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DATA:

Taking the "Stress" out of Portfolio Stress Testing

Brillio's HANA-based Enterprise Business Event Simulation Solution (HEBESS)

Developed in co-operation with SAP Co-Innovation Lab



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EXECUTIVE SUMMARY

Modern banking, in spite of all its technology and digital advancements, is exposed to a vicious environment where challenges remain largely concealed-only to explode when least expected.

Particularly noticeable are uncertainties on varying levels of market and credit risk due to market-traded and credit (loan) portfolios.

Traditional investments on risk management and mitigation are largely focused on supporting the regulatory compliance agenda only. Thus the need for "above-and-beyond" strategic enterprise capability which can create an impregnable line of defense is often left unattended.

Hence, there is the imminent need for banks to address the challenge ground up and make the Stress Testing process more analytics-driven, cost-efficient, time-bound, accurate, consistent and yet flexible and easy-to-report for all roles ranging from the Portfolio Manager level right up to the CRO (Chief Risk Officer).

THE MARKET SITUATION

Today, there is the need for a configurable, flexible, comprehensive and fully-automated Portfolio Stress Testing Tool which allows Risk Managers to access cost efficient Stress Test results in real time.

Current Stress Testing methodologies focus more on modeling complexities and rigid logics often requiring herculean task to shock and assess the stress impact even a small change in one or a group of parameters.

Obsolete technologies that are incapable of yielding the real time intelligence that modern banking organizations require for Portfolio Risk Management is another fundamental main point.

A solution that can simulate shocks of financial data in real-time whilst enabling decision-making for business growth is the dire necessity of the times.





THE OPPORTUNITY IN THE CHALLENGE

Even in today's digital world, months of manual preparation is required for generating Stress Testing reports a few times in a year and yet only that meets regulatory needs. As the process is mostly executed manually, it is prone to dangerous issues of repeatability and auditability.

Hence, a majority of global banks expect to enhance their Stress Testing frameworks over the near term, with data quality and modeling capabilities as top priorities. This points to the need for a contemporary and automated solution and presents a clear opportunity. Investments that help banks quickly re-align to Stress Testing objectives would be on the money here.

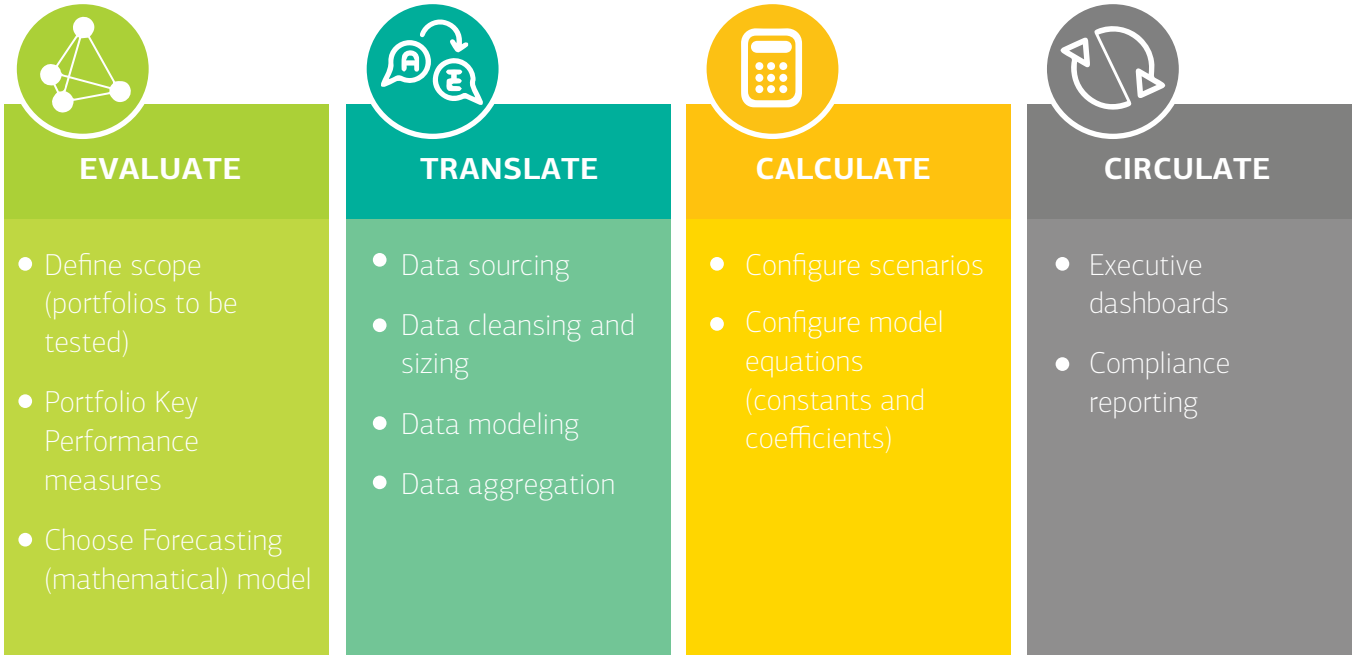
However, the focus needs to mature to not just building resistance to risk but actually going a step ahead and convert these risks into opportunities for expanded business scope and growth in the long term.

MEETING THE MODERN BANK'S PORTFOLIO STRESS TESTING REQUIREMENTS

The market is ripe for a solution that is capable of automating the end to end Stress Testing needs, execution of real-time simulations and analytics of financial data to accelerate decision making capabilities encompassing portfolios both the Banking Book and the Trading Book.

This solution should be able to automatically extract large amounts of portfolio data and perform forecasting calculations for stress scenarios. It should allow flexible and easily configurable mathematical models and generate dashboard outputs and regulatory reports with ease.

Brillio's 4-step process for simulation planning and execution can help banks have an instantaneous view of asset portfolio's performance.



A robust Portfolio Stress Testing solution is one that leverages the power of analytics tools and enables an unparalleled integrated set of services.

Delivered by a partner with strong domain capabilities, such a solution can make the process of Stress Testing sharper, quicker and effective.

The advantage of leveraging a proven analytics platform is obvious: improved data management and data validation, almost real time results, effective reporting and dashboarding - the list can go on.

When a platform like SAP HANA is combined with the proven expertise and execution leadership of a successful technology major, the resulting solution can offer banks and financial institutions a multitude of features including:

- Source Data Capturing, Management and Validation
- In-Memory Computing to offer reporting capabilities that are 4000 times fasterthereby enabling quicker faster better decision making
- Real time analytics and Dynamic dashboards
- Forecast of Ratios/Performance Measures based on input parameters provided
- Shocking particular input parameters for Sensitivity Analysis and Forecasting Model Validation
- Scenarios and model configuration and periodic maintenance
- On demand and custom-format reporting



THE POWER OF CO-INNOVATION

At Brillio, we believe in constantly innovating for growth. In partnership with SAP HANA, we co - innovated to build a world-class solution. It leverages the power of the HANA analytics engine and provides the capability to run multi-factor Stress Test simulations on asset portfolios performance.

The simulations are based on easily configurable forecasting models. The results can be rendered on any mobile device or a web application.

Tailor-made to address the complexity of the banking and financial services business, our solution focuses on ensuring protection for the present and potential for the future by:

Leveraging the value of information

The right information flowing in at the right time is not just meant to build resistance to risk but also helps in converting these risks into opportunities for expanded business scope and growth. This can help in creating new revenue streams in the crowded banking industry and the solution helps clients by leveraging predictive analysis to assess the impact of new scenarios on the Bank's asset portfolios in the future. And when combined with an outcome based pricing model, the benefits are always guaranteed.

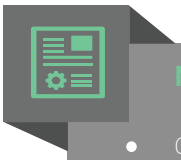
Going beyond regulatory compliance

The Brillio solution allows for customization of the Portfolio Stress Testing by providing the ease of quickly creating and modifying forecasting models as well as creating custom stress scenarios. It also helps to shock input macro-economic parameters which form a stress scenario and predict the outcome for effect of individual parameters being varied. The ability to define inputs and create tailor-made scenarios using economic indicators such as unemployment rate, GDP, Fed funds rate, currency volatility and automatically convert them into market shocks in the test environment creates a tighter Stress Test environment. Thus it goes far beyond regulatory mandates of Fed Reserve.

Intelligent reporting

At the core of the Brillio's HEBESS- Portfolio Stress Testing Solution is the ability to provide intelligent and intuitive, executive level reporting even in dashboard formats. The reports are also compatible for exec reporting in standardized formats and review across multiple mobile devices. And all this with instant report generating capabilities-shrunk from weeks earlier to minutes now. The solution can also be easily managed by business users to automate and reduce risk of errors and get the impact of assumptions, drivers and changes almost in real time. It provides a central repository of data with detailed and controlled audit trails.

The innovative 'scale-out' architecture of our solution, is especially effective for accurate and real time simulation & reporting. This translates into significant reduction in costs and turn-around times, enabling maximum automation. Some key features are depicted below:



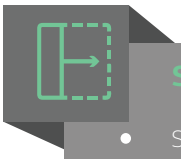
MANAGEMENT CONSOLE

- Customizable rich GUI Dashboard and Custom Reporting
- "Slide and Watch" functionality for Sensitivity Analysis



DATA CAPTURE

- Automatic capture / update of Portfolio data as it changes or is provided
- Supports multiple interfaces to capture inputs



SCALABLE ARCHITECTURE

- Scalable architecture enables analytical processing which can be adjusted and extended for complex and changing business needs



IN-MEMORY ANALYTICS

- Real-time simulations using calculations on updated data and scenarios



MODEL AND DATA MANAGEMENT

- Forecasting model configuration
- Data range selection
- Customizable Scenarios Configuration for atypical macro-economic movements

Challenges	Features of HEBESS
Current tools are not scalable to meet the data volume and calculations	HEBESS is scalable and customizable for specific portfolio Stress Testing needs
Data has to be sourced from multiple system landscape and processed manually to generate required outputs	HEBESS architecture allows to extract data from multiple sources automatically before processing it for analytical calculations
Banks are not able to shock portfolios for sharp variations in macro-economic parameters	HEBESS provides the flexibility to generate reports based on custom scenarios and shocked individual parameters (Sensitivity Analysis)
The outputs generated are typically data driven and fixed for each scenario	The outputs are generated as dashboards and the user persona can pick & choose various type of charts
Changes to calculations requires programing skills	Calculation rule engines are customizable and user has the option to add or modify the formula based regulatory requirements

TAKING THE "STRESS" OUT OF STRESS TESTING

Brillio's Portfolio Stress Test solution HEBESS (HANA based Enterprise Business Event Simulation Solution) is designed to help banks leverage predictive analysis to assess the impact of future scenarios on the Bank's asset portfolios.

The solution was extensively tested to understand current Stress Testing challenges and design ways to address them. It presents a powerful synergy of SAP HANA analytics capabilities and Brillio's expertise in engineering and customizing solutions to meet precise customer challenges.



CONCLUSION

The modern business place is a complex and challenging one. Banks need to have real-time comprehensive insights in portfolio stress scenarios to plan and take improved business decisions. Legacy systems for portfolio Stress Testing are not agile enough to meet current business demands of real-time analytics and real-time reporting.

A radical approach is the need of the hour and Brillio's HANA based Enterprise Business Event Simulation Solution (HEBESS) is designed to help address business requirements effectively and efficiently

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