and capital plans.
- Mappings between different financial hierarchies such as those used by accounting and treasury for data propagation and consolidation.

Key Features

Well-governed process orchestration workflow

- Orchestrated IFRS 9/CECL and stress testing process at the enterprise level with status and timelines.
- Transparent control, management and testing.
- Identify bottlenecks and streamline processes.
- Comprehensive audit trails are provided, including who, when, what and why.
- Complete record of data lineage.

Controlled model execution library

- A single model execution library, including metadata.
- The centralized library can include open source and SAS models.
- Qualitative estimates, including version control and change management.
- Interactive what-if scenarios:
 - Manage scenario library from a web-based interface.
 - Import scenarios provided by regulators.
 - Compare scenarios side by side.
 - Enhance and edit scenarios.
- Visualize fully documented model execution results with overlays.
- Forecasting from line of business to enterprise level.

Flexible risk and finance aggregation

- Define legal entity structure and hierarchies.
- Mapping between risk, finance and regulatory hierarchies.
- Capital assessments and risk-weighted assets.
- What-if analysis with review and challenge processes.
- Management overlays with audit and governance.
- Integration with existing ALM, aggregation and reporting systems.

Regulatory reporting and analytics

- Scalable regulatory reporting engine.
- Stress testing regulatory packages.
- Ability to slice and dice historical and forecasted data.
- Management dashboard, including analytical reports.
- Ability to document regulatory reporting processes. Includes Microsoft Office integration.

- Definition of legal entity structures and hierarchies.
- Generation of metrics and key results through models, rules (such as rollover and balancing), aggregation and mappings.
- Worksheets for management overlays and overrides with a change log.

With this solution, analysts can specify the scenarios and models required for regulatory and internal stress testing. Models are executed and their results integrated with

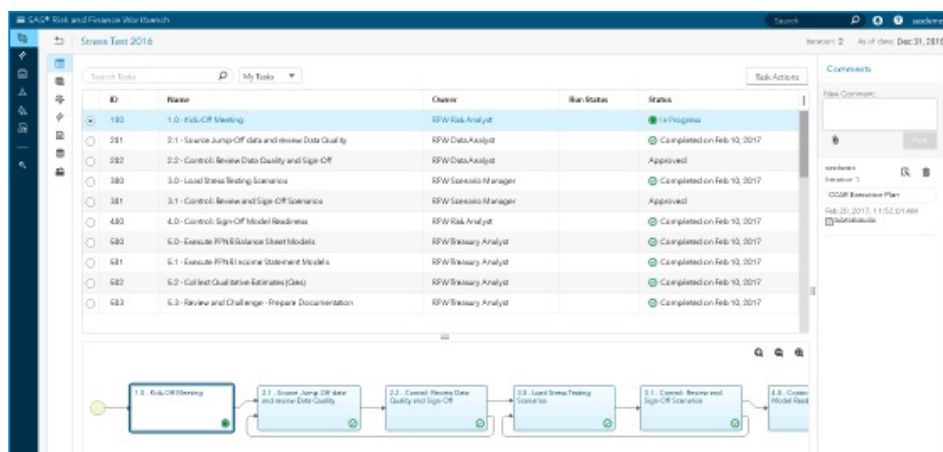
the financial statements. Management overlays with comments allow adjustments with tracking and justification. Final reports for internal and regulatory purposes can be created.

Regulatory reporting packages

Filing packages, created and maintained by SAS, are provided to streamline the collection of data and preparation of reports for supervisory purposes – for example, implementing the European Banking Authority's (EBA) Technical Standards on Supervisory

Reporting). With these packages, you can create data quality checks to ensure all data for regulatory reports is captured.

SAS Risk and Finance Workbench enables the setup of process flows for data review with management overrides in a controlled and auditable environment. Validation rules for EBA ITS and edit checks for CCAR can be designed and performed, so you can make adjustments with no hassle before submission. Report templates make it easy to create XBRL and XML files for submission.



Orchestrate process and document status.

Integration with SAS® components

SAS offers a complete, integrated set of solutions that can also operate as individual components within an existing bank architecture. You can orchestrate the entire stress testing process across all types of risk, including market, credit and liquidity risk with full transparency.

SAS Risk and Finance Workbench serves as a central hub to manage stress testing and credit loss reserving (IFRS 9 and CECL). It seamlessly integrates with other SAS components, particularly SAS Risk Modeling Workbench and the SAS Model Implementation Platform, to comprehensively address the requirements of an end-to-end enterprise process.

Category	Worksheet	Scenario	A	B	C	D	E	F	G
1	Total Assets	03096	322,811.30	322,811.30	323,403.25	323,387.06	323,099.19	323,099.59	323,249.1
2	Held-to-Maturity (HTM)	248,890.42	248,811.67	248,798.68	249,734.18	248,193.91	249,026.29	248,846	
3	Available-for-Sale (AFS)	77,211.21	77,900.32	77,816.78	77,692.88	77,738.18	77,662.62	77,900	
4	Securitized (non-mortgage grade)	216,950.78	216,958.85	216,880.18	216,669.32	217,070.18	216,882.55	216,950	
5	Securitized (mortgage grade)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6	Total Loans and Leases	721,278.95	718,581.11	746,221.83	747,584.27	749,348.94	750,144.32	752,924	
7	Real Estate Loans (Residential)	287,278.95	284,848.81	288,211.47	271,840.11	274,784.18	275,144.32	281,500	
8	First Lien Mortgage	150,800.00	158,702.82	158,109.83	140,340.83	142,480.83	144,892.72	147,28	
9	First Lien HELOC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
10	Second / Junior Lien Mort.	61,706.84	62,832.75	63,507.45	64,330.33	65,009.98	65,911.83	66,74	
11	CB Loans	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12	CB Loans	61,706.84	62,832.75	63,507.45	64,330.33	65,009.98	65,911.83	66,74	
13	CB Loans	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
14	CB Loans	48,808.83	48,259.82	48,832.10	49,734.14	47,095.38	47,253.18	47,59	
15	Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
16	Multi-family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
17	Non-Residential	48,808.83	48,259.82	48,832.10	49,734.14	47,095.38	47,253.18	47,59	
18	Owner Occupied	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
19	Non-Owner Occupied	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
20	Loans Secured by Real Estate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
21	Real Estate Loans (Non-Residential)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
22	First Lien Mortgage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
23	Second / Junior Lien Mort.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
24	CB Loans	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
25	Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
26	Multi-family	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
27	Non-Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
28	Owner Occupied	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
29	Non-Owner Occupied	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
30	Loans Secured by Real Estate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
31	CB Loans	253,340.84	249,126.71	249,809.44	247,000.27	248,182.81	248,253.72	248,114	
32	CB Loans	228,695.32	244,167.87	250,843.87	254,688.19	261,241.88	261,719.65	273,86	

Interactively display projected financial statements.

TO LEARN MORE »

To learn more about SAS Risk and Finance Workbench, please visit sas.com/rfw.

To contact your local SAS office, please visit: sas.com/offices

